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0001

HEALTH CONDITIONS BY RETIREMENT ELIGIBILITY AGE AND EMPLOYMENT STATUS: DATA FROM THE U.S. HEALTH AND RETIREMENT SURVEY. Toni Alterman*, Walter Alarcon, Sharon Silver, Jia Li, Marie Sweeney (NIOSH, CDC)

Data from the 2010 Health and Retirement Study, a nationally representative panel study of older Americans, were used to examine the distribution of health conditions by retirement eligibility age and employment status among ever-employed persons ages 50-74 (N=14,444). Work status was separated into four mutually exclusive categories: working for pay; not working for pay and retired; not working for pay or retired but disabled; and other. Respondents were asked if they ever had 7 conditions: high blood pressure (HBP), diabetes, cancer, lung disease, heart problems, stroke, or arthritis. In the younger group (ages 50-64) the mean number of health conditions reported in 2010 differed by employment status: actively employed (1.2); not working for pay and retired (2.1); and not working for pay or retired but disabled (2.5). The mean number of conditions in each employment status was significantly higher for 65+ age workers than for 50-64 age workers. In both age groups, stroke had the largest impact on employment, with only 31.5% of younger respondents and 13.9% of older respondents actively employed. Lung disease was also associated with lower employment prevalence in both age groups (42.9% and 21.8% respectively). Respondents reporting HBP and arthritis were most likely to be employed, with approximately half of younger and a quarter of older respondents reporting active employment. These data suggest that increased emphasis on prevention of stroke and lung disease is needed. They also suggest that more than 1/2 of those under age 65, and more than 1/4 of those over age 65 remain employed despite having chronic diseases. Research on both workplaces and work practices is needed to ensure the continued employment of these workers.

0003

TOWARDS THE DEVELOPMENT OF A SCREENING TOOL TO ENHANCE THE DETECTION OF ELDER ABUSE AND NEGLECT BY EMERGENCY MEDICAL TECHNICIANS (EMTs): A QUALITATIVE STUDY. Brad Cannell*, Katelyn Jetelina, Sepeadeh Radpour, Matt Zavadsky, Jennifer Reingle (University of North Texas Health Science Center)

Elder abuse and neglect (EA) are under-detected and under-reported in the United States. Although about 11% of older adults experience elder abuse, it is estimated that as few as 1 in 14 cases of elder abuse are reported to the authorities. At a recent meeting of the Fort Worth [TX] Elder Abuse Task Force, representatives from the region's largest mobile healthcare (ambulance) provider discussed high levels of EA under-reporting among their emergency medical technician (EMTs). As a result, we began a project to understand and address barriers to reporting EA for EMTs. As a first step, the research team conducted a series of semi-structured focus group sessions with 23 EMTs and Adult Protective Services (APS) caseworkers. Using systematic procedures, including Grounded Theory, five general themes related to barriers to reporting EA were identified, including: (1) EMT apprehension towards violating older adults' personal freedom to determine the conditions of their living environment; (2) EMT moral anxiety about the potential negative consequences (e.g., institutionalization) of an APS investigation on the older adult and/or their caregiver(s); (3) time burden associated with reporting to APS; (4) potential inaccuracies in EMT's ability to recall case details, and, (5) low confidence in EMT's ability to correctly identify potential EA. Additionally, we found that EMTs expressed a need for a screening tool to help identify EA. The results from the focus groups suggest eight general domains that might be associated with EA cases, including: (1) conditions of the outside areas around the home; (2) conditions inside the home; (3) the presence /adequacy of social support; (4) medical history and medication use/misuse; (5) caregiving indicators; (6) the physical condition of the older adult; (7) the older adult's behavior; and, (8) EMTs instincts. Future research should develop and validate a tool to enhance detection and reporting of elder abuse and neglect.

0002

DEVELOPMENT OF A SCREENING INSTRUMENT FOR DEMENTIA IN A TRIBAL ILLITERATE ELDERLY POPULATION. Ashok Bhardwaj* (Medical College)

Introduction Cognitive impairment, characteristic of dementia, is measured objectively by standard neuropsychological (cognitive) tests. Given the diversity of culture and language in India, it is difficult to use a single modified version of MMSE uniformly to Indian population. In this article, we report methods on the development of a cognitive screening instrument suitable for the tribal (Bharmouri) elderly (60 years and above) population of Himachal Pradesh, India. **Materials and Methods** We used a systematic, item-by-item, process for development of a modified version of MMSE suitable for elderly tribal population. **Results** The modifications made in the English version of MMSE and the pretesting and pilot testing thereof resulted in the development of Bharmouri version of cognitive scale. **Discussion** The study shows that effective modifications can be made to existing tests that require reading and writing; and that culturally sensitive modifications can be made to render the test meaningful and relevant, while still tapping the appropriate cognitive domains.

0004-S/P

ELDERLY FALLS AND THE COMPONENTS OF FRAILTY: FOUR YEAR FOLLOW UP IN THE SABE STUDY. Jair Licio Ferreira Santos*, Gisele Patricia Duarte, Yeda Oliveira Duarte, Maria Lucia Lebrão, (Faculdade de Medicina de Ribeirão Preto - USP)

Introduction: there are a number of articles linking frailty with increased risk of falls in the elderly. This may be a bidirectional relationship, since the occurrence of falls leads to increased vulnerability and a decrease in adaptive capacity. This work focuses in the opposite direction of the relation, seeking to evaluate whether the occurrence of falls in the year before the interview is associated with components of frailty after a four year period. **Methods:** Data were obtained from the second round of the SABE Study, conducted in 2006, when 1413 elderly were interviewed, forming a representative sample of the city of São Paulo -Brasil. Individuals considered frail or pre-frail according to the model of Fried were excluded, resulting in 580 elderly at baseline. In 2010, the survivors were assessed for the five components of frailty. Statistical test with correction for sample design (Rao-Scott) was applied to evaluate associations between frailty and the falls at baseline. **Results:** Of the 580 elderly 134 (23%) had fallen during the previous year. In 2010, 9.8% of the individuals were classified as Frail - 8.3% (no falls) and 13.7% (falls) a Risk Ratio (RR) of 1.65, P = 0.016. Results for the components are: muscle weakness: 23.5% (no falls), 33.8% (falls), RR = 1.44, P = 0.001. Decreased walking speed: 22.1% (no falls), 26.8% (falls), RR = 1.21, P = 0.120. Exhaustion : 8.6% (no falls) 14.6% (falls), RR= 1.70, P = 0.006. Low physical activity: 36.5% (no falls) , 35.2% (falls), RR = 0.98, P = 0.800. Unintentional weight loss: 6.8% (no falls), 8.1%(falls), RR = 1.19, P = 0.485. **Discussion:** At least for two components of frailty - muscle weakness and exhaustion- a previous fall must be considered as a risk factor. This finding may throw some light on the bidirectional nature of the relationship and points to the need for further investigation on the double role played by falls: outcome and risk factor.

0005

SOCIAL INEQUALITIES IN SELF-RATED HEALTH OF ELDERLY IN THE CITY OF SAO PAULO. Jose Leopoldo Ferreira Antunes*, Alexandre Dias Porto, Chiavegatto Filho, Yeda Aparecida, Oliveira Duarte, Maria Lucia Lebrão (University of Sao Paulo, School of Public Health)

Objectives: To describe the prevalence of self-reported poor and very poor health status among the elderly living in São Paulo in 2010, and to identify whether previously reported social inequalities for this condition persist. **Methods:** We conducted a cross-sectional study, with a representative sample of 1344 people aged 60 or more years old living in the city, who participated from the SABE Study (Health, Well-Being and Aging). We applied a questionnaire on socio-demographic characteristics, which included three questions on self-reported health status: a direct question about the current condition, a comparison with the condition of others with the same age, and a comparison with himself a year ago. The comparative analysis used Poisson regression models, reporting the prevalence ratio as a measure of association between variables. **Results:** Only 7.8% of elders reported a negative health status in 2010; similar proportion of those who consider themselves to be in worse health condition than other people of the same age (8.7%). However, a higher prevalence of elders report worsening over the previous year: 29.2%. Independent of the question used, the prevalence of negative self-assessed health status directly associated with worse indicators of income, education and consumer classes. Significant differences between sexes, age groups and categories of skin color were also observed. **Conclusion:** Differences in the prevalence of self-reported negative health status persist affecting the socio-demographic groups. Knowledge already available on social inequalities in health has not prevented social injustice in this outcome.

0007

THE SOUTH CAROLINA ALZHEIMER'S DISEASE REGISTRY: A NATIONAL MODEL. Margaret Miller * Gelareh Rahimi, Macie Smith (Office for the Study of Aging, Arnold School of Public Health, University of South Carolina)

The South Carolina (SC) Alzheimer's Disease and Related Disorders (ADRD) Registry is one of only three population-based registries in the nation. Two main strengths of the Registry lie in its longevity and vast number of resources including: Hospital records, ER visits, Vital Records, and data from the Department of Mental Health, Home Health, State Health Plan, Community/Residential Mental Health, Community Long Term Care, Program of All-Inclusive Care for the Elderly, and Medicaid claims. The Registry has identified 225,938 individuals with ADRD since its inception in 1988. As of 1/1/2012, the most recent year of data available, there were 90,040 individuals living with ADRD in SC. Of South Carolinians with diagnosed ADRD: 61% have Alzheimer's disease, 64% are women, 68% live in the community, and 38% are 85 years+. Twenty-four percent have a dementia diagnosis related to medical conditions such as alcohol dementia, HIV/AIDS dementia, Pick's disease, and Parkinson's disease. Sixty-two percent of ADRD cases are white and 27.5% are African American (AA) but AAs are at notably higher risk of an ADRD diagnosis than are whites (OR 1.57). With increasing age as a leading risk factor for ADRD, the nation's rapidly growing population of persons aged 65 years and older presents a challenge to families, communities, and those who plan and deliver aging services. The SC ADRD Registry provides disease prevalence estimates and ADRD case description which has enabled better planning for social and health-related services for this growing population in SC and serves as a model for the development of ADRD registries across the nation.

0006- S/P

EFFECT OF CONTINUITY OF ASTHMATIC AMBULATORY CARE ON EMERGENCY DEPARTMENT VISITS AMONG THE GERIATRIC PATIENTS: A NATIONWIDE PERSPECTIVE STUDY. Yu-Hsiang Kao*, Chien-Hung Lee, Shiao-Chi Wu (Institute of Health & Welfare Policy, National Yang-Ming University)

The potential dangers of emergency department (ED) overcrowding have recently been noticed in countries with health care delivery system. Unsafe environment in an overcrowding ED has been associated with increased medical errors, health care costs and deaths. Past studies have demonstrated that certain ED visits can be prevented if patients have proper ambulatory care. Continuity of care (COC) is a process by which the patient and medical team are cooperatively involved in an ongoing health care management. Although studies have linked higher COC to less ED visits, the relationship between older asthma adults with COC and ED visit is not well studied. We conducted a retrospective cohort study to investigate the effect of COC on ED visits for elderly asthmatic patients using a 2004-2013 population-based data obtained from the Taiwan's Longitudinal Health Insurance Database. A total of 3,395 elderly asthmatic patients with ≥ 3 visits to clinics/hospitals during 2005 and 2011 were identified, and were followed-up for 2 years. Multivariate logistic regression models were used to estimate the likelihood of ED visit among patients with varied COC levels. Adjusted for age, gender, insurance premium, Charlson comorbidity index, chronic obstructive pulmonary disease history, the number of asthmatic ambulatory visit and the number of asthma-related ED visit in prior year, a higher level of physician COC index was found to be associated with a lower likelihood of asthmatic ED visit. As compared to patients with high COC (COC=1), patients with low (COC<0.5) and moderate COC ($0.5 \leq \text{COC} < 1$) respectively had a 2.41- and 1.21-folds higher odds ratios of visiting ED due to asthma. Our study presents longitudinal findings to demonstrate that a better continuity of ambulatory care in elderly asthmatic patients may reduce asthma-related ED utilization.

0008-S/P

FALLS AND CATARACT: INVESTIGATING RISK AND PREDICTORS IN OLDER ADULTS DURING THEIR WAIT FOR SURGERY. Anna Palagyi*, Kris Rogers, Lynn Meuleners, Peter McCluskey, Andrew White, Jonathon Ng, Nigel Morlet, Lisa Keay (The George Institute for Global Health, Sydney Medical School, University of Sydney)

Background: There is strong evidence of increased falls risk associated with cataract. Although cataract surgery can restore sight, lengthy waiting times are common in many high income countries, including Australia. Here, we report the risk and determinants of falls in older people with cataract during their surgical wait. **Methods:** Data from a prospective study of falls in a cohort of patients aged ≥ 65 years on Australian cataract surgery waiting lists were analysed. Participants underwent assessment of vision, comorbidity, physical activity and health-related quality of life (HRQoL), and recalled falls in the previous 12 months. Falls were also self-reported prospectively using monthly calendars; the context and outcomes of any falls were determined by interview. **Results:** Of 329 participants, mean age was 76 years and 55% were female. Participants' habitual vision was an average of 20/40 (20/16 to 20/160) and 10% were vision impaired ($< 20/60$). Falling in the previous 12 months (129 [39%] participants) was associated with the use of antidepressant medication (odds ratio [OR] 3.6, 95% confidence interval [CI] 1.7–7.5) and older age (OR 1.3, 95%CI 1.1–1.6; five year increase in age). A total of 242 falls were reported prospectively by 98/298 (33%) participants during the surgical wait – a falls rate of 1.2 per year. Poorer vision function (incidence rate ratio [IRR] 1.1, 95% CI 1.0–1.2), lower self-rated HRQoL (IRR 1.1, 95%CI 1.0–1.2), increased walking activity (IRR 1.1, 95%CI 1.0–1.1) and lower BMI (IRR 1.1, 95%CI 1.0–1.1) were predictive of falls risk. Over one half (51%) of falls were injurious, including 11 head injuries and 2 fractures. **Conclusion:** These findings provide insight into associations with increased falls risk in older adults with cataract. We demonstrate the negative impact of impaired vision function on falls risk and injury, and reinforce the need for improved efficiency of surgical services to avoid escalation of this critical public health issue.

0009

POST-HOC PRINCIPAL COMPONENT ANALYSIS ON A LARGELY ILLITERATE ELDERLY POPULATION FROM NORTH-WEST INDIA TO IDENTIFY IMPORTANT ELEMENTS OF MMSE. Sunil Raina (Dept. of Community Medicine, Dr. RP Govt. Medical College, Tanda (HP), India)

Introduction: Mini-mental state examination (MMSE) scale measures cognition using specific elements that can be isolated, defined, and subsequently measured. The present study was conducted with the aim to analyze the factorial structure of MMSE in a largely illiterate elderly population in India and to reduce the number of variables to a few meaningful and interpretable combinations. **Material and methods:** Principal component analysis was performed post-hoc on the data generated by a research project conducted to estimate the prevalence of dementia in four geographically defined habitations in Himachal Pradesh state of India. **Results:** Questions on orientation and registration account for high percentage of cumulative variance in comparison to other questions. **Discussion:** The PCA conducted on the data derived from a largely illiterate population reveals that the most important components to consider for estimation of cognitive impairment in illiterate Indian population are component; temporal orientation, spatial orientation and immediate memory.

0010

A LATE LIFE DEMENTIA RISK INDEX FOR MEXICAN AMERICANS. Sreenivas P. Veeranki*, Sreenivas P. Veeranki, Brian Downer, Amit Kumar, Mukaila Raji, Kyriakos Markides (University of Texas Medical Branch)

Objective: To develop and validate a late life dementia risk index for Mexican Americans. **Methods:** Study data (n=1739) included Mexican Americans aged ≥ 65 years enrolled in the Hispanic Established Populations for Epidemiologic Studies of the Elderly cohort with no cognitive impairment [Mini-Mental Status Exam (MMSE) >23] at baseline. Participants were randomly assigned to training (n=869) and validation (n=870) samples. Participants who declined >3 points/year on MMSE between successive examinations and were impaired in >1 activities of daily living (ADL) or instrumental ADL were defined as having dementia. Survival models with competing risks adjustment were used to identify risk factors in the training sample. A weighted point value was assigned to each risk factor based on the survival model coefficients. Accuracy was assessed using prediction models for discrimination [area under the curve (AUC)] and calibration by comparing the actual with predicted 10-year dementia incidence in the validation sample. **Results:** Risk index included age, female gender, <4 years of education, diabetes, depressive symptoms, chronic pain, and physical impairment. The AUC was 0.71 (95% CI = 0.65 – 0.77) and a score of >23 points had a sensitivity of 0.55 (95% CI = 0.45 – 0.65) and specificity of 0.79 (95% CI = 0.75 – 0.83). The predicted and actual 10-year incidence of dementia was within five percent for each quintile of the risk index score. **Conclusions:** The index predicted dementia incidence with moderate accuracy and can help clinicians target high-risk individuals for early interventions.

0011

BRAIN ATROPHY AND SUBCLINICAL BRAIN INFARCTS, BUT NOT WHITE MATTER LESION LOAD, ARE ASSOCIATED WITH DEPRESSIVE SYMPTOMS: THE NORTHERN MANHATTAN STUDY. Adina Zeki Al Hazzouri*, Michelle Caunca, Sandino Cespedes, Chuanhui Dong, Mitchell S. V. Elkind, Ralph L. Sacco, Charles DeCarli, Clinton Wright (University of Miami)

In the present study, we examined whether magnetic resonance imaging (MRI) markers of brain atrophy and subclinical cerebrovascular disease are associated with depressive symptoms in older adults. We hypothesized that white matter lesion load and the presence of subclinical brain infarcts (SBI) would be associated with more depressive symptoms, while total brain volume would be inversely associated. Data analyzed was from the MRI substudy of the Northern Manhattan Study, a prospective, racially/ethnically diverse cohort of older adults. At time of MRI, a total of 1,111 participants had total cerebral volume (TCV), white matter hyperintensity volume (WMHV), SBI, and CES-D (Center of Epidemiological Studies-Depression) score data available. WMHV and TCV were expressed as a percentage of total intracranial volume. We also examined a categorically increased level of WMHV ("large WMHV," >1 SD age-predicted value). A CES-D score ≥ 16 was considered indicative of elevated depressive symptoms. Mean TCV was 1147.9 cm³ (SD=120.5), mean WMHV was 7.8 cm³ (SD=10), and 10% had large WMHV. At time of MRI, 18% of participants had CES-D >16 . Using logistic regression models, after adjustment for socio-demographics, cardiovascular factors, antidepressant medications, and other brain volumes, 1SD higher TCV (i.e. less atrophy) was associated with 23% lower odds of elevated depressive symptoms (OR=0.77; 0.61 to 0.96). The presence of SBI was associated with 59% greater odds of elevated depressive symptoms in a sociodemographic-adjusted model (OR=1.59; 1.03 to 2.44). The association was slightly attenuated after full adjustment (OR=1.56; 0.99 to 2.47; p=0.06). WMHV and WMHV large were not associated with CES-D >16 . Recent data indicates that cerebrovascular disease may predict depressive symptoms in older adults, our findings suggest that SBI and neurodegenerative processes also contribute to the pathogenesis of depression. Future studies need to confirm these results.

"-S/P" indicates work done while a student/postdoc

0020-S/P

SEVERITY SCORES FOR PREDICTING MORTALITY IN ADULT PATIENTS HOSPITALIZED WITH COMMUNITY-ACQUIRED PNEUMONIA. Laura Bahlis*, Luciano Diogo (UFRGS-epidemiology pos graduation program)

Background: Community-acquired pneumonia (CAP) is a common and serious disease. Several risk scores such as CURB-65 and pneumonia severity index (PSI) have been developed and validated to assist management decisions. A well-known method for classifying comorbid conditions is the Charlson Comorbidity Index (CCI). The CCI has been validated for short-term mortality in different study samples, however not exclusively in CAP patients. We aim to investigate the performance of CCI compared to CURB-65 and PSI for predicting in-hospital mortality in patients with CAP. **Methods:** A cohort study was conducted of patients with CAP who were hospitalized at our hospital from May 2014 to April 2015. The primary outcome was in-hospital mortality. Clinical and laboratory features at presentation were recorded and used in order to calculate CURB-65, PSI and CCI. To compare test performance, receiver-operating characteristic (ROC) curves were constructed, and the areas under the curve (AUC) were calculated with 95% confidence intervals. AUC comparisons were tested for significance using the technique of DeLong. **Results:** A total of 287 patients were enrolled in the study. The overall in-hospital mortality rate was 14.2%. The mean age was 66.9 years (DP 17,11), 55.2% were male, 28.1% were admitted to the intensive care unit and 29.8% needed mechanical ventilation. CCI predicted in-hospital mortality with an AUC of 0.813 (CI 0.754-0.883), compared to 0.753 (CI 0.676-0.83) for CURB-65 and 0.787 (CI 0.716-0.858) for PSI. There was no statistically significant difference in performance between the three scores. **Conclusions:** CCI performed well in identifying patients with severe CAP when compared to PSI and CURB-65. It has the advantage of not needing laboratory test for its realization, therefore being available at patient presentation. Also, it is a universal tool, routinely used in many hospitals. Further research involving a large number of patients from different institutions is needed.

0022

COMPARISON OF GROUPING METHODS FOR THE IDENTIFICATION OF ASTHMA PHENOTYPES IN THE QUEBEC BIRTH COHORT ON IMMUNITY AND HEALTH Miceline Mesidor *, Andrea Benedetti, Marie-Claude Rousseau (Ministère de la Santé Publique et de la Population)

Common among children, asthma is a chronic disease which also affects adolescents and young adults. Its manifestations are diverse and the identification of asthma phenotypes may contribute to elucidating its etiology. In this study, we identified asthma phenotypes during three periods of life (childhood, adolescence, young adulthood) using three different statistical approaches and compared the results. The Quebec Birth Cohort on Immunity and Health includes 81,496 individuals born in 1974 among whom health services (medical services and hospitalizations) for asthma and allergic diseases were documented from 1983 to 1994. Individuals who had at least one medical service or hospitalization for asthma during follow-up were included in the analysis (n=9989, 12% of study population). Three grouping methods were used: k-means clustering, Ward's method and latent profile analysis. Variables considered for phenotype identification included an indicator of asthma (Y/N) and an indicator of first asthma-related health service (Y/N) during the period, the number of medical services and of hospitalizations for asthma, and the numbers of health services for rhinitis, eczema, urticaria, and other allergies respectively. In the analytical sample, 40% of the subjects had at least one health service for asthma during childhood (8-12 years), 55% during adolescence (13-17 years), and 45% in young adulthood (18-20 years). In general, a larger number of phenotypes was identified with k-means (9 in each period), an intermediate number with Ward (6 or 7), and a smaller number with latent profiles (5 or 6). Some of the phenotypes were identified with the three methods, although with different proportions of subjects. K-means and Ward's methods resulted in similar findings, whereas results from latent profiles tended to differ. Our results underscore the importance of grouping method selection when studying asthma phenotypes, and suggest that the robustness of results should be evaluated.

0021

PREDICTORS OF SPIROMETRY QUALITY IN THE GULF LONG-TERM FOLLOW-UP (GULF) STUDY. W. Braxton Jackson*, Matthew Curry, John McGrath, Robert Jensen, Kaitlyn Gam, Lawrence Engel, Richard Kwok, Dale Sandler (Social & Scientific Systems, Inc. (SSS))

Background: Spirometry is a common measure of lung function in epidemiologic studies. Prior studies have reported associations between spirometry quality and participant characteristics, which could bias analyses of lung function outcomes. We examined participant predictors of spirometry quality in the Gulf STUDY, a prospective cohort study of health effects associated with the clean-up following the 2010 Deepwater Horizon Oil Spill. **Methods:** More than 50 technicians obtained baseline spirometry measures from 10,019 participants. An expert reviewer determined whether or not these measures met the 2005 American Thoracic Society (ATS) quality standards. Multivariate log binomial regression was used to identify participant characteristics associated with spirometry quality. The analysis was restricted to spirometry data gathered by technicians who completed ≥ 50 tests and had the opportunity to receive reviewer feedback. **Results:** About 75% of spirometry sessions met ATS standards for both FEV1 and FVC reproducibility and acceptability; 84% of FEV1 and 79% of FVC measurement met ATS standards. Participant characteristics that increased the chance of failing to meet standards included self-reported frequent shortness of breath (PR=1.14, 95%CI=1.01-1.28), low income (PR=1.33, 95%CI=1.19-1.48), young age (PR=1.24, 95%CI=1.12-1.36), and black race (PR=1.26, 95%CI=1.16-1.36). Participant characteristics that reduced the likelihood of failing to meet standards included female gender (PR=0.71, 95%CI=0.65-0.79), BMI ≥ 30 (PR=0.91, 95%CI=0.84-0.99), and current smoking (PR=0.89, 95%CI=0.82-0.97). Other respiratory symptoms, prevalent lung disease, Hispanic ethnicity and fair/poor perceived health were not predictors of quality. **Conclusion:** A number of participant characteristics predicted spirometry quality. Since some of these characteristics may be related to both exposures and lung function, adjustments may be required in models of risks for adverse lung function outcomes.

0023

MEASURING COPD PREVALENCE IN THE UNITED STATES USING DATA FROM THE 2012-2014 NATIONAL HEALTH INTERVIEW SURVEY Brian Ward*, Colleen Nugent, Stephen Blumberg, Anjel Vahratian (National Center for Health Statistics)

This study of measuring COPD prevalence examines whether a single survey question asking explicitly about diagnosed COPD is sufficient to identify U.S. adults with COPD, and how this measure compares to estimating COPD prevalence using survey questions on diagnosed emphysema and/or chronic bronchitis, and all three survey questions together. Data from the 2012-2014 National Health Interview Survey (NHIS) were used to examine different measures of prevalence among 7,211 U.S. adults who reported a diagnosed respiratory condition (i.e., emphysema, chronic bronchitis, and/or COPD). A significantly higher prevalence of COPD was estimated using a measure accounting for all three diagnoses (6.1%) relative to measures using only COPD diagnosis (3.0%), and emphysema and/or chronic bronchitis diagnoses (4.5%). This pattern was present among all but one subgroup examined (non-Hispanic Asian adults). The difference was larger in magnitude among certain subgroups (adults aged 18-39, Hispanic, and never smokers); additional analyses showed this was a result of a higher proportion of adults in these subgroups reporting a chronic bronchitis diagnosis only. Based on our findings, it is recommended that when using self- or patient-reported health survey data such as the NHIS, a measure asking respondents only about COPD diagnosis is not adequate for estimation. Instead a measure accounting for diagnoses of emphysema, chronic bronchitis, and/or COPD may be the best option available. Furthermore, additional analyses are needed to explore the reliability and validation of survey questions related to COPD, with special attention being given to questions on chronic bronchitis.

0030

CONTINUOUS MEASUREMENT OF BREAST TUMOR PROTEIN EXPRESSION: COMPARISON OF TWO COMPUTATIONAL PATHOLOGY PLATFORMS

Thomas Ahern*, Bernard Rosner, Gretchen Frieling, Andrew Beck, Laura Collins, Rulla Tamimi (University of Vermont)

Protein expression is an essential facet of tumor characterization for molecular epidemiology. Computational pathology systems incorporate digital microscopy with sophisticated image analysis software and may facilitate rapid, reproducible measurement of tumor protein biomarkers. We evaluated performance of two such platforms—Aperio and Definiens—by measuring expression of estrogen receptor (ER) and progesterone receptor (PR) in tumor tissue microarrays (TMAs) from breast cancer cases in the Nurses' Health Study (NHS). The Aperio platform requires substantial manual review and pathologist markup of regions of interest, whereas we utilized the Definiens system with minimal pathologist input. We focused on the "positivity index" (PI) measurement, defined as the proportion of tumor nuclei positive for the target protein. We used expert pathologist classification of dichotomous (0 vs. $\geq 1\%$ positive) ER and PR status as benchmarks to compare platforms. ER and PR data from both platforms were available for 592 and 187 cases, respectively. Each case was represented by up to 3 tumor cores, across which the PI measurements were averaged. We evaluated ER and PR classification accuracy by fitting logistic regression models of gold-standard ER or PR status as a function of the platforms' PI measurements and comparing platform-specific areas under the ROC curve (AUCs). PI values for individual cases correlated well between the two platforms (for ER, Pearson $\rho=0.83$; for PR, Pearson $\rho=0.77$). For ER, the AUC for the Aperio PI was 0.96 and the AUC for the Definiens PI was 0.88 (difference=0.09, 95% CI: 0.06, 0.12). For PR, the AUC for the Aperio PI was 0.92 and the AUC for the Definiens PI was 0.83 (difference=0.10, 95% CI: 0.05, 0.15). While Aperio modestly outperformed Definiens, the reduced user input required by the Definiens system makes it an attractive option for protein biomarker measurement in large epidemiologic studies.

0032-S/P

ASSOCIATION BETWEEN SERUM ANTIBODIES TO PERIODONTAL BACTERIA AND RHEUMATOID FACTOR IN NHANES III

Charlene Goh*, Jacob Kopp, Panos Papapanou, Jerry Molitor, Ryan Demmer (Columbia University Mailman School of Public Health)

Background: Alterations in the microbiome, including the periodontal microbiome may be a risk factor for rheumatoid arthritis (RA). Most studies that have analyzed this association are relatively small, focus primarily on a single periodontal pathogen (*Porphyromonas gingivalis*), and are not population-based. We investigated the association between serum IgG antibodies to 19 periodontal species and the prevalence of rheumatoid factor (RF), a preclinical marker of RA, in a large nationally-representative sample of adults. **Methods:** The Third National Health and Nutrition Examination Survey is a cross-sectional sample of the non-institutionalized US population (n=33,994) aged ≥ 2 months. Our study population included all dentate participants ≥ 60 years, who did not have RA as defined by a modified version of the American College of Rheumatology 1987 criteria (Arnett et al., 1988), and had complete data for both serum IgG antibodies against periodontal bacteria (n=2461) and the outcome serum rheumatoid factor antibody titer. Multivariable logistic regression models were used to examine the association between elevated serum IgG to periodontal bacteria and RF seropositivity, controlling for age, gender, race, education, smoking status, alcohol use, and BMI. **Results:** Adjusted odds ratios (ORs) (95% CI) summarizing the relationship between the 19 periodontal serum IgG and RF seropositivity ranged from 0.53 (0.29, 0.97) to 1.27 (0.79, 2.06), and 17 of the 19 observed ORs were <1.0 . The ORs for RF seropositivity among participants with elevated *Prevotella intermedia* [0.53 (0.29, 0.97)] and *Campylobacter* [0.54 (0.31, 0.95)] IgG were statistically significant. **Conclusion:** We have found elevated periodontal IgGs to be mostly unassociated with RF seropositivity in the nationally representative NHANES III. Elevated antibody levels to *P. intermedia* and *C. ochracea* were associated with lower odds of RF seropositivity.

"S/P" indicates work done while a student/postdoc

0031

CIRCULATING VITAMIN D AND BIOMARKERS OF SEX STEROID HORMONES AS PREDICTORS OF ALL-CAUSE MORTALITY AMONG ADULT MEN IN THE THIRD NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY

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Background: In men, hypovitaminosis D as well as extreme levels of androgens have been linked to adverse events, including death. A biological interaction has been previously suggested between vitamin D and androgens. Specifically, androgens may increase 1- α -hydroxylase, a key enzyme in vitamin D metabolism, and regulation of gene expression by vitamin D metabolites is modified according to androgen levels. In a cohort study using Third National Health and Nutrition Examination Survey data, we simultaneously investigated circulating vitamin D and biomarkers of sex steroid hormones as predictors of all-cause mortality. **Methods:** Age-adjusted and fully-adjusted Cox regression models were constructed to estimate hazard ratios (HR) and their 95% confidence intervals (CI). Whereas the vitamin D sufficient group was selected as a referent, the 3rd quintile was selected as a referent group for biomarkers of sex steroid hormones since extreme levels of androgens were previously shown to be associated with mortality risk. **Results:** Of 1,472 men with a mean age of 42.1 years at baseline, 382 died over a median of 192 months of follow-up. Total, bioavailable and free testosterone as well as sex hormone binding globulin concentrations were lower among men with vitamin D insufficiency or deficiency compared to vitamin D sufficient men. In fully-adjusted models, loge-transformed free androgen index (FAI) (HR=0.79, 95%CI: 0.64-0.97) was inversely related to all-cause mortality; men whose FAI was in the 5th quintile had significantly lower risk of all-cause mortality versus men whose FAI was in the 3rd quintile (HR=0.31, 95%CI: 0.11-0.92). Vitamin D and other biomarkers of sex steroid hormones were not significantly related to all-cause mortality in fully-adjusted models. **Conclusions:** FAI may be inversely related to all-cause mortality among adult men, after adjustment for baseline demographic, socioeconomic, lifestyle and clinical characteristics.

0033-S/P

EVALUATION OF THE EFFECT OF GAMMA GLUTAMYLTRANSFERASE AND ISCHEMIC HEART DISEASE: A MENDELIAN RANDOMIZATION STUDY

Junxi Liu*, Shiu Lun, Au Yeung Shilin Lin, Catherine Mary Schooling (School of Public Health, Li Ka Shing Faculty of Medicine, The University of Hong Kong)

Observational observationally gamma glutamyltransferase (GGT), a marker of poor liver function, is more strongly associated with higher risk of cardiovascular disease (CVD) than other liver enzymes, such as alkaline phosphatase, alanine transaminase. However, observationally it is difficult to disentangle the specific role of GGT in CVD and these associations are vulnerable to residual confounding. Randomized controlled trials of GGT are difficult to conduct. Comparing risk of CVD according to genetically determined GGT, i.e., Mendelian randomization, provides a means to assess whether GGT is a likely target of intervention for CVD prevention or treatment. Here, we used genetic predictors of GGT from a genome wide association study of people of largely European descent in a large case (n=63,746)-control (n=130,681) study of people largely of European descent with extensive genotyping, i.e., CARDIoGRAM-plusC4D, of coronary artery disease/myocardial infarction to obtain an unconfounded estimate of the association of GGT with ischemic heart disease (IHD) using instrumental variable analysis where we combining the Wald estimates for 21 SNPs independently and solely predicting GGT with inverse-variance weighted. We found GGT associated with IHD (odds ratio 1.001 per 1% higher GGT, 95% confidence interval 1.000, 1.003). Further investigation of the role of GGT in IHD is might provide new avenues to reduce the burden of the leading cause of morbidity and mortality globally.

0034-S/P

URINARY 6-SULFATOXYMELATONIN (aMT6s) LEVELS AND RISK OF INCIDENT HYPERTENSION AMONG POSTMENOPAUSAL WOMEN Aixa Pérez-Caraballo*, Susan Sturgeon, Katherine Reeves, Jackeline Ockene Frank Stanczyk (University of Massachusetts-Amherst)

Objective: Melatonin is involved in the synchronization of daily rhythms of physiological processes. Blood pressure is affected by circadian rhythm. However, limited epidemiologic data are available on the relationship between urinary 6-sulfatoxymelatonin (aMT6s) levels in postmenopausal women and risk of incident hypertension. **Methods:** We examined the association between first morning urinary 6-sulfatoxymelatonin (aMT6s) levels and risk of incident hypertension in a subset of 427 postmenopausal women who were enrolled in the Women' Health Initiative Observational Study and were part of a previous nested case-control study of breast cancer. Cox proportional hazards models were adjusted for age, body mass index (BMI), physical activity, alcohol intake, smoking status and insomnia. **Results:** Over 8.6 mean years of follow up, a total of 168 women developed hypertension. Compared to the lowest quartile ($<6.69\text{ng/mg}$), the relative risk for incident hypertension among these postmenopausal women in the second, third and highest quartile of urinary melatonin ($<22.18\text{ng/mg}$) was 0.9 (95% Confidence Interval: 0.5,1.3), 1.0 (95%CI: 0.6,1.5) and 0.7(95%CI: 0.4,1.1), respectively, after adjusting for age, body mass index, physical activity, alcohol intake, smoking status and insomnia (p-trend=0.34). **Conclusions:** Preliminary results showed no statistical significant association between melatonin and incident hypertension, although there is a slight suggestion of a decreased risk among women the highest quartile compared to women who had lowest quartile.

0040

ACCURACY OF SEER KRAS VARIABLE AMONG STAGE IV COLORECTAL CANCER CASES IN IOWA Mary Charlton*, Jennifer Schlichting, Bobbi Matt (University of Iowa College of Public Health)

The 2009 National Comprehensive Cancer Network guidelines recommend KRAS testing for metastatic colorectal cancer (CRC) patients at diagnosis, with epidermal growth factor receptor inhibitors given only to those with wild-type KRAS. KRAS was added as a SEER variable in 2010; but yielded a lower than expected testing rate (23%) among 2010 cases; Iowa's rate was particularly low (19%). We assessed the accuracy of this variable and factors associated with testing. Iowa residents diagnosed from 2011-June 2013 with Stage IV CRC were included. Registry personnel reviewed all pathology reports to determine accuracy of the initial KRAS value. Treating facilities were categorized by NCI comprehensive cancer center designation, Commission on Cancer (CoC) accreditation and bed size. KRAS testing was initially coded in 170 (31%) of 541 cases, but rose to 239 (44%) on re-review. Mean number of days between diagnosis date and KRAS test was 145 (median=53, IQR: 25-185). Of 67 additional cases found to have KRAS testing on re-review, 34 had a test date after the case abstraction date. The remaining 33 cases were started on traditional chemotherapy agents (5FU) for first line treatment, and 17 of these had KRAS testing after chemotherapy was initiated. Ten cases received care in facilities that include KRAS results in separate molecular pathology reports that may have been overlooked during initial abstraction. Younger age and treatment at a facility with a teaching affiliation, larger bed size, urban location, CoC accreditation and NCI designation were associated with KRAS testing in unadjusted analyses (all $p < .01$). Age and NCI designation remained significant in multivariate models. KRAS testing was initially missed in 12% of cases, but often occurred several months post-diagnosis, sometimes past the initial abstraction window. Addition of a test date variable would be beneficial in understanding treatment patterns and developing consistent coding guidelines regarding timeframe for capture.

Cancer

0042-S/P

NEIGHBOURHOOD WALKABILITY AND PROSTATE CANCER RISK: A POPULATION-BASED CASE-CONTROL STUDY IN MONTREAL, CANADA Claire Demoury*, Nicoleta Cutumisu, Tracie A Barnett, Eric Robitaille, Brittany Sigler, Hugues Richard, Marie-Claude, Rousseau, Marie-Elise Parent (INRS-Institut Armand-Frappier, University of Quebec)

Introduction Evidence is growing for a beneficial effect of favourable residential characteristics on health. While little evidence on this has accrued regarding prostate cancer (PCa), engagement in physical activity has been associated with a reduction in risk. We investigated the association between neighbourhood walkability and PCa incidence. **Methods** A case-control study was conducted in Greater Montreal. 1,933 incident PCa cases aged ≤ 75 years were ascertained across French hospitals in 2005-2009 and 1,994 age-matched (± 5 years) controls were selected from electoral lists. Lifestyle and occupational factors were collected during interviews. Addresses at diagnosis (cases) or recruitment (controls) were geocoded and linked to a neighbourhood walkability index (dichotomized based on a median split) considering land use mix data, density of dwellings and of intersections of three or more streets in the dissemination area (DA), a census area inhabited by 400-700 persons. **Results** Polytomous logistic regression models were used to estimate odds ratios (OR) and 95% confidence intervals (CI) for the association between walkability and risk of low and high-grade (Gleason score of 7[4+3] or higher) PCa. Compared to men living in low walkability areas, those in highly walkable areas had an OR of high-grade PCa of 1.23 (95%CI 1.01,1.49), when adjusting for age, ancestry, and first-degree family history. Further adjustments for education, income, marital status, physical activity, body mass index, frequency of physician visits, exposure to traffic-related air pollution, PCa screening frequency, and for material and social deprivation census-derived indices in the DA, yielded an OR of 1.24 (95%CI 0.96,1.60). **Discussion** Men living in highly walkable areas showed greater risks of high-grade PCa, independently of material and social circumstances, lifestyle and PCa screening practices. Further in-depth analyses will assess the potential for confounding to explain this association.

“S/P” indicates work done while a student/postdoc

0041

TREND IN MORTALITY FROM PROSTATE CANCER IN BRAZIL BY AGE GROUP AND GEOGRAPHIC REGIONS, 1990 TO 2011. Leticia Daminelli*, Marcia Kretzer, Alan de Jesus, Moraes Paulo Freita (Universidade do Sul de Santa Catarina - Brazil)

Introduction: Prostate cancer is the second most common type of cancer in men in Brazil, accounting for 13.6% (899,102) of all new cases of cancer and 6.1% (258,133) of all deaths. **Objective:** To estimate time trends in mortality from prostate cancer in Brazil by age group and geographic regions. **Methods:** An ecological study of time series was conducted using data from the National Information System on Mortality (SIM). Data on deaths from 1990 to 2011 were obtained from the National Mortality Information System. Crude and specific mortality rates were calculated according to age group and region. The existence of correlations between age, region and year was tested using the Spearman correlation coefficient. **Results:** An upward time trend was observed in mortality in all regions of Brazil from 1990 to 2011. An increasing linear trend in mortality by prostate cancer was found ($r = 0.996; p < 0.01$). The age group above 80 years had the highest mortality rates and the most significant increase ($r = 0.960; p < 0.01$). Rates in the period were specially high in the southern region with the highest correlation ($r = 0.992; p < 0.01$). **Conclusion:** The mortality from prostate cancer in Brazil from 1990 to 2011 showed increasing linear trend for all age groups and regions.

0043

USE OF SELF-REPORT, PRESCRIPTION RECORDS, AND ESTROGEN MEASUREMENTS TO ASSESS ADHERENCE TO AROMATASE INHIBITOR THERAPY AMONG BREAST CANCER PATIENTS Lisa Gallicchio*, Carla Calhoun, Kathy Helzlsouer (National Cancer Institute)

Purpose: Non-adherence to aromatase inhibitor (AI) treatment can result in poor outcomes among breast cancer patients. The objectives of this study were to examine the associations between self-reported adherence to AI therapy, prescription records, and estrogen measurements among breast cancer patients in the first year of AI therapy and to understand factors related to non-adherence. **Methods:** Data were analyzed from 146 women participating in a 1-year longitudinal study assessing the health of breast cancer patients initiating AI therapy. Survey data and blood samples were collected prior to starting AI therapy, and at 3-months and 1-year after AI initiation. Self-reported adherence was assessed using a single question about current use and the Morisky Medication Adherence Scale (MMAS). Estradiol was measured using a high sensitivity radioimmunoassay method. At 1-year, prescription records were obtained for the first year of AI therapy and used to determine discontinuation and persistence [medication possession ratio $> 80\%$]. **Results:** Approximately 84% and 78% of participants reported taking an AI at 3-months and 1-year, respectively. Self-reported adherence using this single question, but not the MMAQ, was significantly associated with having an estradiol concentration below the limit of detection of the assay. Discontinuation and persistence, as assessed using pharmacy records, were significantly associated with both the single self-report adherence question and estradiol concentrations. The strongest predictors of both discontinuation and lack of persistence at 1-year were lower education level and report of musculoskeletal pain. **Conclusions:** Findings from this study indicate that a single question is useful in assessing adherence to AI therapy, and that low education level and musculoskeletal pain are factors that can help to identify patients more likely to be non-adherent to their AI treatment. This research was supported by Susan G. Komen for the Cure.

0044

PROSTATE CANCER SCREENING DECISION MAKING IN THREE STATES: 2013 BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM ANALYSIS Jun Li* (CDC)

Background: Given the discordant prostate cancer screening recommendations in the United States, shared decision making (SDM) has become increasingly important. The objectives of this study were to determine who made the final decision to obtain prostate-specific antigen (PSA)-based screening and identify factors associated with the screening decision determined by both patients and their health care providers (noted as joint decision making). **Methods:** Using the 2013 Behavioral Risk Factor Surveillance System data from Delaware, Hawaii, and Massachusetts, weighted percentages of joint decision making were calculated in 2015. Associations between the joint decision making and sociodemographic, lifestyle, access to care, and PSA testing-related factors were assessed by using multivariate logistic regression. **Results:** There were 2,248 men aged 40 years or older who had ever had a PSA test for cancer screening in the 3 states in 2013. Only 36% of men made their prostate cancer screening decision jointly with their health care provider. Multivariate logistic regression analysis showed that joint decision making was reported more frequently by men who had ever participated in a discussion about prostate cancer screening ($P = 0.0001$), or men whose most recent PSA test occurred within the past year ($P = 0.04$). **Conclusions:** The majority of screening decisions were made by the patient or health care provider alone in these three states, not jointly, as recommended. Because SDM is an indispensable component of joint decision making, our study points to the needs for increased use of higher quality, patient-engaged, and preference-elicited SDM.

0046

PREGNANCY-RELATED FACTORS AND THE RISK OF TRIPLE NEGATIVE BREAST CANCER: A POOLED ANALYSIS

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Epidemiologic studies have shown that pregnancy-related factors, such as late age at menarche, parity, early age at first full-term pregnancy, and breastfeeding protect against breast cancers that are positive for the expression of the estrogen receptor (ER) and/or progesterone receptor (PR). However, it remains unclear if these factors are associated with the risk of triple negative breast cancer (TNBC). TNBC, a highly aggressive subtype, accounting for ~10–25% of invasive cases, is negative for the expression of ER, PR, and human epidermal growth factor receptor-2 (HER2). We evaluated the effects of these factors on TNBC and luminal A-like subtype (the most common subtype defined by ER/PR/HER2: ER+ and/or PR+, and HER2-), in 6586 women (2446 controls, 4140 breast cancer cases including 544 TNBC and 1963 luminal A-like) aged 20–64 years, who previously participated in one of the three population-based case-control studies: the Women's Contraceptive and Reproductive Experiences Study, the Women's Breast Carcinoma in situ Study, or the Women's Learning the Influence of Family and Environment Study. We used multivariable polychotomous unconditional logistic regression methods to conduct case-control comparisons by ER/PR/HER2 status. We found that parous women who breastfed at least one year compared to parous women without breastfeeding had nearly 30% lower risk for TNBC (odds ratio, $OR=0.73$; 95% confidence interval, $CI=0.53-1.01$) and luminal A-like subtype ($OR=0.72$, 95% $CI=0.57-0.90$). Late age at menarche, parity, and early age at first full-term pregnancy were not associated with TNBC risk ($P \text{ trend} \geq 0.34$), but they were associated with decreased risk of luminal A-like subtype ($P \text{ trend} \leq 0.09$); the differences between these two subtypes were more apparent in young women (<45 years, $P \text{ homogeneity of trends} \leq 0.07$). Our results were similar when in situ cases were excluded. Our data suggest that differences in etiology exist between TNBC and luminal A-like subtype.

0045-S/P

DIABETES, INSULIN, AND INSULIN RESISTANCE IN RELATION TO INCIDENT LIVER CANCER AND CHRONIC LIVER DISEASE MORTALITY IN THE ALPHA-TOCOPHEROL, BETA-CAROTENE CANCER PREVENTION STUDY Erikka Loftfield*, Neal Freedman, Gabriel Lai, Stephanie Weinstein, James Everhart, Katherine McGlynn, Phil Taylor, Satu Männistö, Demetrius Albanes, Rachael Stolzenberg-Solomon (National Cancer Institute)

Background: Insulin resistance likely increases the risk of chronic liver disease (CLD) and liver cancer, but few prospective studies with information on fasting glucose and insulin, hepatitis B and hepatitis C viral status, and extended follow-up are available. **Methods:** We conducted a nested case-control study of 138 incident primary liver cancer cases and 216 deaths from CLD during 22 years of follow-up in the Alpha-Tocopherol, Beta-Carotene (ATBC) Cancer Prevention Study of male Finnish smokers, aged 50–69 years, with 681 controls matched on age, date of blood draw, and follow-up time. Glucose and insulin levels were measured in prediagnostic fasting baseline serum. Diabetes was defined by self-report or glucose levels ≥ 126 mg/dL. Age, alcohol use, BMI, hepatitis B and C viral status, education, and smoking history adjusted odds ratios (OR) and 95% confidence intervals (CI) were calculated using unconditional logistic regression. **Results:** Overall diabetes was associated with risk of liver cancer ($OR=2.82$, $CI=1.66-4.77$) and CLD mortality ($OR=1.83$, $CI=1.08-3.09$). Among those without self-reported diabetes, glucose (Quartile 4 vs. Quartile 1 (Q4/Q1): $OR=2.44$, $CI=1.35-4.43$) was positively associated with liver cancer. Insulin (Q4/Q1: liver cancer, $OR=3.45$, $CI=1.78-6.72$; CLD, $OR=2.51$, $CI=1.44-4.37$) and HOMA-IR, a measure of insulin resistance, (Q4/Q1: liver cancer, $OR=3.93$, $CI=2.00-7.72$; CLD, $OR=2.28$, $CI=1.32-3.95$) were each positively associated with liver cancer and CLD mortality. In joint-effects analyses, those with glucose levels ≥ 126 mg/dL and insulin levels ≥ 6.7 $\mu\text{U/mL}$ (Q4 in controls) had a particularly high risk of liver cancer ($OR=7.43$, $CI=3.20-17.24$) and CLD mortality ($OR=3.95$, $CI=1.81-8.64$) relative those who did not. **Conclusions:** Diabetes, insulin levels, and insulin resistance were positively associated with liver cancer incidence and CLD mortality in the ATBC cohort suggesting a potentially important role for insulin signaling in liver cancer and CLD.

0047- S/P

PREVENTING CERVICAL CANCER; A REVIEW OF PAP SMEAR SCREENING IN THIKA TOWN, KENYA Raphael Mburu*

(Member of International Epidemiology Association and Kenyatta University, Nairobi, Kenya)

INTRODUCTION: Cancer of the cervix is one of the most common cancers in women worldwide and the leading cause of cancer deaths in women in developing countries. In Kenya, the most common cancer reported among women is breast at 23.3%, followed by uterine cervix at 20.0% (Nairobi Cancer Registry, 2006). Kenya is also ranked 16 among the countries with the top 20 highest incidence of cervical cancer in 2012 (GLOBOCAN 2012). In countries where screening is routine, this cancer is not so common. **METHODS:** This retrospective review looked at Pap smear results of the women screened at Vineyard hospital for the past 2½ years. The study looked at the available information of these women from the records in terms of age, parity, family planning methods and other information associated with the Pap smears such as inflammatory changes and their causes. Data was collected from laboratory records and analyzed using Epi Info statistical software. **RESULTS:** The overall prevalence of squamous intraepithelial lesions was 12 (1.2%) with 1 case each of AGCUS and ASCUS, 4 LSIL, 3 HSIL and 3 CaCx. There were 33 (5.4%) infections identified, mainly 29 (4.7%) candida, 2 (0.3%) bacteria, 1 (0.2%) each of actinomyces and HPV. Overall, there were 147 (24%) inflammations; 8 (1.3%) mild, 65 (10.6%) moderate and 74 (12.1%) severe. Most women (314) 51.4% never used any contraceptives and this included 9.2% post-menopausal while the most popular contraceptive was IUCD at 97 (32.6%). **CONCLUSIONS:** Other healthcare facilities, public and private, should also be actively involved in the campaign on screening for cervical cancer, so as to capture precancerous cases and inflammations and treat the women. The creation of awareness should go together with the provision of accessible and affordable services

0048-S/P

HYPERGLYCEMIA, GLUCOSE INTOLERANCE, INSULIN RESISTANCE AND DIABETES MELLITUS AND CANCER CARCINOGENESIS: QUASI QUANTITATIVE EVIDENCE SYNTHESIS (QES) AND SCIENTIFIC STATEMENT Laurens Holmes Jr.*, Lavisha McClarin, Jonathan Vandenberg (University of Maryland-College Park School of Public Health)

PURPOSE: To assess existing literature on the potential causal, mechanistic and clinical role of hyperglycemia and cancer carcinogenesis with the intent to generate further hypothesis for prospective investigation and/ or suggest the future direction on cancer risk assessment, prevention and therapeutics. **METHODS:** Using Quasi QES design, we examined published literature on hyperglycemia, glucose intolerance, insulin resistance and diabetes mellitus (DM) and cancer carcinogenesis. We postulated the possible implication of these glycemic attributes on DNA damage, impaired tumor suppression and compromised apoptosis. The search terms were glucose, glucose intolerance, pyruvate, triglycerides, fat, adipocytes, mitochondria, ATP, insulin, insulin resistance, IGF, gluconeogenesis, glucagon, pancreatic enzymes, pancreatic hormones, metformin, cancer, cancer initiation, cancer promotion, cancer cause, cancer etiology, and carcinogenesis. **RESULTS:** Hyperglycemia is implicated in cancer carcinogenesis at initiation, promotion and progression levels. Preclinical studies and basic medical sciences validate the relationship between excess sugar, fat and protein deposition in adipocyte and muscle cells respectively. **CONCLUSIONS:** Scientific evidence exists on the implication of hyperglycemia in cancer carcinogenesis. **RECOMMENDATION:** The strength of the evidence on the role of glucose and hyperglycemia in cancer carcinogenesis requires further prospective studies on exposure to food rich in sugar and cancer incidence in various populations. **IMPLICATIONS:** Public health action is needed for the regulation of sugar in diets, drinks and schools meals. Additionally, the FDA should convene scientific panels on the basis of these scientific statements to reevaluate dietary recommended allowance for sugar in American diets.

0050-S/P

IMPROVEMENT OF ACCURACY IN HEART EXPOSURE ASSESSMENT IN RETROSPECTIVE EPIDEMIOLOGICAL STUDIES OF RADIOTHERAPY PATIENTS Elizabeth Mosher*, Min-Soo Choi, Elizabeth Jones, Choonsik Lee (Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health)

In epidemiological investigations of second cancer risks in patients who underwent radiation treatments, it is crucial to accurately estimate radiation dose to normal tissues. During radiation treatments to the chest, it is of interest to determine the doses to the heart and its substructures. Current dosimetry methods are based on a single standard heart model, which may produce significant uncertainty when estimating heart dose for radiotherapy treatments involving sharp dose gradient around the tumor. In order to increase the accuracy of exposure assessment, we developed methods to reconstruct the location and size of the heart using patient characteristics. We obtained abdominal CT images for 30 adult male and 30 adult female patients. Image-analysis computer programs were used to contour the whole heart and 8 substructures and to measure the volume of each heart substructure and the dimension of the whole heart. We found that some patient characteristics were strongly correlated with the volume and dimensions of the heart (e.g., Body Mass Index vs. heart width in males: $R^2=0.64$; weight vs. heart depth in the adult females: $R^2=0.59$). Our prediction model will be used to accurately estimate heart size and location for radiotherapy patients whose CT images are not available. More accurate exposure assessments will prohibit potential misclassification, which will lead to more accurate risk assessments (e.g. second cancers and cardiac disease). We will also assess the impact of dose errors on risk assessment in collaboration with branch statisticians.

0049- S/P

A BRIEF ASSESSMENT OF CULTURALLY SPECIFIC TOBACCO PRODUCTS ASSOCIATED WITH ORAL CANCER IN SOUTH ASIAN IMMIGRANT POPULATION IN THE UNITED STATES Gunjanbhai Patel*, Jay Mistry, Gunjanbhai Patel, Nayan Patel, Balaji Kolsani (University of North Texas Health Science Center)

Background: Oral cancer is the sixth most common cancer in the world and shows considerable geographic differences in occurrence. South Asian regions, especially, India, Pakistan, Bangladesh, and Sri Lanka accounts for approximately half of newly diagnosed cases worldwide. As immigrant population from South Asian is rising rapidly in the United States, oral cancer among this population is a major concern. **Objective:** We reviewed epidemiological literature to assess general and unique risk factors significantly related to the occurrence of oral cancer in South Asian immigrant population in the United States. **Methods:** We conducted a systemic electronic search through Medline and reviewed articles that were in English and published from 1995-2015. A meta-analysis has been performed on epidemiological studies presenting association between culturally specific tobacco products and oral cancer. **Results:** The pervasive use of culturally specific tobacco products in south Asian immigrant population is indicated by 18% prevalence of betel quid and 12% prevalence of areca nut in New York as well as 28% prevalence of all culturally specific tobacco products in Los Angeles. **Conclusion:** Our review of the literature suggests that culturally specific tobacco products such as betel quid, areca nut, hand-rolled bidis, water pipes (hookah), Paan Masala, and Zarda are the major cause of oral cancer in the South Asian immigrant population. Social acceptability, religious beliefs, perceived health benefits and addiction are four major factors that encourage high consumption of smokeless tobacco and areca nut chewing. It is important to integrate this information to design specific intervention strategies to prevent oral cancer in South Asian immigrant population. **Key Words:** Culturally specific tobacco products, oral cancer, South Asian Immigrants, Tobacco prevention strategies

0051- S/P

REOPERATION DUE TO SURGICAL BLEEDING IN BREAST CANCER PATIENTS AND BREAST CANCER RECURRENCE: A DANISH POPULATION-BASED COHORT STUDY Rikke Noergaard Pedersen*, Deirdre Cronin-Fenton, Krishnan Bhaskaran Uffe, Heide -Jørgensen, Mette Nørgaard, Peer M. Christiansen, Niels Kroman, Henrik, Toft Sørensen (Department of Clinical Epidemiology, Aarhus University, Aarhus, Denmark)

Background: Breast cancer patients who develop postoperative bleeding requiring reoperation may be at increased risk of breast cancer recurrence, since bleeding activates platelets that can bind to tumor cells, potentially promoting metastatic growth. **Objectives:** We investigated the association between postsurgical bleeding requiring reoperation and the rate of breast cancer recurrence. **Methods:** We used the Danish Breast Cancer Group Registry to identify women with incident operable stages I-III breast cancer, who underwent breast-conserving surgery or mastectomy recorded in the Danish National Patient Registry (DNPR) during 1996-2008. Information on reoperation due to postsurgical bleeding within 14 days of primary surgery was retrieved from the DNPR. Follow up began 14 days after the date of primary surgery and continued for 10 years or until breast cancer recurrence, death, emigration, or January 1, 2013, whichever came first. Cox regression models were used to quantify the association between any postsurgical bleeding requiring reoperation and breast cancer recurrence, adjusting for age, menopausal status, stage, tumor grade, primary surgery type, estrogen receptor/endocrine therapy status, comorbidity, baseline HRT, and post-diagnostic simvastatin/aspirin use. We further investigated the effect of number of reoperations within 14 days of primary surgery (0, 1, > 1 reoperation). **Results:** Our study included 32,372 patients with 218,039 person-years of follow-up. 811 patients had at least one reoperation within 14 days and 5,037 developed a breast cancer recurrence during follow-up. We found no association between postsurgical bleeding and breast cancer recurrence overall (adjusted HR, 1.07; 95% CI, 0.90-1.26) and no evidence that recurrence was associated with number of reoperations due to postsurgical bleeding. **Conclusion:** Our large prospective cohort study provided no evidence of an association between reoperation due to postsurgical bleeding and breast cancer recurrence.

0052

COFFEE, CAFFEINE, AND PROSTATE CANCER RISK IN THE MULTIETHNIC COHORT STUDY Song-Yi Park*, Neelma Skilling, Lynne Wilkens, Loïc Le Marchand (University of Hawaii)

Coffee contains various biologically active compounds, including caffeine and polyphenols, that may reduce the risk of prostate cancer. We examined the associations of caffeine intake and its major food sources, coffee, tea, and soft drinks, with prostate cancer risk in the Multiethnic Cohort Study in Hawaii and California. The analyses included 84,404 African American, Native Hawaiian, Japanese American, Latino, and white men aged 45-74 years who completed a detailed quantitative food frequency questionnaire in 1993-1996. During a mean follow-up period of 15 years, 8,690 total cases of prostate cancer were identified, including 3,754 advanced and 3,402 high-grade cases. We used Cox proportional hazards models to estimate hazard ratios (HR) and 95% confidence intervals (95% CI) with adjustment for potential confounding factors. Coffee consumption was not significantly associated with the risk of total (HR=0.94, 95% CI: 0.86-1.03 for ≥ 3 cups/day vs. none, P for trend=0.30), non-aggressive, aggressive, or fatal prostate cancer; this was also true for regular and decaffeinated coffee separately. No significant association was found with tea consumption, while soft drink intake was associated with a lower risk of prostate cancer (HR=0.89, 95% CI: 0.82-0.97 for ≥ 2 cans per day vs. none, P for trend=0.011). Caffeine intake was related to a lower risk of prostate cancer (HR=0.89, 95% CI: 0.83-0.96 for the highest vs. lowest quintile, P for trend=0.002). The inverse association with caffeine intake was stronger for low-grade tumors than for high-grade tumors (P for interaction = 0.026), whereas it did not vary by extent of disease (P for interaction = 0.50). We found no evidence that the associations were different across racial/ethnic groups (P for interaction > 0.15). Our data do not support that coffee consumption reduces prostate cancer risk, but show an inverse association with caffeine intake.

0054-S/P

LOCALIZATION OF LOW PENETRANCE CANCER SUSCEPTIBILITY POLYMORPHISMS TO LARGE GENE FAMILIES

Michael Passarelli*, Michael Passarelli, Caroline Tai, Rebecca Graff, John Witte (Department of Epidemiology and Biostatistics, University of California, San Francisco (UCSF), San Francisco, CA)

Introduction: Characterization of the human genome has permitted classification of large multi-gene families that share functionality or sequence similarity. Hundreds of common single-nucleotide polymorphisms (SNP) associated with cancer risk have been discovered from genome-wide association studies (GWAS), but it is unclear if there is enrichment of cancer risk loci in or near genes that are part of large families. **Methods:** The Human Genome Organisation Gene Nomenclature Committee database curates 19,003 protein-coding genes, including 32 families of at least 50 genes. We conducted a systematic search of the National Human Genome Research Institute-European Bioinformatics Institute GWAS catalog and identified 172 GWAS evaluating risk of any type of invasive cancer. Without pruning correlated variants, these studies collectively reported 838 SNPs with $P < 1 \times 10^{-5}$. Gene regions were defined as 250 kb beyond the transcription start and end sites of the longest isoforms using RefSeq annotation for the hg38 assembly. Family-specific odds ratios (OR) with 95% confidence intervals (CI) adjusted for gene size were calculated using logistic regression. **Results:** Of the 18,901 regions for genes with available RefSeq annotation, 2,498 (13%) harbored at least one cancer risk SNP. ORs for two of the 32 gene families achieved statistical significance with Bonferroni correction. At least one cancer risk SNP localized to 15 of the 52 (29%) genes in the homeobox-like (HOXL) family (OR, 2.76; CI, 1.51-5.04), and to 17 of the 247 (7%) genes in the tryptophan-aspartic acid repeat (WDR) domain containing family (OR, 0.45; CI, 0.28-0.74). **Conclusion:** HOXL genes, including the HOXA-D transcription factors involved in cellular adhesion and migration, appear to be enriched for GWAS-identified cancer susceptibility SNPs. Fewer than expected cancer SNPs localized to WDR domain containing genes, which encode for proteins that facilitate assembly of protein-protein complexes.

0053-S/P

SOCIOECONOMIC DIFFERENTIALS AND MORTALITY FROM COLORECTAL CANCER IN LARGE CITIES IN BRAZIL Viviane Parreira*, Viviane Parreira, Karina Meira, Raphael Guimarães (Fundação Oswaldo Cruz. Instituto Nacional de Infectologia Evandro Chagas.)

The objective of this study was to compare colorectal mortality pattern according to the social development profile of large Brazilian cities. This is an ecological study using the analysis units Brazilian municipalities considered large (over 100 thousand inhabitants). The adopted social indicators were obtained from Atlas of Human Development in Brazil. Mortality data came from Mortality Information System (MIS) represented by codes C18, C19 and C20. For data analysis, municipalities were characterized according to indicator profile used by multivariate classification cluster analysis. We can observe that Southeast, South and Midwest regions concentrated over 90% of cities in the group of more developed municipalities, while North and Northeast regions were represented by 60% of cities in group of low development municipalities. Mortality pattern from colon and rectal cancer in both groups was different, with higher average mortality rate from colorectal cancer for populations living in cities with higher development group ($p = 0.02$). Mortality rate from this cancer was shown to be directly proportional to the amount of municipal HDI and inversely proportional to the inequality indicator ($p < 0.001$), therefore highest average among the municipalities with the better socioeconomic conditions. It is important to consider the social disparities to ensure equity in health policy management.

0055-S/P

ANALGESIC MEDICATION USE AND RISK OF EPITHELIAL OVARIAN CANCER IN AFRICAN AMERICAN WOMEN Lauren Peres*, Lauren Peres, Fabian Camacho, Sarah Abbott, Anthony Alberg, Elisa Bandera, Jill Barnholtz-Sloan, Melissa Bondy, Michele Cote, Sydnee Crankshaw, Ellen Funkhouser, Patricia Moorman, Edward Peters, Ann Schwartz, Paul Terry, Frances Wang, Joellen Schildkraut (University of Virginia)

Existing literature examining analgesic medication use and epithelial ovarian cancer (EOC) risk has been inconsistent, with the majority of studies reporting inverse associations. Race-specific effects of this relationship have not been adequately addressed. The present study examines EOC risk associated with analgesic medication use exclusively among African American (AA) women. Data were from the largest population based case-control study of EOC in AA, the African American Cancer Epidemiology Study. Odds ratios (OR) and 95% confidence intervals (CI) for the relationships between self-reported analgesic medication use (aspirin, non-aspirin non-steroidal anti-inflammatory drugs (NSAIDs), and acetaminophen) overall and by frequency, duration, dose, and indication of use, and EOC risk were estimated using multivariate logistic regression. A total of 541 cases and 731 controls were included in the analysis. Approximately 36.7% of the study population reported any analgesic medication use. In comparison to never users of analgesic medications, aspirin use, overall, was associated with a 43% lower EOC risk (OR=0.57; 95% CI=0.35-0.92) and a 26% lower EOC risk was observed for non-aspirin NSAID use (OR=0.74; 95% CI=0.52-1.04). The inverse association was strongest for women taking aspirin to prevent cardiovascular disease (OR=0.50; 95% CI=0.29-0.86) and women taking non-aspirin NSAIDs for arthritis (OR=0.53; 95% CI=0.32-0.88). Significantly decreased EOC risks were also observed for low dose aspirin use, daily aspirin use, aspirin use for a duration of less than 5 years, and occasional non-aspirin NSAID use for a duration of 5 or more years. Although inversely associated, no statistically significant associations were observed for acetaminophen use. Our findings support previous evidence that analgesic use is inversely associated with EOC risk.

0056-S/P

REPRODUCTIVE AND HORMONAL RISK FACTORS IN RELATION TO OVARIAN CANCER SURVIVAL AND PLATINUM RESISTANCE

Amy L Shafir*, Ana Babic, Rulla M Tamimi, Bernard A Rosner, Shelley S Tworoger, Kathryn L Terry (Department of Epidemiology, Harvard TH Chan School of Public Health)

Ovarian cancer survival is poor, particularly for women with platinum-resistant disease. We evaluated the association of pre-diagnostic reproductive and hormonal factors with ovarian cancer survival and platinum resistance. We included 1,648 cases of invasive epithelial ovarian cancer from a population-based case-control study conducted in Eastern Massachusetts and New Hampshire from 1992-2008. Reproductive and hormonal factors were assessed during in-person interviews. Invasive ovarian cancer cases with medical record data and platinum chemotherapy (n=610) were included in the analyses on platinum resistance, defined as a recurrence within the first six months after the end of platinum-based chemotherapy. We used Cox proportional hazards models to calculate overall ovarian cancer survival and platinum resistance. We observed 911 deaths during 12,494 person-years of follow-up. An endometriosis diagnosis was associated with a 28% (95% CI: 0.55-0.94; p=0.02) decreased risk of death from ovarian cancer. Women over 50 years old had a 23% (95% CI: 1.03, 1.46; p=0.02) increased risk of ovarian cancer death compared to women 50 years old or younger. We observed no association between oral contraceptive (OC) use, parity, and ovulatory years and ovarian cancer survival (p>0.17). In preliminary analyses, 162 of the 610 women with platinum-based therapy had disease recurrence within six months of ending treatment over 2,929 person-months of follow-up. Women with endometriosis had a 71% (95% CI: 0.09, 0.93; p=0.04) reduced risk of being platinum-resistant. No association was observed for OC use, parity, and ovulatory years (p>0.53). Increasing age at natural menopause was associated with an increased risk of ovarian cancer death. Endometriosis was associated with better ovarian cancer survival and a reduced risk of platinum resistance after adjusting for tumor histology, suggesting that endometriosis may improve survival through pathways other than tumor histology.

0058

PRE-DIAGNOSTIC LEVELS OF CIRCULATING ESTROGENS AND ESTROGEN METABOLITES AND POSTMENOPAUSAL OVARIAN CANCER RISK

Britton Trabert*, Louise A. Brinton, Garnet L. Anderson, Ruth Pfeiffer, Roni T. Falk, Howard D. Strickler, Sarunas Sliesoraitis, Lewis H. Kuller, Margery L. Gass, Barbara J. Fuhrman, Xia Xu, Nicolas Wentzensen (Division of Cancer Epidemiology and Genetics, National Cancer Institute, Bethesda, Maryland)

Hormonal and reproductive factors contribute to the development of ovarian cancer, but few studies have examined associations between circulating estrogens and estrogen metabolites and ovarian cancer risk. We evaluated whether serum estrogens and estrogen metabolite levels are associated with ovarian cancer risk among postmenopausal women in a nested case-control study in the Women's Health Initiative (WHI) Observational Study (OS). We selected all 169 eligible epithelial ovarian cancer cases and 412 matched controls from women enrolled in the WHI-OS who were not using menopausal hormones at baseline. Baseline levels of 15 estrogens and estrogen metabolites were measured via LC-MS/MS. Associations with ovarian cancer risk overall and stratified by histologic subtype (102 serous, 67 non-serous) were analyzed using logistic regression. The mean time from serum collection to cancer diagnosis was 6.9 years. Overall we observed modest ovarian cancer risk associations among women with higher levels of estrone [odds ratio (OR) (95% confidence interval (CI)) quintile (Q)5 vs. Q1: 1.54 (0.82-2.90), p-trend=0.05], as well as 2- and 4-methoxyestrone metabolites [OR (95% CI): 2.03 (1.06-3.88), p-trend=0.02; OR (95% CI): 1.86 (0.98-3.56), p-trend=0.01, respectively]. Associations of estrogens and estrogen metabolites varied by histologic subtype. Associations with serous tumors were universally null, while estrone [OR (95% CI): 2.65 (1.09-6.45), p-trend=0.01, p-heterogeneity=0.04], unconjugated estradiol [OR (95% CI): 2.72 (1.04-7.14), p-trend=0.03, p-heterogeneity=0.02] and many of the 2-, 4-, and 16-pathway metabolites were positively associated with non-serous tumors. Our study provides novel molecular data showing an association of the parent estrogens and several estrogen metabolites with non-serous ovarian cancers. These findings further support the heterogeneous etiology of ovarian cancer.

"S/P" indicates work done while a student/postdoc

0057

A MENDELIAN RANDOMIZATION APPROACH TO ASSESS THE RELATIONSHIP BETWEEN TYPE 2 DIABETES AND POSTMENOPAUSAL BREAST CANCER RISK IN A LARGE COHORT OF US WOMEN

Deirdre Tobias*, Paulette Chandler, Christina Ellervik, Nancy Cook, Frank Hu, Aruna Pradhan Daniel, JoAnn Manson (Division of Preventive Medicine, Brigham and Women's Hospital and Harvard Medical School)

Introduction: Hyperglycemia, hyperinsulinemia, and type 2 diabetes may have a causal role in breast cancer incidence, with an estimated ~23% greater risk for those with a history of diabetes versus those without. **Methods:** We included N=23,073 postmenopausal women from the Women's Health Study (WHS), with mean age 54.6 years and cancer-free at baseline. We constructed a type 2 diabetes genetic risk score (T2D-GRS) summing weighted risk alleles of 58 known diabetes-related SNPs. Phenotypic sub-scores were derived from SNPs involved in either beta-cell dysfunction (beta-cell GRS) or insulin resistance (IR-GRS). We used age-adjusted cox proportional hazards regression models, including the GRS as a continuous measure or in quintiles. **Results:** In the WHS, there were 1,128 incident confirmed postmenopausal breast cancer cases over 20 years of follow-up. The T2D-GRS was associated with type 2 diabetes (p<0.0001). However, the continuous T2D-GRS was not associated with incident breast cancer (HR=1.00, 95% CI=0.99, 1.01, p=0.71), nor was the beta-cell GRS HR=1.00, 95% CI=0.98, 1.02, p=0.78) or the IR-GRS HR=1.00, 95% CI=0.97, 1.04, p=0.95). Comparing the highest with lowest quintiles was also null (HR=1.05, 95% CI=0.87, 1.26; p=0.61). Results were similar using an unweighted GRS and adjusting for body mass index (BMI). Risk did not differ according to BMI, family history, postmenopausal hormone use, or other known breast cancer risk factors. Exclusion of women with diabetes (n=137 breast cancer cases) to minimize the influence of diabetes lifestyle modifications or treatment did not change findings. **Conclusions:** Genetic analysis does not support a causal role for susceptibility to type 2 diabetes in breast cancer in the WHS. Shared common causes or diabetes treatments may underlie previously observed associations between diabetes and breast cancer.

0059

FOLATE AND VITAMIN B12 INTAKE AND PANCREATIC CANCER RISK IN A POPULATION-BASED CASE-CONTROL STUDY

Jianjun Zhang*, Bei Kang, Kristin Anderson (Indiana University)

Pancreatic cancer is a leading cause of cancer death. The etiology of this malignancy is largely unknown, which limits its primary prevention. As folate and vitamin B12 are important for DNA synthesis and methylation, it is possible that inadequate intake of these nutrients are involved in the carcinogenesis of various organs, including the pancreas. To date, however, it is still not clear whether folate and vitamin B12 intake are associated with the risk of pancreatic cancer. The present study sought to examine this issue in a case-control study conducted in Minnesota. Cases (n=148), aged 20 years or older, were ascertained from all hospitals in the metropolitan area of the Twin Cities (TC) and the Mayo Clinic; from the later, only cases residing in the Upper Midwest of the U.S. were recruited. Controls (n=453) were randomly selected from the TC general population and frequency matched to cases by age (within 5 years) and sex. Odds ratios (OR) and 95% confidence intervals (95% CI) were estimated using unconditional logistic regression. After adjustment for confounders, intake of folate, from both dietary and supplemental sources, was associated with a reduced risk of pancreatic cancer. Specifically, OR (95% CI) was 0.67 (0.39-1.45), 0.46 (0.25-0.86), and 0.71 (0.40-1.27) for quartiles 4 (785 µg/day), 3 (517 µg/day), and 2 (346 µg/day) vs. quartile 1 (231 µg/day) of folate intake, respectively. No significant associations were identified between vitamin B12 intake and pancreatic cancer risk. Our study suggests that folate nutritional status modulates pancreatic cancer risk.

0060

IS BIRTHWEIGHT ASSOCIATED WITH TOTAL AND AGGRESSIVE/LETHAL PROSTATE CANCER RISKS? A SYSTEMATIC REVIEW AND META-ANALYSIS. Cindy Ke Zhou*, Siobhan Sutcliffe, Judith Welsh, Karen Mackinnon, Diana Kuh, Rebecca Hardy, Michael Cook (Division of Cancer Epidemiology and Genetics, National Cancer Institute)

Introduction. Few risk factors for prostate cancer have been established despite the heavy disease burden among men worldwide. It has been hypothesized that intrauterine exposures are important for subsequent prostate cancer risk. Prior epidemiological studies have used birthweight as a proxy of cumulative intrauterine exposures to test this hypothesis, but results have been inconsistent partly due to limited statistical power. **Materials and Methods.** We investigated birthweight in relation to prostate cancer in the Medical Research Council (MRC) National Survey of Health and Development (NSHD) using Cox proportional hazards models. We then conducted a meta-analysis of birthweight in relation to total and aggressive/lethal prostate cancer risks, combining results from the NSHD analysis with 13 additional studies on this relationship identified from a systematic search in four major scientific literature databases through January 2015. **Results.** Fixed-effects models found that each kg increase in birthweight was positively associated with total (OR=1.02, 95% CI=1.00, 1.03; I²=13%) and aggressive/lethal prostate cancer (OR=1.04, 95% CI=1.00, 1.08; I²=40%). Sensitivity analyses restricted to studies with birthweight extracted from medical records demonstrated stronger associations with total (OR=1.11, 95%CI=1.03, 1.19; I²=0%) and aggressive/lethal (OR=1.37, 95%CI=1.09, 1.74; I²=0%) prostate cancer. These studies heavily overlapped with those based in Nordic countries. **Discussion.** This study provides evidence that heavier birthweight may be associated with small-to-moderate increased risks of total and aggressive/lethal prostate cancer, which supports the hypothesis that intrauterine exposures may be related to subsequent prostate cancer risks.

0070

PREVALENCE OF RISK FACTORS FOR CARDIOVASCULAR DISEASE IN PICHINCHA PROVINCE, ECUADOR Carlos Erazo *, Esperanza Arevalo, Ana Lucia, Moncayo, Freddy Carrión (Pontificia Universidad Católica del Ecuador / Facultad de Medicina)

Introduction In Ecuador, the mortality for cardiovascular diseases has been increasing in the last years. To gain a better understanding of the risk factors of cardiovascular disease in Pichincha province in Ecuador, we sought to describe the prevalence of risk factors for cardiovascular disease among this population. **Methods** Using the protocol of the WHO STEPwise approach to Surveillance (STEPS), risk factors for cardiovascular diseases were determined for 85 men and 259 women aged 25–64 years living in Pichincha province in Ecuador, 2009-2010. **Findings.** About 50% of study population had more than three cardiovascular risks factors. Male gender was positively associated with smoking (OR 9.93, CI 95% 4.50 – 21.94) and alcohol consumption (OR 4.01, CI 95% 2.35 – 6.83). Lower income and educational level were protective factors for smoking (OR 0.36, CI 95% 0.17 – 0.72; OR 0.36, CI 95% 0.17 – 0.73, respectively). People with low education had a lower prevalence of sedentarism (OR 0.43, CI 95% 0.26 - 0.71). Overweight was more prevalent in women (OR 1.81, CI 95% 1.12 – 2.94) and in people with low education (OR 4.78, CI 95% 2.72 – 8.47). Gender, educational and socioeconomic level was not associated with diet, cholesterol level, triglycerides, HDL-cholesterol, glucose, hypertension. **Conclusion** Half of the study population showed high cardiovascular risk, mainly associated with high socioeconomic level. It is necessary to establish strategies in order to modify cardiovascular risk in this population.

0072-S/P

THE USE OF PERCUTANEOUS CORONARY INTERVENTION AND LONG-TERM PROGNOSIS IN ADULTS DISCHARGED FROM THE HOSPITAL AFTER A FIRST ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION Han-Yang Chen* (University of Massachusetts Medical School)

Background Comparisons of outcomes between patients treated and untreated in observational studies may be biased due to differences in treatment selection biases. Multiple methods were used to control for confounding and selection bias to estimate the effect of percutaneous coronary intervention (PCI) on long-term prognosis in patients who survived hospitalization after a first ST-segment elevation myocardial infarction (STEMI) in a community setting. **Methods** Residents of the Worcester, MA, metropolitan area discharged after a first STEMI from all central MA hospitals on a biennial basis between 2001 and 2011 comprised the study population (n=1,054). Traditional regression analyses and propensity score-based analyses were used to examine the association between the use of PCI and long-term prognosis. **Results** The average age of this population was 64 years, 65% were men, and 93% were white. Between 2001 and 2011, 73% of patients who survived hospitalization for a first STEMI received PCI during index hospitalization; crude 1-year post-discharge mortality rates were 5.1% and 22.5% for patients with and without undergoing a PCI, respectively. After adjusting for several prognostic factors, PCI was associated with a decreased odds (odds ratio [OR]=0.30, 95% confidence intervals [CI]: 0.14-0.65) of dying at 1 year post-discharge during the years under study. Similar results were found using propensity score risk adjustment (OR=0.31, 95% CI: 0.14-0.69), propensity score weighting (OR=0.36, 95% CI: 0.17-0.73) and propensity score matching (OR=0.33, 95% CI: 0.11-0.95) analyses. **Conclusions** The increased use of PCI was associated with enhanced long-term survival among patients hospitalized for a first STEMI.

0071-S/P

COHORT PROFILE: LONGITUDINAL STUDY OF PATIENTS WITH CHRONIC CHAGAS CARDIOMYOPATHY IN BRAZIL: (SAMI-TROP PROJECT) Clareci Cardoso*, Ester Sabino, Claudia Oliveira, Lea Oliveira, Ariela Ferreira, Edécio, Neto Ana Bierrenbach, João Ferreira, Arthur Reingold, Antonio Ribeiro (University of California. Berkeley United States of America. Federal University of São João del-Rei. Brazil)

Background: The most important consequence of Chagas Disease (ChD) is Chronic Chagas Cardiomyopathy (CCC), which occurs in 20 to 40% of infected persons. It is a potentially lethal condition, but the severity of the disease varies widely and accurate stratification of the risk of disease progression and death remains an unsolved challenge. **Aim:** To develop a prognostic algorithm, based on simple electrocardiogram measurements in conjunction with clinical information and Brain Natriuretic Peptide (BNP) levels, that would be used to predict the risk of disease progression and death in CCC patients that can be useful in the clinical management of such patients. **Method:** We have established a cohort of 1,959 patients with chronic Chagas cardiomyopathy (CCC) conducted in 21 cities of the northern part of Minas Gerais state in Brazil, and includes a follow up of at least two years. The baseline evaluation included collection of socio-demographic information, social determinants of health, health-related behaviours, comorbidities, medicines in use, history of previous treatment for Chagas Disease (ChD), symptoms, functional class (FC), quality of life, blood sample collection and ECG. **Results:** Patients were mostly female, aged 50-74 years, with low family income and educational level, with known ChD for >10 years; 46% presented with FC > I. Previous use of benznidazole was reported by 25.2% and permanent use of pacemaker by 6.2%. Almost half of the patients presented with high blood cholesterol and hypertension and one third of them had diabetes mellitus. NT-ProBNP level at baseline were >300 (pg/ml) in 30% of the sample and a positive Polymerase Chain Reaction was found in 36.3%. **Conclusion:** Base line results confirm the important residual morbidity of ChD in the remote areas, thus supporting political decisions that should prioritize besides epidemiological surveillance the medical treatment of CCC in the coming years.

0073

LEISURE-TIME PHYSICAL ACTIVITY AND CARDIOMETABOLIC RISK AMONG CHILDREN AND ADOLESCENTS Marcia Galván-Portillo*, Luz M. Cárdenas-Cárdenas, Ana I Burguete-García, Barbara I Estrada-Velasco, Jesús Peralta-Romero, Miguel Cruz (Mexican National Institute of Public Health)

Objective: To assess the effect of Leisure-time physical activity (LTPA) on cardiometabolic risk by nutritional status in Mexican children and adolescents. **Methods:** This was a cross-sectional study conducted with 1,309 participants aged between 5 and 17 years. Nutritional status was classified according to the BMI Z-score by age and gender. A previously validated questionnaire was used to evaluate LTPA; a cardiometabolic risk score was calculated. Multiple linear regression analysis was performed to assess the effect of LTPA on cardiometabolic risk. **Results:** After adjusting for risk factors, mild LTPA were positively associated with cardiometabolic risk score (□ Mild vs Intense LTPA: 0.68; 95% CI: 0.18 to 1.18; p for trend = 0.007). This association became stronger when estimated for overweight (□ Mild vs Intense LTPA: 1.24; 95% CI: 0.24 to 2.24; p for trend = 0.015) and obese participants (□ Mild vs Intense LTPA: 1.02; 95% CI: 0.07 to 1.97; p for trend = 0.045). **Conclusion:** Mild LTPA was positively associated with cardiometabolic risk in overweight and obese children and adolescents. Given the emerging childhood obesity epidemic in Mexico, these results may be useful in the design of strategies and programs to increase physical activity levels in order to achieve better health.

0074

CROSS-SECTIONAL ASSOCIATION OF MAJOR DEPRESSIVE DISORDER AND OTHER COMORBID PSYCHIATRIC DISORDERS WITH CORONARY HEART DISEASE: NATIONAL EPIDEMIOLOGIC SURVEY ON ALCOHOL AND RELATED CONDITIONS III Boji Huang*, Bridget Grant, Sharon M Smith, Tulshi D Saha, S Patricia Chou, W June Ruan, Jeeseun Jung, Haitao Zhang, Roger P Pickering (NIAAA/NIH)

Purpose. DSM-V diagnosis criteria were not used to examine the relationships of major depression (MDD) with coronary heart disease (CHD), previously. Psychiatric disorders comorbid with MDD were not examined simultaneously. The reasons of why treatments for MDD did not demonstrate expected benefits to reduce CHD remain unclear. We conducted the present cross-sectional study using DSM-V diagnosis criteria to explore the potential reasons. **Methods.** The study population comprised 35,518 individuals of the National Epidemiologic Survey on Alcohol and Related Conditions III (NESARC-III). Face-to-face interviews using the Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-V version were conducted. Past-year MDD, any mood disorders other than MDD, any anxiety disorders, posttraumatic stress disorder, any substance use disorder, any eating disorder, and lifetime any personality disorders were diagnosed. The number of experiencing stress events was assessed. Self-reported past year doctor diagnosis of CHD was assessed. **Results.** MDD increased CHD by more than twice, odds ratio (OR) was 2.20, 95% confidence interval (CI) was 1.86-2.59 after controlling for sociodemographic characteristics. Further inclusions of CHD risk factors and comorbid psychiatric disorders in the multivariate regression model attenuated the association of MDD with CHD, but the association remained significant (OR=1.27, 95% CI=1.07-1.50). **Conclusion:** In accordance with the previous prospective analyses using NESARC data, the present study provided further evidence of the association of MDD with CHD. A genome-wide association study is warranted to identify the genes shared by MDD and CHD. Our findings suggested the insufficiency of the treatment for MDD only to reduce CHD and the equal attentions to the comorbid psychiatric disorders be paid in the treatment. The future collaboration of cardiologists and psychiatrists should be enhanced.

0076-S/P

USE OF ASPIRIN FOR PRIMARY AND SECONDARY CARDIOVASCULAR DISEASE PREVENTION AMONG MISSISSIPPI ADULTS, BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM, 2013 Vincent Mendy*, Rodolfo Vargas, Evelyn Walker (Mississippi State Department of Health)

Background The effective use of aspirin therapy in cardiovascular disease (CVD) prevention among high-risk populations is well documented. However, Mississippians aspirin use for primary and secondary prevention of CVD in men ages 45 to 79 and women ages 55 to 79, and sociodemographic differences have not been described. **Methods** Data from 2013 Behavioral Risk Factor Surveillance System were used to examine the prevalence of aspirin use for primary and secondary prevention in men and women based on U.S. Prevention Services Task Force guidelines and assess sociodemographic differences. CVD was defined as a "yes" response to the question "Has a doctor ever told you that you had any of the following: 1) a heart attack; 2) coronary heart disease; 3) or a stroke". Respondents who had never been told they had CVD were considered eligible for primary prevention while those without CVD for secondary prevention. Prevalence estimates and 95% confidence intervals were calculated and Chi-square test was used to examine sociodemographic differences. **Results** Among males 45-79 and females 55-79 years without a previously CVD diagnosed, 36.8% and 39.4% were taking aspirin respectively for primary prevention. Among males 45-79 and females 55-79 years previously diagnosed with CVD, 82.2% and 70% were taking aspirin respectively for secondary prevention. We observed significant differences in aspirin use for both primary and secondary prevention by race, household income, education, health insurance, and diabetes status. **Conclusion** The use aspirin for secondary prevention of CVD among eligible Mississippians is high while its use for primary prevention of CVD is low with observed sociodemographic disparities.

0075

LEISURE-TIME BUT NOT COMMUTING TIME PHYSICAL ACTIVITY IS PROTECTIVE TO HIGH BLOOD PRESSURE. THE BRAZILIAN LONGITUDINAL STUDY OF ADULT HEALTH (ELSA-BRASIL). Paulo Lotufo*, Carlos Treff, Isabela Bensenor (University of Sao Paulo)

To investigate the association between leisure-time physical activity and commuting time physical activity and high blood pressure among participants of Brazilian Longitudinal Study of Adult Health (ELSA-Brasil). Physical activity was assessed applying the long version of the International Physical Activity Questionnaire (IPAQ) only for the domains of leisure and transportation. We use the definition of the American Heart Association's and the World Health Organization (≥ 150 minutes/week moderate activities or 75 minutes/week vigorous activities). The categories were created active, insufficiently active and inactive. Hypertension was defined as systolic/diastolic blood pressure higher than 140/90 mm Hg or under use of antihypertensives. From 15105 participants, we analyzed 10 536 subjects without previous cardiovascular diseases and with complete information about the IPAQ and variables associated with hypertension as body-mass index, report of the use of antihypertensive medicines, alcohol and sodium intake. After adjustment for age, race, income, body-mass index, urinary sodium excretion, and alcohol intake. Men active during leisure-time had an odds ratio (and 95% Confidence Interval) after multivariate adjustment of 0.85 (0.78-0.90) hypertension compared to men inactive. For women, the odds ratio for active vs. inactive during leisure-time was 0.85 (0.75-0.96). In contrast, the association observed for commuting physical activity with hypertension was not detected among men and the odds ratio of active women while commuting time compared to inactive was 1.15 (1.04-1.27). Concluding, after adjustment for variables related to hypertension, leisure-time physical activity was protective, but commuting time physical activity was associated with high blood pressure only among women.

0077

THE ROLE OF OBESITY IN EXPLAINING URBAN-RURAL DIFFERENCES IN CARDIOVASCULAR DISEASE IN INDIA Shivani Patel*, Ambuj Roy, Pradeep Praveen, Ritvik, Amarchand Lakshmy Ramakrishnan, Ruby Gupta, K Srinath, Reddy Nikhil, Tandon Anand, Krishnan Prabhakaran Dorairaj (Emory University)

Background: The rising prevalence of cardiovascular disease (CVD) in low - and middle-income countries (LMICs) is often attributed to expanding urbanization, which in turn promotes obesogenic environments. We investigated the evidence supporting body mass index (BMI), a metric to gauge obesity, as an explanation for urban-rural differences in CVD risk factors in Northern India. **Methods:** Data were from 4,047 adults (mean age 47.2 y, 46% men) in a representative sample of households in Delhi ("urban") and neighboring Balabgarh district ("rural"). BMI (kg/m²) and outcomes—diabetes (fasting blood glucose ≥ 126 mg/dl or treatment), high total cholesterol (total blood cholesterol ≥ 200 mg/dl or treatment), and hypertension (blood pressure $\geq 140/90$ mmHg or treatment)—were objectively measured. Poisson regression with robust variance estimation was used to compare the prevalence of each outcome between urban and rural settings (primary exposure), and we used change-in-estimate criteria to evaluate mediation by BMI. Sex, religion, employment status, education, tobacco use, and alcohol use treated as confounders. **Results:** Diabetes (13.8%) was the least prevalent CVD risk factor, while roughly one-third of participants had high cholesterol (33.7%) or hypertension (36.4%). Prevalence ratios (PR [95% CI]) comparing diabetes, high cholesterol, and hypertension in urban to rural areas were 2.00 (1.57-2.56), 0.87 (0.71-1.07), and 1.35 (1.17-1.57), respectively, adjusting for socio-demographics alone. After inclusion of obesity in the models, diabetes, high cholesterol, and hypertension urban-rural PRs were attenuated by 15%, 5%, and 11%, respectively. **Conclusion:** The prevalence of diabetes and hypertension was higher in urban compared with rural areas in Northern India, but urban-rural differences were not substantially explained by BMI. Further investigation into factors beyond energy imbalance is required to understand the rise of cardiovascular disease in cities in LMICs.

0078-S/P

CURRENT MANAGEMENT OF PATIENTS WITH ST-ELEVATED MYOCARDIAL INFARCTION IN A LATIN AMERICAN COUNTRY: DELAY AND MORTALITY Andrea O. Ruiz-Alejos*, Eddy Segura, Laura Navarro-Huaman (Universidad Peruana de Ciencias Aplicadas)

Introduction: Primary percutaneous coronary intervention reduces mortality in patients with ST elevated myocardial infarction (STE MI). The objective was to evaluate the 30 days in-hospital mortality according to door-to-balloon time and total ischemic time in patients treated with primary PCI. **Methods:** A retrospective cohort study was performed including patients with STE MI who underwent primary PCI at a national reference hospital in Lima, Peru. A Cox Regression analysis was performed for door-to-balloon time less than 90 minutes and total ischemic time less than 12 hours as predictors and in-hospital mortality as outcome. **Results:** During 2010-2014, 296 STE MI patients underwent PCI. From them, 82,4% were male. The mean age was 66,5 ±11,8 years. The 30-day mortality was 8,11%. The median of time to emergency room since presymptom was 4 hours. The proportion of patients with total ischemic time less than 12 hours and door-to-balloon time was 82,43% and 33,11% respectively. Only 12,16%, 33,11% and 51,35% had a door-to-balloon time less than 60, 90 y 120 minutes respectively. No association between these intervals and 30-day mortality was found. Cardiac arrest (HR: 2,9 95%CI 1,09-7,72), cardiogenic shock at the admission (HR: 7,06; 95%CI: 2,84-17,59) and TIMI flow less than 3 after primary PCI (HR: 4,21; 95%CI: 1,73-10,19) were associated with higher 30-day mortality. **Conclusion:** No association between mortality and lower total ischemia time or door to balloon time mortality was found. A significant delay was observed in hospital arrival and performing revascularization.

0079

MONITORING PREVALENCE, TREATMENT AND CONTROL OF METABOLIC CONDITIONS IN NEW YORK CITY ADULTS USING 2013 PRIMARY CARE ELECTRONIC HEALTH RECORDS: A SURVEILLANCE VALIDATION STUDY Lorna Thorpe*, Katharine McVeigh, Sharon Perlman, Polly Chan, Katherine Bartley, Lauren Schreiberstein, Jessica Rodriguez-Lopez, Remle Newton-Dame (CUNY School of Public Health)

Primary care electronic health records (EHRs) have potential to extend chronic disease surveillance by assessing burden of cardiovascular risk factors and metabolic conditions such as hypertension, hypercholesterolemia and diabetes, as well as monitoring their treatment and control patterns. New initiatives are emerging to track population-based metrics using indicators developed specifically for EHR data, but few have been validated for accuracy. We designed a new EHR-based population health surveillance system for New York City (NYC), known as NYC MacroScope using a large distributed EHR network. We present validation findings for metabolic indicators by comparing EHR-based estimates to those from a gold standard surveillance source – the 2013-2014 NYC Health and Nutrition Examination Survey (NYC HANES) overall and stratified by sex and age group, using the two one-sided test of equivalence (TOST) and other validation criteria. EHR-based hypertension prevalence estimates were highly concordant with estimates generated from NYC HANES. Diabetes prevalence estimates were highly concordant when measuring diagnosed diabetes but less so when incorporating laboratory results, potentially reflecting risk-based screening for diabetes in clinical practices compared with standardized survey testing. Hypercholesterolemia prevalence estimates were less concordant overall. All measures to assess treatment and control of the three metabolic conditions performed poorly. While performance across indicators was variable, findings here confirm that valid estimates for chronic disease metrics can be derived using primary care EHRs. Systematic efforts to increase documentation and standardize reporting can improve completeness and accuracy of these indicators over time.

0090-S/P

MATERNAL LEVELS OF PERFLUOROALKYL AND POLYFLUOROALKYL SUBSTANCES DURING PREGNANCY AND EXECUTIVE FUNCTION IN THE OFFSPRING Cathrine Carlsen Bach*, Zeyan Liew, Niels Bjerregård Matthiesen, Tine Brink Henriksen, Ellen Aagaard, Nohr Bodil, Hammer Bech, Beate Ritz, Jørn Olsen (Perinatal Epidemiology Research Unit, Aarhus University Hospital, Aarhus, Denmark)

Background: Perfluoroalkyl and polyfluoroalkyl substances (PFASs) are ubiquitous in the environment and accumulate in humans. PFASs are suspected to affect the neuropsychological function of children, but only few studies have investigated the association between intrauterine PFAS exposure and childhood executive function. **Methods:** We included 1356 children from the Danish National Birth Cohort born 1996-2003. The levels of 16 PFASs were measured in maternal plasma during pregnancy. At 5 years of age, the executive function of the children was assessed by the Behavior Rating Inventory of Executive Function (BRIEF). The test scores were standardized to a mean of 50 and a standard deviation of 10. We examined the associations between the levels of seven PFASs (quantified in at least 50 % of the samples) and BRIEF scores by multivariable linear regression adjusted for potential confounders, including the maternal intelligence quotient. **Results:** We found no clear associations between PFAS exposures and BRIEF scores rated by day-care employees. However, considering the parent ratings, perfluorooctanoate (PFOA) and four sulfonated PFASs, including perfluorooctane sulfonate (PFOS), were associated with an increase in executive function difficulties; the most extreme estimate was 3.0 (95 % confidence interval 0.7, 5.2) for PFOA, highest versus lowest quartile, but no clear dose-response relationships were identified. **Conclusions:** Intrauterine exposure to some PFASs was associated with executive function difficulties in childhood in a large sample of Danish children. Given the widespread nature of PFAS exposure, these findings may have public health implications and warrant further investigation.

0093-S/P

RESILIENCE FACTORS FOR CHILD DEVELOPMENT: A COMMUNITY-BASED COHORT STUDY IN ALBERTA, CANADA Erin Hetherington*, Heather Kehler, Sheila McDonald, Suzanne Tough (University of Calgary)

Introduction: Children of mothers with mental health challenges are at increased risk of developmental delays. However, which protective factors have the potential to promote resilience and mitigate risk for developmental problems is not well understood. **Objective:** To identify protective factors for child development at two years of age among children of mothers with mental health risk. **Methods:** Data from the All Our Babies (AOB) longitudinal cohort study in Calgary, Canada was used. Maternal mental health risk was defined as having two or more of the following: history of abuse, previous mental health condition, or poor prenatal or current mental health. Global child development was measured using the Ages and Stages Questionnaire. Social-emotional and behavioural development was measured using two scales from the Brief Infant Toddler Social Emotional Assessment. Among families with maternal mental health risk, three logistic regression models were built for each area of child development (global, social-emotional and behavioural). Protective factors that were considered included maternal factors (e.g. social support, optimism), child factors (e.g. gestational age, sex) and family factors (e.g. marital status, relationship happiness). **Results:** Among children of mothers with maternal mental health risk (28%), protective factors for positive global child development included: parenting self efficacy (OR 5.05, CI: 1.97, 12.96), social support (OR 2.46, CI: 1.21, 5.03) and relationship happiness (OR: 2.22, CI: 1.00-4.89). These factors were also protective for social-emotional and behavioural development. Additional protective factors for behavioural development included use of a recreation facility in the community and mother's perceived ability to fulfill competing responsibilities. **Conclusion:** As these protective factors are modifiable, these results can inform community based strategies to optimize early childhood development among families at high risk of poor outcomes.

"S/P" indicates work done while a student/postdoc

0092

DOSAGE AND TIMING OF EARLY CHILDHOOD HOME VISITING AND ASSOCIATION WITH CHILD DEVELOPMENT Alonzo Folger*, Katherine Bowers, Ting Sa, Judith Van Ginkel, Robert Ammerman (Cincinnati Children's Hospital Medical Center)

Introduction: Early childhood home visiting (HV) provides a unique opportunity to support children at risk for developmental delays during a critical window of brain development. We aimed to determine whether the number of home visits received by a family was associated with risk for a suspected developmental delay (sDD) at 12 months of age. **Methods:** Participants included 1,817 families who enrolled in Every Child Succeeds, a HV program in greater Cincinnati, Ohio, and who remained active in HV at 12 months of age (42% of the 4,323 families who enrolled 2010-2013). Logistic regression was used to model the relationship between the number of visits received and sDD at 12 months, as measured by the Ages and Stages Questionnaire Edition Three and defined as 2 standard deviations below the mean in at least 1 domain (communication, problem solving, personal/social, fine or gross motor). **Results:** The mean number of home visits at 12-months of age was 30.0 (SD 11.5). 4.2% of children had an sDD. There was a statistically significant reduction in the odds of sDD for every unit increase in the number of visits (OR: 0.97; 95% CI: 0.95-0.99) adjusting for maternal race, age, education, and baseline family stress. The effect translated to a 12% reduction in the risk for sDD for every 5 additional visits received by 12-months of age. Preliminary results suggest that prenatal visits had the largest effect on the risk for sDD. Maternal age was also a significant predictor for sDD. For every additional year of maternal age, there was a 9% increase in the risk for sDD (OR: 1.09; 95% CI: 1.04-1.15). **Conclusions:** The number of home visits at 12-months of age had a statistically significant, but modest association with the reduction in risk for sDD at 12-months of age. Prenatal home visits may have the largest effect, underscoring the value of early intervention. Sensitivity analyses must be performed to assess the association between loss-to-follow-up at 12-months and risk for sDD.

0094-S/P

BEHAVIOR PROBLEMS IN ADOLESCENTS WITH CONGENITAL HEART DISEASE: AN ANALYSIS USING STICHD Jessica Knight*, Michael Kramer, Carolyn Drews-Botsch, Bryan Williams, Matthew Oster (Emory University, Rollins School of Public Health)

Congenital heart disease (CHD) is the most common type of birth defect, affecting nearly 1% of all livebirths. As survival has improved over time, understanding the long-term impact of CHD is important to ensure optimal health and quality of life for those affected. The purpose of this analysis was to compare the prevalence of behavior problems between adolescents with CHD and population-norms. Data was used from the Studying the Impact of Congenital Heart Disease (StICHD) study which examines social, scholastic, and daily challenges of adolescents born with CHD. Self-administered questionnaires were completed by a random sample of parents of surviving adolescents ages 12 – 17 surgically treated for a CHD between 1998 and 2008 at Children's Healthcare of Atlanta. Behavior problems were assessed using the Child Behavior Checklist (CBCL), a well-validated instrument assessing behavior in children ages 6 to 18. Among 362 families contacted, 127 (35%) responded and of these 123 (34%) parents completed the CBCL. According to these parents' responses, 17% (95% CI: 10%, 24%) of the adolescents scored in the clinically significant range on total behavior problems, as compared to an expected prevalence of 10%, p-value = 0.02. Twenty-three percent (95% CI: 15%, 30%; p-value = <0.01) and 15% (95% CI: 8%, 21%; p-value = 0.13) of adolescents with CHD scored in the clinical range in internalizing and externalizing behavior problems respectively. These preliminary data suggest that the prevalence of behavior problems, particularly internalizing problems, may be higher in adolescents treated for a CHD. Parents and providers should be alerted to this potential increase and seek services for children with CHD exhibiting signs of behavioral issues.

0095

GEOGRAPHIC DIFFERENCES IN AUTISM SPECTRUM DISORDER AMONG CHILDREN OF NURSES' HEALTH STUDY II PARTICIPANTS Veronica Vieira*, Kate Hoffman, Marc Weisskopf, Andrea Roberts, Raanan Raz, Kristen Lyall, Jaime Hart, Francine Laden (University of California, Irvine)

Although autism spectrum disorders (ASD) have a strong genetic component, there is also evidence that environmental exposures may play an etiologic role. The aim of the current study is to determine the association between residential location (at birth and at age 6 years) and ASD risk in the children of Nurses' Health Study II participants. Participants included 509 ASD cases among 33,315 children with geocoded addresses born from 1989-1999. We used generalized additive models to predict a continuous risk surface, smoothing on longitude and latitude. Unadjusted and adjusted spatial analyses assessed whether underlying geographic variations were explained by previously identified risk factors (e.g. maternal age or perinatal exposure to hazardous air pollutants (HAPs)). Both country-wide and regional analyses were conducted. We identified areas of statistically significant risk using permutation tests. Areas of increased unadjusted ASD risk were identified in the northeast U.S. and in Indiana ($p=0.02$). Models adjusted for maternal age, child's sex, community income, and HAPs produced similar results, suggesting that geographic differences were not explained by these factors. Results were slightly stronger for the address at age 6 years than for the birth address, possibly indicating that diagnostic differences are driving geographic patterns. In summary, we identified areas of both increased and decreased risk of an ASD diagnosis that were not explained by individual risk factors and environmental exposures included in our analysis. Other geographically-distributed causal or diagnostic factors likely impacted the prevalence of ASD.

0096-S/P

MATERNAL DIABETES AND OFFSPRING AUTISM SPECTRUM DISORDER: ASSOCIATION AND PRENATAL MEDIATORS Christina Kan Hong Zheng*, Jordon Rabey, Xiaozhong Wen, Lina Mu (SUNY University at Buffalo, School of Public Health and Health Professions, Department of Epidemiology and Environmental Health)

Prevalence of Autism Spectrum Disorder (ASD) has increased since the 1960s. Because this is not fully explained by improved diagnosis, ASD etiology remains unclear. Perinatal and neonatal characteristics are suspected to be associated with ASD. Previous epidemiological studies examined ASD risk with maternal diabetes-induced hyperglycemia and fetal oxygen depletion, but with inconsistent results. This current study aims to explore associations between maternal diabetes and ASD development in offspring. This study used data of 8,900 children in the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B, 2001-2007). Multivariable logistic regression models were applied to examine association between maternal diabetes in pregnancy and child risk of ASD controlling for maternal and paternal age, socioeconomic status, weight gain during pregnancy, BMI before pregnancy, and parity. We analyzed whether this association was mediated by gestational duration, birth weight, or delivery method (vaginal vs. caesarian section). About 100 children were reportedly diagnosed with ASD. Children from diabetic mothers during pregnancy had higher risk of ASD than from non-diabetic mothers (21.41 per 1000 vs. 8.96 per 1000) with an adjusted odds ratio (OR) of 2.21 (95% CI: 1.00, 4.88). Inclusion of the potential mediators of gestational duration, birth weight and delivery method into the model did not affect the association significantly. These results suggest maternal diabetes during pregnancy is associated with ASD development and may not be mediated by gestational duration, birth weight, or delivery method. A larger prospective cohort is necessary for more conclusive results.

0100-S/P

POTENTIAL RISK OF CHOLERA DUE TO CLIMATE CHANGE IN NIGERIA: A PROJECTION USING CMIP5 CLIMATE MODEL SIMULATIONS. Auwal Abdussalam* (Kaduna State University)

Cholera is one of the meteorologically-sensitive infectious diseases that remain a major health burden in West-Africa and especially in Nigeria. Several studies have established that cases exhibit sensitivity to climate variability, raising concern that future climate change may exacerbate the risk of the disease. Projecting the future risk of this disease is essential, especially for regions where the projected climate change impacts, and infectious disease risk, are both large. In this study, projection was made by forcing an empirical model of cholera with monthly simulations of four meteorological variables from an ensemble of thirteen statistically downscaled global climate model projections from the Coupled Model Intercomparison Experiment Phase 5 for Representative Concentration Pathways 2.6, 6.0 and 8.5 scenarios. Result indicates statistically significant increases in cases during April-September for RCPs 6.0 and 8.5 in both near (2020-2035) and far (2060-2075) future. Changes are largest and have the strongest statistical significance ($p < 0.05$) towards the end of the dry season and the beginning of the rainy season, with increases over the present day case rate (22 cases per 100,000 of population in the month of June) to rates ranging from 30 to 35 in the far future, depending on the RCP. The months with the largest increases coincide with the months (May and June) in which maximum temperature increases are also large. Cases only showed potential increases in the wettest months of July and August in the far future projections for RCPs 6.5 (8.3 and 7.9%) and 8.0 (17 and 21%) respectively. It is noteworthy that these results represent the climatological potential for increased cases due to climate change, assuming current prevention and treatment strategies remain similar in the future.

0101

CLIMATE CHANGE EPIDEMIOLOGICAL HEALTH REPORTS IN MICHOACAN STATE, MEXICO SINCE 2009 TO 2013 Alejandro Molina-Garcia*, Cynthia Armendariz-Arnez, Lilian Pacheco-Magaña, Gloria Figueroa-Aguilar, Josefina Martinez-Ponce, Carlos-Esteban, Aranza-Doniz, Luz-Arlette Saavedra-Romero (State Commissioner of the Ministry of Health at Michoacan State)

Objective: To show the epidemiological reports of the impact on health with local and global environmental change. Data sources: our main reports were measured with parameters like temperature and precipitations during 1950-2000; and climate change scenarios projected to 2020-2030-2050. Also, ozone like air pollutant, 2009 pandemic A/H1N1 spring outbreak; floodings and acute respiratory and diarrheal infectious diseases, dermatitis and conjunctival diseases related with contaminated food, air, water and soil after intense rainfalls; surveillance of vibrio parahaemolyticus; ocean pH and enterococcus. **Methods:** Samples were obtained and sent to state public health laboratory in Morelia, Michoacan, Mexico. Meteorological reports were obtained and reviewed by the Delegational state of the National Commission of Water and analysed by the Atmospheric Science Center from the National University Autonomus of Mexico in Mexico City. Descriptive epidemiological health reports were assessed to complete these reports from the epidemiological surveillance health system of Michoacan. **Results:** Acute infectious diseases were identified like A/H1N1 flu virus and ozone air pollutant in april and may in 2009. Respiratory and diarrheal infectious outbreaks in heavy rainfalls and floodings in 2010 february in the Monarch butterfly biosphere region in East Michoacan. In the same year, in april an outbreak of vibrio parahaemolyticus were presented. And, recently in 2013 a serial reports related with a low level pH decrease in the Pacific ocean coast and the presence of enterococcus were measured. All these results were associated with temperature, precipitations and climate change scenarios since 1950-2000 and 2020, 2030 and 2050 measures in Michoacan. **Conclusions:** Acute and infectious diseases were identified in places where our temperature and precipitations are increasing like world reports in ar4 and ar5 IPCC and others epidemiological data have been publishing.

0110-S/P

COMPARATIVE EFFECTIVENESS OF SHORT-COURSE AZITHROMYCIN VERSUS LONG-COURSE ANTIBIOTICS FOR TREATMENT OF TYPICAL PEDIATRIC COMMUNITY-ACQUIRED PNEUMONIA: A META-ANALYSIS Licelot Eralte Mercer*, Stephen Morse (Columbia university mailman school of public health)

Background. Although current treatment guidelines recommend amoxicillin as a first-line therapy for pediatric community-acquired pneumonia (CAP) in outpatient settings, many clinicians prescribe azithromycin (AZT) instead — contending that the empirical evidence corroborates AZT's superior effectiveness despite reports of rising pneumococcal resistance to macrolides. Do the evidence support claims of AZT's superior effectiveness? **Objective.** To conduct a meta-analysis that synthesizes the existing evidence from randomized controlled trials (RCTs), and assess the comparative effectiveness of short-course AZT (≤ 5 -days) monotherapy versus long-course antibiotics (≥ 5 -days) used in the conventional treatment of non-severe typical pediatric CAP. **Methods.** Following the PRISMA-Protocol Guidelines, we identified non-placebo-controlled RCTs measuring the association between clinical cure rates of CAP symptoms in patients treated with AZT versus a long-course antibiotic. **Results.** From nine studies that treated CAP patients from 15-37 days, a total of 1409 cases (< 18 yrs) were collected. In a random-effects model, the ORpooled of clinical cure from CAP was -1.32 (95%CI: 0.99-1.75; $P = 0.79$) times more likely among cases treated with AZT than those treated with either erythromycin, amoxicillin (AMOX) or amoxicillin-clavulanate (AMOX-CLAV). The RCTs that defined CAP broadly to include bronchitis and bronchiolitis diagnosis, detected a meaningful association between the likelihood of experiencing complete clinical cure with AZT treatment ($p \leq 0.05$). Among CAP cases treated with AZT, those from studies with broader CAP definitions appeared to be 1.55 (95%CI: 1.08-2.22; $P = 0.59$) more likely to recover compared to CAP cases from studies only using the traditional and narrow definition of pneumonia. **Conclusions.** Our findings support indicate that AZT is as effective to standard first-line CAP antibiotic used. However, this evidence is circumstantial and results should be interpreted with caution.

0111

EVALUATING HETEROGENEITY OF ADJUVANT CHEMOTHERAPY EFFECTIVENESS AMONG OLDER ADULTS WITH STAGE III COLON CANCER Jennifer Lund*, Caitlin Murphy, Hanna Sanoff, Sharon Peacock Hinton, Til Stürmer (Department of Epidemiology, University of North Carolina at Chapel Hill)

Randomized controlled trials (RCTs) have shown that the addition of oxaliplatin to adjuvant 5-fluorouracil/capecitabine (5-FU), referred to as FOLFOX, reduces all-cause mortality in stage III colon cancer and is now the standard of care. However, a pooled analysis of 3 RCTs found that FOLFOX provided no incremental mortality reduction over 5-FU in patients age ≥ 70 years. Because chronologic age may be a poor predictor of treatment effectiveness, we evaluated heterogeneity of the comparative effectiveness of FOLFOX and 5-FU on all-cause mortality by selected comorbid conditions and markers of frailty. Individuals aged ≥ 66 years with stage III colon cancer diagnosed from 2004-2011 were identified from the Surveillance, Epidemiology and End Results program-Medicare database. Chronic conditions and frailty markers were defined using diagnosis and durable medical equipment codes from claims data. Propensity score weighted Cox proportional hazards models were used to compare the effectiveness of FOLFOX and 5-FU in reducing all-cause mortality, overall and by patient subgroup. Among the 5795 patients identified, the most common comorbidities were diabetes (24%), chronic obstructive pulmonary disease (COPD, 10%), and congestive heart failure (7%) and 6% had a high predicted probability of frailty (> 0.15). In total, 3368 patients (58%) initiated FOLFOX and 2351 patients died over a median follow-up of 4.3 years. Overall, the initiation of FOLFOX was associated with reduced all-cause mortality compared to 5-FU (adjusted hazard ratio (aHR)=0.80, 95%CI: 0.74, 0.87) but not among patients with comorbid COPD (aHR=0.95, 95%CI: 0.75, 1.20) or a high predicted probability of frailty (aHR=1.04, 95%CI: 0.73, 1.49). Our findings suggest FOLFOX may benefit some, but not all, older patients with stage III colon cancer. Decisions regarding adjuvant chemotherapy warrant consideration of patient preferences and physiologic as opposed to chronologic age, as benefits may be heterogeneous.

0120

HOUSEHOLD EXPOSURES AND PREVALENCE OF HELICOBACTER PYLORI INFECTION IN WESTERN CANADIAN ARCTIC COMMUNITIES

Katharine Fagan-Garcia*, Emily Walker, Karen J Goodman (The Canadian North Helicobacter pylori (CANHelp) Working Group University of Alberta)

The CANHelp Working Group addresses concerns about health risks from *H.pylori*, which is common in Indigenous Arctic communities, launching community-driven projects in Aklavik, Tuktoyaktuk, and Fort McPherson, Northwest Territories, and Old Crow, Yukon during 2007-2012. This analysis describes associations of household exposures with *H.pylori* prevalence. We tested participants for *H.pylori* by urea breath test or histology and interviewed a representative of each participating household about relevant household exposures using a structured questionnaire. We estimated odds ratios (OR) and 95% confidence intervals (95% CI) for associations of household characteristics with individual *H.pylori* status using logistic regression with a random effect for household clustering. We selected the following exposures for a multivariable model based on a crude OR <0.67 or >1.50 and a p-value <0.2: sex; age; ethnicity; # of household members; persons per bedroom; highest education level in household; public or private housing; car ownership; travel to southern Canada; # of household moves in past 5 years; years in house; carpeting in house; sewage or water pipes freezing; use of river water; evidence of mice in house; # of animals around house. We collected data for 412 households containing 1232 individuals; 684 individuals had *H.pylori* results (63% *H.pylori*-positive). From the 526 participants with complete data (63% *H.pylori*-positive), we report the adjusted OR(CI) for socioeconomic status (SES) variables: 0.91(0.38-2.2) for any household member with Grade 12 or equivalent and 0.42(0.19-0.93) for post-secondary education compared to <Grade 12 education of all household members; 1.8(0.87-3.9) for public housing versus private; 0.62(0.31-1.2) for owning a car versus not owning one. These results show low household SES associated with increased odds of *H.pylori* infection among household members. Estimates for other household exposures will be presented.

0122

STUDY OF THE PREVALENCE AND ECOLOGICAL ASPECTS OF INTESTINAL PARASITES OF THE MAXAKALI BRAZILIAN INDIGENOUS PEOPLE.

George Luiz Lins Machado Coelho*, Rafael Martins, Maria Terezinha Bahia, Maria Beatriz Pena e Silva, Leite Nacife, Keila, Furbino Barbosa, Valeska, Natiely Vianna, Cássio, Zumerle Masioli (Universidade Federal de Ouro Preto)

The prevalence of intestinal parasites is high among Amerindian populations and there are serious inequalities regarding health and healthcare of indigenous peoples in Brazil. The intestinal parasites are a major cause of morbidity in the indigenous Maxakali ethnicity. The goal of this study was to determine prevalence, richness and composition of the intestinal parasites in three villages of Maxakali ethnicity. Stool samples from 152 individuals were collected from the villages Novila, Vila Nova and Zé Pirão located in the state of Minas Gerais in the southeast of Brazil. The parasitological exams were performed through the TF-Test technique. The prevalence of total intestinal parasites was 91% and considering only the pathogenic species was 74%. The prevalent species were: *Entamoeba coli* (78%), *Endolimax nana* (63%), *Iodamoeba butschlii* (21%), *Entamoeba histolytica/E. dispar* (18%), *Giardia duodenalis* (14%), hookworms (39%), *Schistosoma mansoni* (29%), *Hymenolepis nana* (15%), *Strongyloides stercoralis* (16%) and *Trichuris trichiura* (3%). Zé Pirão village has less richness of pathogenic species than the others ($p<0.001$). The total parasites composition differs between different villages ($p=0.003$) and age groups ($p=0.049$). Cluster analysis between age groups revealed two groups, one consisting of adolescents and another of children and adults. In cluster analysis between villages there was a group of Novila and Zé Pirão and another to Vila Nova. The high prevalence could be attributed to lack of sanitary infrastructure, inadequate hygiene, and environmental conditions and also to contact with intermediate hosts. This indicates the need for implementation of sanitation and health education measures, in addition to mass treatment. Low parasites richness in the village Zé Pirão probably occur due to a higher organizational level of the village.

0121-S/P

THE EFFECTS OF COMMUNITY HEALTH WORKERS INTERVENTION ON CARIES PREVENTION BEHAVIORS AMONG IMMIGRANT CHILDREN IN TAIWAN

Kuan-Yu Lin*, Yi-Ching Lin, Hsiao-Ling Huang (Kaohsiung Medical University, Taiwan)

In Taiwan, The caries index (dmft) in immigrant children is higher than native children. The goal of this study is to evaluate the efficacy of community health workers (CHWs) intervention program to increase immigrant mothers and their children's caries prevention behaviors. Vietnamese and Indonesian women who have 2-6 years old children were recruited and randomized to receive brochure only or a CHW intervention. Of the 56 women, 31 and 25 are randomized to intervention and control group. Mothers in intervention group were taught about oral hygiene knowledge and techniques four times at 4-week period by eligible CHWs who used training manual, bilingual brochure, dental model and teeth cleaning kit in their outreach. Questionnaire was used to collect the data in oral health behaviors from baseline to follow-up. According to data of questionnaire analysis, mothers in the CHW arm had significant increase in the minutes of brushing teeth ($p<0.001$), using modified Bass brushing technique ($p<0.001$), dental floss used ($p<0.001$) and choosing toothpaste with fluoride ($p=0.022$). They also increased in the habit of brushing after eating out from 71% to 90%. Compare to the control group, children whose mother in the intervention group tended to add teeth-brushing over three minutes ($p=0.006$), and mother would assist their children brushing teeth over three minutes ($p<0.001$). In addition, there are significant stage changes between intervention and control group, including the minutes of children's teeth brushing ($p=0.046$), and the minutes of mothers assisting children brushing teeth ($p=0.043$). Mothers in intervention group were more likely to assist in child brushing over three minutes per time [Odds Ratio (OR)=4.55, 95%CI=1.37-15.08]. The CHWs intervention were effective on improving mothers and their children's oral hygiene behaviors. Key word: community health worker, oral health, immigrant women

0123

MACROSOMIA, PERINATAL AND INFANT MORTALITY IN CREE COMMUNITIES IN QUEBEC, 1996-2010

Zhong-Cheng Luo*, Lin Xiao, Dan-Li Zhang, Jill Torrie, Nathalie Auger, Nancy Gros-Louis, McHugh (Xinhua Hospital, Shanghai Jiao-Tong University School of Medicine, Shanghai, China)

Objective: Cree births in Quebec are characterized by the highest reported prevalence of macrosomia (~35%) in the world. It is unknown whether Cree births are at greater elevated risk of perinatal and infant mortality than other First Nations relative to non-Aboriginal births in Quebec, and if macrosomia may be related. The present study sought to address these important questions. **Methods:** This was a population-based retrospective birth cohort study using the linked birth-infant death database for singleton births to mothers from Cree ($n=5,340$), other First Nations ($n=10,810$) and non-Aboriginal ($n=229,960$) communities in Quebec, 1996-2010. Community type was ascertained by residential postcode and municipality name. The primary outcomes were perinatal and infant mortality. **Results:** Macrosomia (birth weight for gestational age >90th percentile) was substantially more frequent in Cree (38.0%) and other First Nations (21.9%) vs non-Aboriginal (9.4%) communities. Comparing Cree and other First Nations vs non-Aboriginal communities, perinatal mortality rates were 1.52 and 1.34 times higher, and infant mortality rates 2.27 and 1.49 times higher, respectively. The risk elevations in perinatal and infant death in Cree communities attenuated after adjusting for maternal characteristics (age, education, marital status, parity), but became greater after further adjustment for birth weight (small, appropriate, or large for gestational age). **Conclusions:** Cree communities had greater risk elevations in perinatal and infant mortality than other First Nations relative to non-Aboriginal communities in Quebec, Canada. The high prevalence of macrosomia did not contribute to the elevated risk of perinatal and infant mortality in Cree communities (mortality rates would be even higher if they had similar birth weights as non-Aboriginal births).

0124-S/P

ESTIMATED NUMBER OF INCARCERATIONS ATTRIBUTABLE TO MODIFIABLE OR MANAGEABLE CO-MORBIDITY IN THE UNITED STATES AND CANADA. Kathryn McIsaac*, Angela Mashford-Pringle, Flora Matheson (St. Michael's Hospital, Centre for Research on Inner City Health, Toronto ON)

Background: The United States has one of the highest incarceration rates in the world; Canada's incarceration rate is more moderate but has been rising in recent years. Increasingly, persons with serious co-morbidities are being incarcerated and these co-morbidities may have played an etiologic role in their detention. The objective of our research was to determine the number of incarcerations that could be attributed to three modifiable or manageable co-morbidities in the United States and Canada: traumatic brain injury (TBI), substance use, and mental illness. We present results from TBI herein and will present results from mental illness and substance use at the Congress. **Methods:** We calculated a pooled relative effect of TBI on incarceration from four studies. These studies were identified from a comprehensive literature search of published work between 1995 and 2015. We obtained the lifetime prevalence of TBI in the United States and Canada from published literature and we obtained the number of unique persons incarcerated in the most recent year from publicly available national statistics. The proportion of incarcerations in Canada and the United States attributable to TBI was obtained using a modified Levin's formula. **Results:** Those who had sustained a TBI had a 2.61 times greater risk of incarceration than those who had not (95% CI: 2.47-2.76). We estimated approximately 3% of incarcerations in the United States and Canada could be attributed to TBI. This translates into 5234 unique incarcerations in Canada in 2012/2013 and 69 939 in the United States in 2013. **Conclusions:** These results indicate that effective rehabilitation programs and symptom management strategies for TBI could reduce the overall number of people incarcerated in Canada and the United States. It could also improve public safety. Given the increasing burden of TBI in the population, and the expense of incarceration, primary and secondary prevention programs are warranted.

0125

A RETROSPECTIVE STUDY EXAMINING THE GEOGRAPHIC VARIATION IN AVAILABILITY OF YOUTH-FRIENDLY CONTRACEPTIVE SERVICES IN POST-CONFLICT BURUNDI Imelda Moise* (University of Miami)

Burundi has severely been affected by over a decade of civil unrest that has devastated the country's health care system and infrastructure. The objective of this study is to examine the geographical variation in the availability of youth-friendly sexual and reproductive health services across a census of health facilities in post-conflict Burundi. In this study we use data from a census of health care facilities, both private and public, Geographical Information Systems (GIS) and binary logit models to assess the geographical variation and associations between facility characteristics and youth friendliness. Preliminary analysis suggests significant regional heterogeneity in youth-friendly sexual and reproductive health services. The localized distribution pattern of youth-friendly sexual and reproductive health services may be disproportionately felt by the rural health facilities, who often have low levels of specially trained staff to offer sexual and reproductive health services to adolescents and young adults and structural barriers to the provision of youth-friendly services than urban health facilities. This suggests a need for policy approaches that take local situations into account.

0130-S/P

PREVALENCE OF HYPERGLYCEMIA AND RELATED CARDIOVASCULAR DISEASE RISK FACTORS IN A MINOR ETHNIC COMMUNITY (BIHARIES) OF DHAKA CITY

Sabrina Ahmed*, Pradip Sengupta, Palash Banik, Mansur Ahmed (Bangladesh Institute of Health Sciences, Dhaka, Bangladesh)

Introduction: Hyperglycemia causes 16% of DALY loss in low income countries. Prevalence of Diabetes was 6.1% in Bangladesh general population in 2010. This study was aimed to estimate the prevalence of hyperglycemia and its related cardiovascular risk factors in a minor ethnic group (Baharies) migrated from India to Bangladesh in 1947. **Method:** A cross sectional study conducted on 300 respondents selected purposively. Blood glucose (OGTT) and cardiovascular risk factors determined by blood Pressure, BMI, Cholesterol, Waist Hip Ratio. **Results:** Males were 67% and females were 33%. Mean age of males and females were 50.9±13.2 and 45.4±12.5 respectively and 58.3% were found illiterate. Male employed was 36% and females mostly housewives 69.7%. The prevalence of hypertension was 22.7% (Both sexes). Prevalence of diabetes was 29.3% (both sexes). The prevalence of IGT was found high (18%) which was more or less equal in males and females. Prevalence of high cholesterol level was found 45.7% respondents (nearly equal in both sexes). The prevalence of overweight and obese 38% (CI-0.25-10.16) and 36% (CI -0.35-14.85) respectively. The prevalence of smoking was 9% and prevalence of alcohol consumption was very low (only 3.3%). Prevalence of low physical activity was 36.3%. Extra salt users were 26.7%. Significant association ($p<0.05$) of high blood pressure was found with age, education and monthly income. **Conclusion:** The prevalence of hyperglycemia and IGT in the study population was 29.3% and 18% respectively, much higher than general population of Bangladesh. There was association between hyperglycemia and socioeconomic condition and anthropometric measurements.

0132

ASSOCIATION BETWEEN DIETARY PATTERNS AND METABOLIC SYNDROME IN BRAZILIAN ADULTS (THE LONGITUDINAL STUDY OF ADULT HEALTH: ELSA-BRASIL).

Bruce Duncan*, Michele Drehmer, Mark Pereira, Maria Inês Schmidt (Postgraduate Program in Epidemiology, School of Medicine, Federal University of Rio Grande, Porto Alegre, Brazil.)

Relationships between dietary patterns and metabolic syndrome risk are scarce in populations from developing countries. We aimed to identify dietary patterns through principal component analysis (PCA) and also through the Dietary Approaches to Stop Hypertension (DASH) diet quality score, and then to assess their associations with the metabolic syndrome. The Longitudinal Study of Adult Health includes 15,105 adults, ages 35 to 74 years, enrolled from universities and research institutions in six Brazilian capital cities between 2008 and 2010. We excluded participants with known diabetes, cardiovascular disease, cancer, and those with reported energy intake ≤ 2 nd or ≥ 98 th percentile. Diet was assessed by a food frequency questionnaire. To characterize adherence to the DASH diet we considered high intake of fruit, vegetables, nuts, legumes, whole grains and low-fat dairy products as well as low intake of sodium, red and processed meats, and sweetened beverages. We computed a metabolic risk score (MetScore) as the mean Z-score of waist circumference, systolic blood pressure, (-) HDL-cholesterol, fasting triglycerides, and fasting glucose. PCA identified three dietary patterns: "Fruits/Vegetables", "Fast Food/Desserts" and "Common Brazilian". In multivariable linear regression analyses, adjusted for demographics, behavioral factors and BMI, we observed a graded positive association with the MetScore for the Common Brazilian pattern ($p<0.001$), which is characterized by high intake of white rice, beans, red meat and low intake of whole grains and dairy. We also found a graded inverse association between the DASH score and the MetScore ($p=0.016$). Associations were null for the other two dietary patterns. These findings support recommendations to follow a diet based on nutrient rich plant foods and with low intake of meat, refined grains and sodium.

0131-S/P

IS THE RELATIONSHIP BETWEEN GLYCATED HAEMOGLOBIN AND FASTING PLASMA GLUCOSE SIMILAR AT COASTAL AND HIGH ALTITUDE IN PERU?

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Objective: Haemoglobin profile in blood is distinct at high altitude due to changes in concentration and conformation of the haemoglobin molecule. Differences in glucose metabolism at altitude have been described. This study explores the relationship between glycated haemoglobin (HbA1c) and fasting plasma glucose (FPG) in populations living at sea level and at an altitude of more than 3,000 meters. **Research Design and Methods:** We evaluated 3,613 Peruvian adults with unknown diabetes status, from two settings: sea level and high altitude. Analyses were done for each setting separately. Linear, quadratic and cubic regression models were performed to assess the relationship between HbA1c and FPG. Diagnostic performance of HbA1c was evaluated considering FPG as gold standard. ROC curves were constructed and concordance between HbA1c and FPG was evaluated using Kappa index. **Results:** At sea level and high altitude, mean haemoglobin levels were 13.5 and 16.7 mg/dL; mean HbA1c were 5.9 and 5.8% ($p<0.01$); mean FPG were 105 and 91.3 mg/dL ($p<0.001$), respectively. Quadratic and linear adjusted models were the best at sea level and high altitude, respectively. Using $FPG \geq 126$ mg/dL as a gold standard, HbA1c cut-off of 6.5% had a sensitivity of 87.3% (95%CI 76.5-94.4) and 40.9% (95%CI 20.7-63.6), respectively. **Conclusions:** A distinct relationship between HbA1c and FPG was observed at high altitude compared to sea level, bringing into question the use of these tests for the identification of diabetes in this setting. Longitudinal studies with diabetic complications as endpoints are required.

0133

COST-UTILITY EVALUATION OF CONTINUING EDUCATION FOR THE MANAGEMENT OF TYPE 2 DIABETES MELLITUS USERS IN ITAMARACÁ, PERNAMBUCO – BRAZIL

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Purpose: To determine the cost-utility of continuing education for the management of subjects with type 2 Diabetes Mellitus (T2DM), in Itamaracá, Pernambuco - Brazil, in 2011. **Methods:** It's a cost-utility evaluation, using the Markov model to simulate the results in health scenarios, from the perspective of the health system. It was considered an analytic horizon of 20 years and selected the category of direct medical costs. Data were obtained from primary source, SERVIDIAH study, and secondary sources, of health information systems and literature. The reference scenario represents the standard health care management performed in public health services. The simulated scenarios for post-intervention's results were based on the suggestion of consulted experts. **Results:** The average individual, representative Pernambuco's population, was female, 61 years old and diagnosed with T2DM for 8.7 years, and other clinical characteristics that influence the calculation of the transition probabilities were gathered. For the reference scenario, the cost for one individual was calculated for 2011: without complications (US\$ 491.04), with microvascular complications (US\$ 774.23), macrovascular complications (US\$ 1,945.95) and both complications (US\$ 2,229.14). The incremental cost for the implementation of the intervention was US\$ 242.42 per individual, later added to the cost for standard management in the post-intervention scenarios. At the cost-utility evaluation, only the first simulated scenario was cost-effective, with Incremental Cost-effectiveness Ratio (ICER) of US\$ 7,362.70/QALY. **Conclusions:** The ICER presented suggests that the intervention isn't a cost-effective alternative. Given the uncertainties about the effectiveness of continuing education for professionals in the PHC on the health of users, it is necessary to conduct in-depth studies on the association between these variables.

0134- S/P

DEPRESSIVE SYMPTOMS, PREDIABETES, AND INCIDENT DIABETES IN AN ENGLISH COMMUNITY SAMPLE

Eva Graham*, Bonnie Au, Norbert Schmitz (Department of Epidemiology, Biostatistics and Occupational Health, McGill University)

Aim: To assess whether the association between depressive symptoms and incident diabetes differs in older adults with prediabetes and normal glucose levels. **Methods:** The study sample included 4129 participants from the English Longitudinal Study of Ageing (ELSA), a panel study of English adults aged 50+. Participants were followed from Wave 2 (2004-2005) to Wave 6 (2012-2013). Baseline depressive symptoms were measured using the 8-item Centre for Epidemiological Studies – Depression scale and categorized as no/low, mild, or high symptoms. Prediabetes status was measured at baseline using haemoglobin A1c measurements. Participants reported incident diagnosed diabetes at follow-up interviews. Cox proportional hazards regression estimated relative hazard ratios of incident diabetes and included adjustment for baseline demographic, lifestyle, and clinical characteristics. Measures of additive and multiplicative interaction were calculated for interactions between depressive symptoms and prediabetes. Survey weights and cluster information were used to generalize to the older English population. **Results:** Participants were followed for a mean of 6.66 years (SD=2.02), and 157 participants were diagnosed with diabetes (3.80%). Relative to participants with normal glucose levels and no/low depressive symptoms at baseline, the adjusted hazard ratios were 0.85 (95% CI 0.40-1.82) and 1.62 (95% CI 0.84-3.15) for those with normal glucose levels and mild depressive symptoms and normal glucose levels and high depressive symptoms, respectively. The adjusted hazard ratios for participants with prediabetes and no/low depressive symptoms, mild depressive symptoms, and high depressive symptoms at baseline were 4.84 (95% CI 3.08-7.60), 7.17 (95% CI 4.00-12.88) and 7.77 (95% CI 4.33-13.93), respectively. **Conclusion:** Mild and high depressive symptoms may be associated with more cases of diabetes development in older adults with prediabetes compared to those with normal glucose levels.

0136

DIABETES MELLITUS AS RISK FACTOR FOR HERPES ZOSTER IN US ADULTS

Kelly Johnson*, Chrisann Newransky, Jianbin Mao, Jeffrey McPheeters, Camilo Acosta (Merck & Co., Inc., Kenilworth, NJ, USA)

BACKGROUND: Diabetes has been associated with an increased risk of HZ. This study improves on previous research by using a nationwide database, large study population, longer follow-up period, adequate adjustment for potential confounders, and examination of HZ risk and DM by age group. **OBJECTIVES:** To assess DM as a risk factor for HZ. **METHODS:** Data for this retrospective cohort study were extracted from commercial and Medicare Advantage plans in Optum claims databases for adults aged ≥ 18 who had ≥ 12 months of continuous enrollment. The DM cohort consisted of 250K patients randomly selected from ~2.3M enrollees with ≥ 2 claims with diagnosis code for diabetes (ICD-9-CM: 250.xx) in 2006-2011. DM type was based on the 5th digit of diagnosis code and insulin use. The non-DM (NDM) cohort consisted of 1.5 million patients randomly selected from ~73 million enrollees. Incident HZ cases were patients with ≥ 1 claim for HZ (ICD-9-CM: 053.0-053.11, 053.14-053.9) in any position. Incident post-herpetic neuralgia (PHN) cases must have HZ and ≥ 1 claim, 90-365 days post first HZ diagnosis date, for nervous system complications (053.12-13, 053.19) or non-specific neuralgia (729.2) or HZ plus relevant analgesia, anticonvulsant or antidepressant therapy indicated for PHN. Crude and adjusted HZ and PHN incidence by DM status and adjusted Incidence rate ratios (IRR) were calculated via Poisson regression models. **RESULTS:** In the DM cohort, a total of 3,900 HZ cases accrued over 426,242 person-years of follow up. In DM cohort with HZ, a total of 222 PHN cases accrued over 2,048 person-years of follow up. Figures 1 & 2 show HZ and PHN crude incidence by age. Only 4.5% of DM were Type 1 DM. After controlling for age, sex, comorbidity index, immunosuppression, and US region, the HZ IRR for patients with DMT2 vs. NDM was 1.16 (95% CI=1.10,1.21, $p<0.001$). Stratified regression models by age showed that patients with DMT2 had significantly higher HZ rate than NDM among both patients aged 18-59 (1.21, 95%CI=1.13, 1.29, $p<0.001$) and aged 60+ (1.09, 95%CI=1.02, 1.17, $p=0.013$). **CONCLUSIONS:** Overall, HZ incidence rate is 16% higher in patients with DMT2 than in NDM. Among patients aged 18-59 years, however, HZ rate is 21% higher for patients with DMT2 than for NDM.

0135-S/P

THE RELATIONSHIP BETWEEN PERIODONTAL DISEASE AND ORAL HEALTH QUALITY OF LIFE IN TYPE II DIABETIC PATIENTS

Yuan-Jung Hsu*, Feng-Chieh Yen, Hsiao-Ling Huan (School of Dentistry, Kaohsiung Medical University, Kaohsiung City, Taiwan)

In Taiwan, there are approximately 1.75 million (9.92%) adults with diabetes. People with diabetes are at a greater risk of incident and prevalent chronic periodontitis and have more severe chronic periodontitis than those without diabetes do. Periodontal disease may directly affect oral health-related quality of life (OHQoL), aspects of which include difficulty speaking, bad breath, discomfort while eating, taste disorders, and general dissatisfaction with oral health. This study is to explore the relationship between periodontal disease and the OHQoL among patients with type II diabetes. This was a multicenter, cross-sectional study. Overall, 491 patients with diabetes who met the criteria were recruited. We used a face-to-face interview with a close-ended questionnaire to collect the data. The OHQoL was measured using the Taiwanese version of the Oral Health Impact Profile-14 (OHIP-14T). Periodontal disease was classified into three groups: “no periodontal disease (Non-PD),” “no treatment recommendation (Non-TR),” and “treatment recommendation (NT).” Data were analyzed using multiple regression. Compared with the Non-PD group, the OHIP score was significantly higher in the Non-TR group (adjusted difference [aDiff = 2.85]) and the NT group (aDiff = 1.48). The Non-TR and TR groups showed significant differences in functional limitation (aDiff = 0.44 and 0.30), physical pain (aDiff = 0.61 and 0.35), and psychological discomfort (aDiff = 0.78 and 0.66) compared with the Non-PD group. The Non-TR group exhibited significant differences in psychological disability (aDiff = 0.41) and social disability (aDiff = 0.25) compared with the Non-PD group. The results suggest that periodontal disease was positively associated with OHQoL in patients with diabetes. Patients advised to receive periodontal treatment had positive changes in psychological disability and social disability.

0140

SEROPREVALENCE AND RISK FACTORS FOR LEPTOSPIROSIS AMONG HIGH-RISK PROFESSIONALS CASABLANCA, MOROCCO 2014, Imad Cherkaoui* (Ministry of health Morocco)

Background: Leptospirosis is a bacterial zoonosis of public health concern worldwide associated occupational activities. This is a first study conducted in Morocco with an objective to determine the seroprevalence of leptospirosis among high-risk groups and to identify their risk factors. **Methods:** We conducted a cross-sectional study in three sites. Sera were collected during February 2014 from 208 professional volunteers in the municipal slaughterhouse, 121 in a poultry market and 160 in the port of Casablanca and tested by both ELISA (IGM, IGG) and the Microscopic agglutination test (MAT) with a cut point of 1:50. Information on risk factors including personal data, place of residence, clinical history, potential exposure and preventive measure use were recorded in a questionnaire. **Results:** The seroprevalence considering a seropositivity by either ELISA or MAT was highest among poultry workers (23.3%) than in fishing workers (11.6%) and abattoir workers (7.4%) ($P < 0.000$). 10 serovars were identified (7 *icterohaemorrhagiae*, 1 *australis*, 1 *hardjobovis*, 1 non identified). In the multivariate analysis by logistic regression only a specific place of residence from all the city was found independently associated with seropositivity by either ELISA or MAT ($p = 0.005$). Most of the serovar *icterohaemorrhagiae* were identified in subjects from a particular professional category (poultry peelers) living in this specific area located near the poultry market. **Conclusions:** This study demonstrated that poultry market workers were at substantial risk of exposure to leptospirosis because of bad hygienic conditions and presence of rodents in both their workplace and their place of residence. Preventive measures should be taken by local authorities targeting high risk area. **Keywords:** leptospirosis, high risk work, seropositivity, ELISA, MAT, Morocco

0142

PRECONCEPTION PERFLUOROALKYL AND POLYFLUOROALKYL SERUM CONCENTRATIONS AND INCIDENT PREGNANCY LOSS, LIFE STUDY Germaine Buck Louis*, Katherine Sapra, Dana Boyd Barr, Jose Masiog, Rajeshwari Sundaram (NICHD)

Introduction: Perfluoroalkyl and polyfluoroalkyl substances (PFASs) have been associated with diminished fecundity resulting in a longer time-to-pregnancy, though with equivocal findings. We assessed preconception PFAS concentrations and prospectively observed pregnancy loss to address data gaps about their relationships with fecundity impairments. **Methods:** 501 couples discontinuing contraception to become pregnant were recruited from Michigan and Texas, 2005-2009. Following baseline interviews and anthropometric assessments, all women provided blood samples for the quantification of 7 PFASs: 2-N-ethyl-perfluorooctane sulfonamide acetate (Et-PFOSA-AcOH), 2-N-methyl-perfluorooctane sulfonamide acetate (Me-PFOSA-AcOH), perfluorodecanoate (PFDeA), perfluorononanoate (PFNA), perfluorooctane sulfonamide (PFOSA), perfluorooctane sulfonate (PFOS), and perfluorooctanoate (PFOA). Women completed daily then monthly journals on lifestyle, hCG pregnancy test results, and pregnancy symptoms. Pregnancy loss was identified by conversion from a positive to a negative pregnancy test, onset of menses or clinical confirmation. Chemicals were log transformed and rescaled by their standard deviations for analysis. Cox proportional hazard models were run to estimate hazard ratios (HR) and 95% confidence intervals (CIs) for pregnancy loss adjusting for ages, prior loss conditional on gravidity, body mass index, smoking, and alcohol consumption up to the timing of loss. **Results:** Pregnancy loss incidence was 28% (98/344 women). None of the adjusted HRs achieved significance: Et-PFOSA-AcOH (1.04; 0.87, 1.23), Me-PFOSA-AcOH (0.78; 0.61, 0.99), PFDeA (0.82; 0.65, 1.04), PFNA (0.85; 0.69, 1.05), PFOSA (0.74; 0.50, 1.09), PFOS (0.80; 0.64, 0.99), and PFOA (0.93; 0.74, 1.16). **Conclusions:** We did not observe an association between preconception PFAS concentrations and prospectively observed pregnancy loss, corroborating findings relying on self-reported pregnancy outcomes.

0141

OCCURRENCE OF UNINTENTIONAL HEAD INJURIES FOLLOWING EARLY LIFE EXPOSURE TO TETRACHLOROETHYLENE-CONTAMINATED DRINKING WATER Ann Aschengrau*, Lisa Gallagher, Michael Winter, Veronica Vieira, Patricia Janulewicz, Thomas Webster, David Ozonoff (Boston University)

Background: Tetrachloroethylene (PCE) is a well-recognized neurotoxicant among adults with occupational exposures. Now there is emerging evidence that exposure early in life has neurological consequences such as attention and vision deficits, diminished motor skills, and an increase in risk-taking behaviors. Thus, early life exposure to PCE could plausibly increase the likelihood of unintentional head injuries. We conducted a retrospective cohort study to examine this hypothesis among residents of Cape Cod, Massachusetts. **Methods:** A total of 1,372 participants born between 1969 and 1983 were studied, including 544 who were unexposed and 828 with early life exposure to PCE from the vinyl-liner of water distribution pipes. Participants provided information on unintentional head injuries, demographic characteristics, and a residential history in a self-administered questionnaire. PCE exposure was assessed using water distribution system modeling software that incorporated a leaching and transport algorithm. **Results:** Overall, 27.6% of participants reported at least one unintentional head injury. We found no evidence of an increased risk among exposed participants for any type of head injury, including those involving a doctor's visit, loss of consciousness, or a concussion. For example, the risk ratio for a head injury involving a doctor's visit was 0.9 (95% CI: 0.8-1.1). Nor were there any associations for head injuries stemming from motor vehicle accidents or recreational activities. No dose-response relationship was observed in relation to increasing PCE exposure. **Conclusions:** This study did not find evidence of an increased risk of unintentional head injuries among participants with early life exposure to PCE. Limited information on contextual factors at the time of the head injury (i.e. alcohol and seat belt use) should be considered when evaluating these results, as they are relevant for an underlying hypothesis about increased risk-taking.

0143-S/P

ASSOCIATION OF INORGANIC ARSENIC WITH OBESITY: FINDINGS FROM THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES) Catherine Bulka*, Sithembile Mabila, Mary Turyk, Maria Argos (University of Illinois at Chicago)

Background: Human exposure to inorganic arsenic predominantly occurs through ingestion of contaminated drinking water and food sources. Chronic arsenic exposure has been associated with cardiovascular disease and diabetes. While obesity is an important risk factor for cardiovascular disease and diabetes, little is known about the specific relationship between arsenic and obesity. **Methods:** To evaluate the cross-sectional association between arsenic exposure and obesity, we analyzed a representative sample of 4,105 U.S. adults, aged 20 to ≥ 80 , using NHANES data from 2007-2010. Arsenic exposure was assessed by urinary total arsenic concentration, accounting for non-toxic seafood derived arsenic, and standardized by urinary creatinine. Obesity was determined by measured body mass index (BMI; kg/m²) and waist circumference (cm). Crude and adjusted survey-weighted linear regression models were performed. **Results:** Creatinine-adjusted urinary inorganic arsenic concentrations were inversely associated with log-transformed BMI (p for trend = 0.0003) and log-transformed waist circumference (p for trend = 0.0001). The highest quintile of inorganic arsenic concentration was associated with a 5% (95% CI: 3 to 8%) lower BMI and a 4% (95% CI: 2 to 6%) smaller waist circumference compared to the lowest quintile. Adjustments for age, gender, race, thyroid problems, diabetes, smoking status, seafood consumption, rice consumption, red blood cell folate, serum folate, socioeconomic status, and survey cycle did not appreciably alter these results, nor was there any evidence of effect modification. **Conclusions:** While inorganic arsenic exposure has generally been positively associated with cardiovascular and cardiometabolic diseases, we observed a negative association between urinary inorganic arsenic concentrations and obesity. It is unclear if this is a true association or if this finding reflects differential arsenic absorption, metabolism, or storage by adiposity level.

0144

ASSOCIATION OF DIOXINS, FURANS AND DIOXIN-LIKE PCBS IN HUMAN BLOOD WITH NEPHROPATHY AMONG US TEENS AND YOUNG ADULTS

Charles Everett*, Olivia Thompson (US Department of Veterans Affairs)

We assessed the association of 3 chlorinated dibenzo-p-dioxins, a chlorinated dibenzofuran, and 4 dioxin-like polychlorinated biphenyls (PCBs) in human blood with nephropathy (microalbuminuria or macroalbuminuria) among teens and young adults (12-30 years old) having normal glycohemoglobin (A1c <5.7%). The data were derived from the 1999-2004 National Health and Nutrition Examination Survey (unweighted N=1504, population estimate=38,806,338). The proportion of those with one or more of the eight dioxin-like compounds elevated, using cut-off values previously described, was 9.9%. The 4 chemicals associated with normal A1c and nephropathy were 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin, PCB 126, PCB 169, and PCB 156. The proportion with one or more of these 4 dioxin-like chemicals elevated was 3.9% (unweighted N=46) and the odds ratio for normal A1c and nephropathy was 7.08 (95% CI 1.79-28.06). The association was strong among females, but among males there were no cases of normal A1c and nephropathy when one or more of the 4 dioxin-like chemicals were elevated, and therefore no association. This study of teens and young adults provides evidence that females progress from normal A1c without nephropathy to normal A1c with nephropathy due to dioxin-like chemicals, beginning early in life.

0146-S/P

HOUSEHOLD AIR POLLUTION FROM BIOMASS COOKSTOVES AND AIRWAY INFLAMMATION AMONG WOMEN IN RURAL HONDURAS

Megan Graham*, Maggie L. Clark, Sarah Rajkumar, Bonnie N. Young, Annette M. Bachand, Robert Brooke, Tracy L. Nelson, John Volckens, Stephen J. Reynolds, Christian L'Orange, Sebastian Africano, Anibal B. Pinel, Jennifer L. Peel (Department of Environmental and Radiological Health Sciences, Colorado State University, Fort Collins, CO, USA.)

Background: Nearly 3 billion people worldwide rely on burning biomass solid fuel for cooking and heating. The resulting household air pollution is the third leading risk factor of morbidity and mortality globally, resulting in an estimated 3.5 million premature deaths per year and 110 million disability-adjusted life years. Evidence suggests that components of air pollution resulting from biomass burning may be associated with airway inflammation in women.

Methods: We conducted a cross-sectional study in rural Honduras to explore the association between airway inflammation and 24-hour exposure to particulate matter less than 2.5µm (PM2.5) among 150 wood-burning cookstove users. In order to detect airway inflammation, we used a portable device (NIOX Vero) to measure fractional exhaled nitric oxide (FeNO), a biomarker for airway inflammation. A total of 139 women completed the FeNO assessment; we used the average of three valid measures. We utilized multiple linear regression to assess the association of FeNO levels with concentrations of kitchen and personal PM2.5 adjusting for confounders. **Results:** FeNO levels ranged from 5ppb to 95ppb (mean=17.1, median=15.0, standard deviation [SD]=9.5). As expected, a 10-year increase in age was associated with a 2.5ppb increase in FeNO [CI]: -1.832, 3.1186. No evidence of a positive association was observed between log transformed PM2.5 and FeNO (kitchen PM2.5: 0.3ppb, 95% confidence interval [CI]: -1.4, 2.0; personal PM2.5: 0.6ppb, [CI]: -1.8, 3.1.

Discussion: Although results from our cross-sectional study suggested no impact of PM2.5 on airway inflammation, the positive association between age and FeNO demonstrated feasibility for this health endpoint in a field setting. Further longitudinal analyses evaluating household air pollution and within-person changes in FeNO are warranted.

0145-S/P

DIALKYL PHOSPHATE URINARY METABOLITES AND CHROMOSOMAL ABNORMALITIES IN HUMAN SPERM

Zaida Figueroa*, Heather Young, John Meeker, Sheena Martenies, Dana Boyd Barr, George Gray, Melissa Perry (Department of Environmental and Occupational Health, George Washington University, Milken Institute School of Public Health)

The past decade has seen numerous human health studies seeking to characterize the impacts of environmental exposures, such as organophosphate (OP) insecticides, on male reproduction. This study investigated environmental exposures to OPs and their association with the frequency of sperm disomy among adult men. Men (n=159) from a study assessing the impact of environmental exposures on male reproductive health were included in this investigation. Multi-probe fluorescence in situ hybridization (FISH) was used to determine XX18, YY18, XY18 and total disomy in sperm nuclei. Urine was analyzed using gas chromatography coupled with mass spectrometry for concentrations of six dialkyl phosphate (DAP) metabolites of OPs. Poisson regression was used to model the association between OP exposures and disomy measures. Incidence rate ratios (IRRs) were calculated for each disomy type by exposure quartiles for most metabolites controlling for potential confounders. A significant positive trend was seen for increasing IRRs by exposure quartiles of dimethylthiophosphate (DMTP), dimethyldithiophosphate (DMDTP), diethylphosphate (DEP) and diethylthiophosphate (DETP) in XX18, YY18, XY18 and total disomy. A significant inverse association was observed between dimethylphosphate (DMP) and total disomy. Findings for total ΣDAP metabolites concealed individual associations as those results differed from the patterns observed for each individual metabolite. Dose-response relationships appeared nonmonotonic, with most of the increase in disomy rates occurring between the second and third exposure quartiles and without additional increases between the third and fourth exposure quartiles. This is the first epidemiologic study of this size to examine the relationship between OP exposures and sperm disomy outcomes. Our findings suggest that increased disomy rates were associated with specific DAP metabolites, suggesting that the impacts of OPs on testis function need further characterization in epidemiologic studies.

0147

THE INTERACTION OF AIR POLLUTION AND ADVERSE CHILDHOOD EXPERIENCES ON CARDIOVASCULAR DISEASE

Anjum Hajat*, Marnie Hazlehurst, Paula Nurius (University of Washington)

It has been hypothesized that individual level psychosocial stressors and environmental hazards work together to exacerbate disease processes. Specifically the two exposures share similar biological pathways such as inflammation, sympathetic nervous system activation and epigenetic modifications. In this study we examine a severe psychosocial stressor, adverse childhood experiences (ACEs), and air pollution, an environmental hazard known to cause cardiovascular disease. Data from the Washington State Behavioral Risk Factors Surveillance System (BRFSS) from 2009 – 2011 were pooled for this cross-sectional analysis. We examined self-reported myocardial infarction, stroke, diabetes, obesity, hypertension and coronary heart disease as outcome measures. Particulate matter less than 2.5 micrometers in diameter (PM2.5), PM10 and nitrogen dioxide (NO2) were measured from land use regression models and defined at the participant's zip code of residence the year prior to the collection of survey data. ACEs were defined with an 8-point scale asking about parental/caretaker abuse, neglect or hardship. Logistic regression models were used to evaluate the multiplicative interaction of ACEs and air pollution on CVD related outcomes. After adjusting for age, race, sex, urbanicity, individual and neighborhood SES characteristics, smoking, alcohol use and exercise, we found no expected interactions between air pollutants and ACEs on the CVD related outcomes ascertained. In some cases odds ratios suggested protective effects for the population who experience both high ACEs and high levels of air pollution. These preliminary results require further assessment to better understand these unexpected findings.

0148-S/P

SERUM CONCENTRATIONS OF POLYBROMINATED BIPHENYLS AND THYROID CONDITIONS IN A COHORT OF MICHIGAN WOMEN. Melanie Jacobson*, Lyndsey Darrow, Metrecia Terrell, Dana Barr, M. Elizabeth Marder, Penelope Howards, Michele Marcus (Emory University, Department of Epidemiology)

Normal thyroid function is essential for basic metabolic processes and growth, but is particularly important for female reproduction. There is evidence that exposure to brominated flame retardants may interfere with the endocrine system and specifically thyroid function, but previous studies have been inconsistent. Due to an industrial accident, we examined this question in a highly exposed population that has been followed for more than 40 years. In 1973-74, Michigan residents were exposed to a brominated flame retardant, polybrominated biphenyl (PBB), through an accidental contamination of the food supply. Between 2012 and 2014, PBB-153 was measured in the serum of 393 women from this community between the ages of 18-86, who were exposed directly through diet or indirectly in utero and potentially through breastfeeding. Women completed questionnaires on health conditions, including physician-diagnosed thyroid conditions; behaviors; and demographics. Logistic regression with generalized estimating equations were used to estimate the association between PBB-153 serum concentrations and thyroid conditions. PBB-153 was detected in 91% of women (median=0.19 ng/mL serum). Women exposed to PBB-153 through consumption of contaminated foods were more highly exposed than women exposed in utero and through breastmilk (median exposure=0.28 and 0.02 ng/mL, respectively). A total of 91 women (23.2%) reported a physician-diagnosed thyroid condition after the contamination event. Compared with women in the lowest quartile of PBB-153 exposure, women in higher quartiles had an increased odds of a diagnosed thyroid condition (adjusted odds ratio (aOR)=2.07, 95% confidence interval (CI): 0.9, 4.9, aOR=1.62, 95% CI: 0.7, 4.0, and aOR=1.48, 95% CI: 0.6, 3.8 for the second, third and fourth quartiles, respectively). Results did not change when we excluded women exposed only in utero. These results suggest that PBB-153 exposure may influence thyroid function.

0150-S/P

ENVIRONMENTAL QUALITY IMPACT ON HUMAN MORTALITY AND ITS SPATIAL VARIATIONS IN THE CONTIGUOUS UNITED STATES 2000-2005 Yun Jian*, Lynne Messer, Jyotsna Jagai, Kristen Rappazzo, Christine Gray, Shannon Grabich, Danelle Lobdell (U.S.EPA ORISE fellow)

Assessing the cumulative effects of multiple environmental factors that influence mortality remains a challenging task. This study used the Environmental Quality Index (EQI), and its five domain indices (air, water, land, built and sociodemographic) as a measure of cumulative environmental exposure. Associations between EQI and all-cause and leading cause-specific (heart disease, stroke, and cancer) death rates for counties in the contiguous U.S. (n=3109) were investigated. Random intercept and slope models clustered by climate and rural-urban setting were used to study the spatial variations of effects; heterogeneity across race groups was also examined using random intercept and slope model clustered by race. Population density, smoking and alcohol consumption were adjusted in the models. We found, on average, one standard deviation increase in overall EQI (worse environment) was associated with 2.4% ($\pm 0.8\%$) increase in all-cause death rate, -0.2% ($\pm 1.1\%$) change in heart disease death rate, 2.8% ($\pm 0.7\%$) increase in cancer death rate, and 3.7% ($\pm 1.4\%$) increase in stroke death rate. Among environmental domains, air had the strongest association with all-cause death rate (3.6% ($\pm 0.4\%$)), and on heart-disease (3.1% ($\pm 1.4\%$)) and cancer (2.4% ($\pm 0.5\%$)) death rates. The sociodemographic domain had the most adverse effects on stroke death rate (4.0% ($\pm 1.2\%$)). Spatially the strongest associations for overall environmental were found in the dry area in southwest U.S. Finally, for different races, all-cause death had the strongest association with air quality for white (7.4% ($\pm 0.5\%$)), African American (3.9% ($\pm 1.0\%$)), and Asian (5.8% ($\pm 1.8\%$)), while all-cause death rate of American Indian most associated sociodemographic environment (10.9% ($\pm 0.7\%$)). These results suggest that poor environmental quality, particularly air quality, increases mortality, and that effects vary by climate, rural-urban setting and race. This abstract does not represent EPA policy.

0149

OVERALL ENVIRONMENTAL QUALITY AND INCIDENCE OF CHILDHOOD CANCERS Jyotsna Jagai*, Lynne Messer, Kristen Rappazzo, Yun Jian, Christine Gray, Shannon Grabich, Danelle Lobdell (University of Illinois at Chicago)

Childhood cancer is associated with individual ambient environmental exposures such as hazardous air pollutants and pesticides. However, the role of cumulative ambient environmental exposures is not well-understood. To estimate cumulative environmental exposures, an Environmental Quality Index (EQI) for 2000-2005 was constructed representing five environmental domains (air, water, land, built and sociodemographic) for each U.S. county. Annual county-level, age-adjusted, childhood cancer incidence rates for 2006-2010 from Surveillance, Epidemiology, and End Results Program (SEER) 18 Registries were linked to the EQI. Random intercept fixed slope linear models, for the relationship between EQI quintiles and childhood cancer incidence, were estimated for counties for which data were available (n=611). Incidence rate differences (95% CI) comparing highest quintile/worst environmental quality to lowest quintile/best quality are reported. All cause childhood cancer was positively, though not significantly, associated with EQI (1.20(-2.60, 5.00)). Models were also stratified by four rural-urban continuum codes (RUCC) ranging from metropolitan urbanized (RUCC1) to rural (RUCC4). We observed positive associations between all cause childhood cancer and EQI (RUCC1: 1.79 (0.24, 3.34); RUCC2: 3.45 (-1.05, 5.84), RUCC3: 0.70 (-2.41, 3.81), RUCC4: 6.07 (-2.49, 14.63)). Significant positive associations were seen in only in the most urbanized areas. Further, when assessing associations by individual environmental domains, we observed positive associations in the land, built and sociodemographic domains (2.68 (0.37, 5.00), 0.60 (-4.12, 5.32), 2.43 (-1.69, 6.56) respectively). These results suggest that cumulative environmental exposure is associated with childhood cancer risk, and associations vary by urbanicity. This abstract does not necessarily reflect EPA policy.

0151-S/P

ASSOCIATIONS BETWEEN THE BUILT ENVIRONMENT AND OBJECTIVE MEASURES OF SLEEP: THE MULTI-ETHNIC STUDY OF ATHEROSCLEROSIS (MESA) Dayna Johnson*, Jana Hirsch, Kari Moore, Susan Redline, Ana Diez Roux (Brigham and Women's Hospital and Harvard Medical School)

Neighborhoods physical and social characteristics are associated with sleep disturbances. However, the effect of neighborhood built environments is understudied. We analyzed data from the Multi-Ethnic Study of Atherosclerosis (MESA), to determine the association between the built environment and objective measures of sleep. A diverse population of men and women (N=1,889) aged 54-93 in the MESA Sleep Cohort underwent 1-week actigraphy between 2010 and 2013. Measures of sleep duration and efficiency were averaged over all days. Walkability was assessed using Street Smart Walk Score® (www.walkscore.com), and three specific built environment features that reflect walkability (social engagement destination density, street intersection density, population density). We fit a series of linear multi-level models, clustered by census tract to assess the association between built environment indicators and sleep outcomes. One standard deviation higher Walk Score® was associated with a shorter average sleep duration of 8.19 minutes (95% confidence interval (CI): 4.12, 12.26) and lower sleep efficiency 0.16 (0.01, 0.33). For sleep duration, the association persisted after adjustment for demographics, individual and neighborhood socioeconomic status, and co-morbidities. However, for sleep efficiency, the association was attenuated and no longer statistically significant in fully adjusted models. Results were generally consistent across walkability components, except that social engagement destination density was not associated with sleep efficiency. Population density had the strongest negative association with average sleep duration of -6.01 minutes (-10.08, -2.05), and intersection density had the strongest negative influence on sleep efficiency -0.15 (-0.32, 0.02). Sleep duration may decline with higher neighborhood walkability. Further understanding how health behaviors are influenced by the social and physical environment may enhance public health efforts to promote healthy lifestyle behaviors.

0152

EXPOSURES TO AIRBORNE PLUMES FROM ANIMAL FEEDING OPERATIONS AND RESPIRATORY HEALTH OF CHILDREN WITH ASTHMA: A PANEL STUDY Christine Loftus*, Michael Yost, Paul Sampson, Elizabeth Torres, Griselda, Arias, Victoria Breckwich Vasquez, Kris, Hartin, Jenna Gibbs, Maria Tchang-French, Sverre Vedal, Parveen Bhatti, Catherine Karr (Gradient Corporation)

Background: Industrial-scale animal feeding operations (AFOs) have adverse impacts on regional air quality, potentially affecting respiratory health in nearby communities. Most existing studies of this topic have been cross-sectional in design, and available methods for exposure assessment are limited. **Objectives:** We aimed to estimate spatial and temporal variations in AFO plume exposure and to conduct a longitudinal, repeated measures study of AFO exposure and pediatric asthma morbidity. **Methods:** Time-varying estimates of AFO plume exposure were calculated using wind conditions and AFO locations in an agricultural community of Washington State and were compared to a marker of AFO emissions, ammonia, measured repeatedly at 18 sites across the region for 14 months. Exposure estimates were then applied in a study of school-age children with asthma (n=58) who were followed for up to 26 months with biweekly surveys of asthma symptoms and medication use and daily measures of forced expiratory volume in one second (FEV1). Short-term relationships between AFO exposure and outcomes were assessed using linear regression with generalized estimating equations. **Results:** Estimates of plume exposure captured a moderate degree of spatial variability in ammonia ($r=0.54$) and some temporal variability ($r=0.62$ after time-varying parameters added). We found that FEV1 as a percent of predicted value changed -2.0% (95%CI: -3.5 , -0.5) for each interquartile range increase in exposure. No significant associations with reported asthma symptoms or medication use were detected. **Conclusions:** We developed a simple metric to estimate time-varying AFO plume exposures, and found that children with asthma may experience decrements in lung function following plume exposures.

0154-S/P

EPA AIR QUALITY INDEX FAILS TO ACCURATELY COMMUNICATE RESPIRATORY HEALTH RISKS OF AIR POLLUTION Lars Perlmutter*, Kevin Cromar (New York University Marron Institute of Urban Management)

Background: The US EPA requires daily reporting of air quality using the Air Quality Index (AQI). However, it remains unclear whether the single-pollutant, regulatory-based AQI is an effective tool in representing acute health risks associated with air pollution. **Methods:** Time-series analyses of respiratory emergency department visits were completed using a Poisson generalized linear model in two New York counties (Bronx and Queens) that had monitoring data for multiple criteria pollutants (NO₂, O₃, PM_{2.5}, and SO₂) from 2005-2010. Coefficients generated from time-series analysis were used to determine the daily additive risk of respiratory morbidity from air pollution. Daily AQI values were assessed in comparison with daily excess respiratory risks in order to assess the internal validity of the AQI as a risk communication tool. **Results:** Dramatic inconsistency in daily excess respiratory risk was observed across the entire range of AQI values (95% of values between 24-100; median=48). For any given level of excess air pollution related respiratory morbidity risk, an average range of 37 on the AQI scale was reported across days with the same level of risk, even after removing the top and bottom 5% of outlying AQI values for each risk level. Results were similar when using coefficients from multipollutant time-series analysis. **Conclusions:** The current AQI, which reports risk as a function of single-pollutant, regulatory standards, fails the basic criteria for any risk communication index, in that increasing values on the scale do not consistently correlate with increased risk. Construction of an air quality index based on epidemiology research, rather than regulatory standards, would dramatically improve risk communication of the acute health effects of air pollution. This research also identifies the need for forecasting of NO₂ and SO₂ concentrations at monitor locations in order to enhance an epidemiology based risk communication index.

0153-S/P

RISK FACTORS FOR LEAD EXPOSURE IN ADULT POPULATION IN SOUTHERN BRAZIL Ana Carolina Bertin de Almeida Lopes*, Ana Navas-Acien, Rachel Zamoiski, Ellen Silbergeld, Maria de Fátima, Carvalho, Marcia Buzzo, Mariana Urbano, Martins Júnior, Airtton Paoliello Monica (State University of Londrina, Parana, Brazil)

In Brazil there is no systematic evaluation to access the blood lead levels (BLL) in the general population and few studies with adults have been published. We aimed to examine the socioeconomic, environmental and lifestyle determinants of the BLL in adult Brazilian population. A total of 959 adults, aged 40 years or more, were randomly selected in a city in Southern Brazil. Information on socioeconomic, dietary, lifestyle and occupational background was obtained by interviews. A spatial analysis was conducted to discern if there were any identifiable sources of exposure. BLL were measured by inductively coupled plasma mass spectrometry technique. We adjusted for sex, age, race, education, income class, smoking status, alcohol consumption, occupation, red meat or cow milk consumption (Model 1), and for occupation and sex (Model 2). The geometric mean of BLL was 1.97 µg/dL (95% CI: 1.90-2.04 µg/dL). In Model 1, BLL were positively associated with male gender, older age, drinking and smoking habits, and with less frequent milk consumption. In Model 2, we found higher BLL in non-white than in white participants, in former smokers and in persons with current or former employment in lead industries. The participants living in the area with more lead industries had higher BLL (3.30 µg/dL) compared with those living in other areas with no or less lead industries (1.95 µg/dL). Despite the low BLL found in adults living in an urban area, lead industries must be monitored and regulatory laws should be implemented to prevent lead contamination in urban settings.

0155

CONCENTRATIONS OF POLYCHLORINATED BIPHENYLS (PCBS) AND ORGANOCHLORINE (OC) PESTICIDES IN UMBILICAL CORD SERUM OF JAMAICAN NEWBORNS Mohammad Rahbar*, Maureen Samms-Vaughan, Manouchehr Hessabi, Aisha S. Dickerson, MinJae Lee, Jan Bressler, Sara E. Tomechko, Emily K. Moreno, Katherine A. Loveland, Charlene Coore Desai, Sydonnie Shakespeare-Pellington, Jody-Ann Reece, Renee Morgan, Matthew J. Geiger, Michael E. O'Keefe, Megan L. Grove, Eric Boerwinkle (The University of Texas Health Science Center at Houston, Houston, Texas, United States)

Several organochlorine (OC) compounds, including polychlorinated biphenyls (PCBs) and OC pesticides persist in numerous environmental media, including soil and water, and can eventually accumulate in biological organisms, principally fish and shellfish, and ultimately in humans. Findings regarding the association between concentrations of PCBs and OC pesticides in cord serum and birth outcomes are conflicting. Using data from 64 pregnant mothers who were enrolled in 2011, we measured concentrations of the aforementioned toxins in umbilical cord serum of 67 Jamaican newborns. Notably, for 97 of the 100 PCB congeners and 16 of the 17 OC pesticides, all (100%) concentrations were below their respective limits of detection (LOD). Measurements below LOD were replaced by half of the LOD. The mean (SD) lipid-adjusted concentrations in cord serum for congeners PCB-82, PCB-153, PCB-180, and PCB-206 were 14.47 (4.36), 14.25 (3.21), 7.16 (1.71), and 7.30 (1.75) ng/g lipid, respectively. The same data for 4,4'-DDE-hexane fraction (an OC pesticide) were 61.61 (70.78) ng/g lipid. The mean (SD) of lipid-adjusted concentrations of total PCB and total-DDE were 28.15 (6.03) and 61.60 (70.76) ng/g lipid, respectively. A higher lipid-adjusted cord serum concentration of the 4,4'-DDE-hexane fraction was significantly associated with reduced gestational age ($P = 0.03$) and higher head circumference ($P = 0.03$), but not with birth weight ($P = 0.82$) and crown-heel length ($P = 0.38$) based on univariable general linear models (GLMs). After adjusting for sex of the newborn in multivariable GLMs, these associations remained similar. Our results not only provide concentrations of the investigated toxins in cord serum that could serve as a reference for the Jamaican population, but also provide data regarding potential associations of cord serum 4,4'-DDE concentrations with gestational age and head circumference at birth.

“-S/P” indicates work done while a student/postdoc

0156

PRELIMINARY EVIDENCE FOR ASYMPTOMATIC NOROVIRUS INFECTION TRANSMISSION ASSOCIATED WITH SWIMMING AT A TROPICAL BEACH Timothy Wade*, Swinburn A.J. Augustine, Shannon Griffin, Kaneatra Simmons, Tarsha Eason, Kevin Oshima, Elizabeth Sams, Andrey Egorov, Alfred Dufour (US EPA)

Swimming in fecally-contaminated natural waterbodies can result in gastrointestinal (GI) infections and associated symptoms. However, the pathogenic microorganisms responsible are often unidentified because studies rely on self-reported symptoms. Noroviruses have been considered a likely cause because they are relatively resistant to conventional wastewater treatment and can survive in the environment. Symptoms among swimmers usually occur within a few days of exposure, consistent with a short incubation period characteristic of noroviruses. In the summer of 2009, we conducted an epidemiology study at a beach in Puerto Rico, where we previously reported no association between swimming and self-reported GI symptoms. We also collected saliva samples from a subset of participants (N=1300) using an OraCol oral swab: on the day of the beach visit (S1); after 10-12 days (S2); and after approximately three weeks (S3), and tested them for IgG antibody responses to two common noroviruses (Norwalk and VA387) using a Luminex platform. An immunoconversion, indicating a potential new infection, was defined as at least a fourfold increase in norovirus-specific median fluorescence intensity (MFI) from the S1 to the S2 sample with the S3 sample remaining at least two times above the baseline (S1) MFI. Approximately 4.7% (N=61) immunoconverted to at least one of the noroviruses. Swimmers who immersed their head in water had a higher rate of immunoconversion (5.5%) compared to non-swimmers (2.0%) (OR=3.32, 95% CI 1.2-9.5). Immunoconversion to norovirus was not associated with increased GI symptoms, indicating these infections were largely asymptomatic. To our knowledge, this is the first epidemiology study to show an association between norovirus infection and swimming exposure, however, these preliminary findings need to be verified with alternate definitions of immunoconversion and additional sensitivity analyses. This abstract does not reflect EPA policy.

0157-S/P

A TIME-SERIES ANALYSIS OF THE RELATIONSHIP BETWEEN OZONE AND MORTALITY IN THE CHINESE MEGACITY GUANGZHOU USING DIFFERENT OZONE METRICS Meilin Yan*, Tiantian Li, Jie Ban, Zhaorong Liu (Colorado State University)

In 2012, the Ministry of Environmental Protection of the People's Republic of China proposed adding an O₃ standard based on the daily 8-hour maximum concentration of O₃, in response to evidence that this 8-hour metric better represented the temporal course of acute effects of ambient O₃ exposure. To explore variability of estimated health effects under different ozone metrics, we performed a time series analysis of the association between ambient ozone and mortality in Guangzhou, China. Guangzhou is a megacity of China and is one of the areas with the fastest economic growth and urbanization and, as a result, severe photochemical pollution. We explored six metrics of O₃—1-h maximum, maximum 8-h average, 24-h average, daytime average, nighttime average, and commute average—to fit the relationship between acute mortality associated with ambient ozone pollution in Guangzhou for 2006–2008. We found that daily 1- and 8-h maximum, 24-h average, and daytime average concentrations yielded statistically significant associations with mortality. An interquartile range (IQR) of O₃ metric increase of each O₃ metric (lag 2) corresponds to 2.92 % (95 % confidence interval (CI) 0.24 to 5.66), 3.60 % (95 % CI, 0.92 to 8.49), 3.03 % (95 % CI, 0.57 to 15.8), and 3.31 % (95 % CI, 0.69 to 10.4) increase in daily non-accidental mortality, respectively. Nighttime and commute metrics, conversely, were only weakly associated with increased mortality. Our findings help clarify the acute effects of O₃ on urban populations in China and indicate that current level of O₃ has an adverse effect on mortality risk in Guangzhou, China.

0160-S/P

INSTRUMENTAL VARIABLES ANALYSES ARE SUBJECT TO SELECTION BIAS Chelsea Canan*, Catherine Lesko, Bryan Lau (Johns Hopkins Bloomberg School of Public Health)

Instrumental variables (IV) are used to draw causal conclusions about the effect of exposure E on outcome Y in the presence of unmeasured confounders. For a variable to be an IV, three assumptions have been well described: 1) IV affects E, 2) IV affects the Y only through E, and 3) IV does not share a common cause with Y. However, even when these assumptions are met, biased effect estimates can result if selection bias allows for a non-causal path from E to Y. To demonstrate the impact of selection bias in IV analyses, we conducted a simulation with 1000 iterations. We generated IV as a Bernoulli random variable (RV) with probability 0.4 and two continuous variables C and U, each with mean 0 and variance 1. E was assigned a Bernoulli RV with probability logit $(0.25+3.0IV+1.7U)$. Y was drawn from a normal distribution with mean $5+1.5C+2.0E+1.4U$ and variance 1. A subset of the sample was selected for analysis to induce selection bias. Selection S was a function of E and C, forming a non-causal pathway from $E \rightarrow [S] \leftarrow C \rightarrow Y$. Two-staged least squares (TSLS) models were fit to estimate the effect of E on Y. Crude linear regression models resulted in median percent bias (MPB) [IQR] of 70% [68 to 73%] and 53% [51 to 56%] in full and selected samples, respectively, with 95% coverage probability of 0. Using a TSLS model in the full sample, the MPB was 0% [-11 to 11%] with 95% coverage probability of 96%. With selection, the TSLS model resulted in -14% [-28 to 0%] MPB and 95% coverage probability of 93%. Inverse probability of selection weights (IPSW) based on E and C reduced the MPB to 1% [-22 to 19%] with a 95% coverage probability of 95%. Despite fulfilling the commonly cited criteria for IV, the selected sample showed large bias. Investigators pursuing an IV approach must understand how their analytical sample is derived; IV approaches may protect against unmeasured confounding but do not solve problems of selection bias. IPSW may be used with IV approaches to minimize bias.

0162

ANALYZING MULTIFACTORIAL EXPOSURES Robert Hirsch* (FAES)

Often exposures have several components among which we wish to discriminate. For instance, many environmental exposures can be separated into years of exposure, maximum intensity of exposure, cumulative exposure, and age at first exposure, to name a few. One characteristic of these components is they are highly correlated. This characteristic makes it difficult to evaluate the relative importance of the individual components. To draw distinctions among these components it is necessary to control for the others, as completely as possible, while evaluating one. This often results in conflict between control of individual characteristics and interpretation of their relationship to the risk of disease. A method that provides both interpretability and discrimination will be described. As an example, the relationship between smoking and lung cancer will be investigated.

0161-S/P

POINT-WISE AVERAGING APPROACH IN DOSE-RESPONSE META-ANALYSIS OF AGGREGATED DATA Alessio Crippa*, Ilias Thomas, Nicola Orsini (Institute of Environmental Medicine, Karolinska Institutet, Stockholm)

The traditional approach in meta-analysis of summarized data is to specify an overall functional relation (typical example is a linear trend) or a common transformation (polynomials or splines) of the quantitative predictor; apply it to each individual study, and then combine the study-specific regression coefficients using an inverse-variance weighted average. Our intent is to propose an alternative approach for meta-analysis of summarized dose-response data in order to allow for greater flexibility of the overall dose-response curve. We explore the idea of point-wise averaging of study-specific trends. The advantages of this strategy have been described in meta-analysis of individual patient data, but have never been investigated in the context of summarized data. Each individual study is allowed to have a different dose-response curve and predicted outcomes are then averaged for a specific set of values of the quantitative predictor. We will describe strengths and limitations of this new strategy and show how to present the findings in a graphical and tabular form. An empirical comparison of the dose-response curves derived from aggregated and individual patient data will be based on the SEER 9 Registries (<http://seer.cancer.gov>).

0163

CONSIDERATIONS WHEN USING SIBLING DESIGNS Lauren Houghton*, Muxing Guo, Mary Beth Terry (Columbia University Mailman School of Public Health)

Background: A sibling study design has many advantages over studies of unrelated individuals as they can control for fixed-family level confounding through the design. However, sibling designs are sometimes not used because of concerns that the siblings may be too tightly matched for many important factors limiting statistical power when assessing risk factors with disease. Few studies have examined whether, and to what extent, the sibling correlations in risk factors for many chronic diseases, including cancers, change with time. **Method:** Using the New York Site of the Breast Cancer Family Registry (BCFR) we examined correlations in risk factors in 552 sibling sets. We collected information on risk factors using a standard questionnaire at baseline. Using linear and logistic regression, we calculated sibling correlations and tested if they differed 1) in sibling pairs that were born in earlier decades compared to sibling pairs born later (birth year effect), and 2) in siblings who were born closer together than siblings who were born further apart (birth interval effect). **Results:** There were 552 sibling pairs born between 1901-1986. Between-sibling correlations ranged from 0.2 to 0.4, with oral contraceptive (OC) duration having the lowest correlation ($\rho=0.16$) and height having the highest ($\rho=0.43$). Sibling differences by birth year were seen for OC use ($\beta=0.002$ SE=0.007, $p<0.01$), OC initiation age ($\beta=-0.01$, SE=0.03, $p<0.01$), parity ($\beta=0.03$, SE=0.01, $p<0.01$), breastfeeding ($\beta=-0.01$, SE=0.01, $p=0.04$), hormone replacement therapy (HRT) use ($\beta=-0.06$ SE=0.009, $p<0.01$) and smoking ($\beta=-0.03$, SE=0.008, $p<0.01$). Sibling differences by birth interval were seen in OC initiation age ($\beta=-0.19$ SE=0.09, $p=0.05$) and HRT use ($\beta=-0.16$, SE=0.07, $p=0.04$). **Conclusion:** We observed only modest correlation (<0.4) in most risk factors between siblings. Secular trends in risk factors played a larger role in changing these sibling correlations compared to birth interval.

0165-S/P

IMPROVING ESTIMATION OF THE EFFECT OF GENDER ON LOSS TO FOLLOW-UP FROM HIV CARE USING TARGETED LEARNING

Kipruto Kirwa*, Becky Genberg, Brandon Marshall, Mark Lurie, Paula Braitstein, Joseph Hogan (Brown University School of Public Health, Department of Epidemiology)

Background: Loss to follow-up (LTFU) is one of the biggest barriers to eliminating HIV transmission. New methods to improve validity of effect estimates of gender on LTFU are essential because gender may profoundly influence attrition from care. **Methods:** In a western Kenyan cohort, we estimated the causal effect of gender on LTFU using longitudinal targeted minimum loss estimation (LTMLE) and compared results to those from logistic regression, G-computation, and inverse probability weighting (IPW). Targeted learning focuses estimation on a single parameter of interest and may reduce bias in assessment of causal effects. We accounted for censoring, key baseline factors and time-varying covariates updated every 3 or 6 months. **Findings:** Among 1,966 adults, 1,324 (67%) were female, and 355 were LTFU, 63% of whom were female. Females were younger (mean age 37 versus 41 years), less educated (44% versus 29% with no schooling), less likely to be married (45% versus 77%), and less likely to be employed (35% versus 54%). Males had more advanced disease at enrollment (median CD4 count 290 versus 364 cells/ μ L), and were more likely to be newly diagnosed (10% versus 8%). Over 3 years on follow-up there was a non-statistically significant tendency towards higher male LTFU rates [LTMLE risk ratio [RR] 1.17, 95% confidence interval 0.75, 1.81, with similar results from other estimators]. Over 4 years, a reversal of effect was observed [LTMLE RR 0.72 (0.48, 1.08)], but was not detected by other estimators [IPW RR 1.25 (0.82, 1.92), G-computation RR 1.25 (0.85, 1.84), and logistic regression RR 1.20 (0.62, 2.31)]. Smaller covariate update intervals shifted effects away from the null non-significantly. **Interpretation:** In a longitudinal context marked by time-varying confounding and censoring, a targeted approach reduces bias and increases precision. Over 4 years of follow-up, gender was not causally associated with LTFU, but effect size changed, with a trend reflecting rising relative LTFU rates for females.

0167

DESCRIBING AND ASSESSING RECORD LINKAGE BETWEEN ONTARIO ADMINISTRATIVE HEALTH DATA AND THE CITIZENSHIP AND IMMIGRATION AND VITAL STATISTICS—DEATH REGISTRIES

Maria Chiu*, Michael Lebenbaum, Kelvin Lam, Nelson Chong, Mahmoud Azimae, Karey Iron, Doug Manuel, Astrid Guttman (Institute for Clinical Evaluative Sciences)

Background Ontario, the most populous province in Canada, has a universal healthcare system that routinely collects health administrative data on its 13 million legal residents that is used for health research. Record linkage has become a vital tool for this research by enabling enrichment of these data with other administrative databases such as the Citizenship and Immigration Canada (CIC) Permanent Resident database and the Office of the Registrar General's Vital Statistics-Death (VSD) registry. The objectives of this study were to estimate linkage rates and compare characteristics of individuals in the linked versus unlinked files. **Methods** We used both deterministic and probabilistic linkage methods to link the CIC database (1985-2012) and VSD registry (1990-2012) to the Ontario's Registered Persons Database. Linkage rates were estimated and standardized differences were used to assess differences in socio-demographic and other characteristics between the linked and unlinked records. **Results** The overall linkage rates for the CIC database and VSD registry were 86.4% and 96.2%, respectively. Unlinked and linked files were similar for most characteristics, such as age and marital status for CIC and sex and most causes of death for VSD. However, lower linkage rates were observed among people born in East Asia (78%) in the CIC database and certain causes of death in the VSD registry, namely perinatal conditions (61.3%) and congenital anomalies (81.3%). **Conclusion** In this era of big data, the linkages of immigration and vital statistics data to the existing population-based healthcare data of the 13 million individuals in Ontario will enable many novel cross-sectional and longitudinal population-based studies to be conducted. However, there are risks of bias due to imperfect linkage which necessitates analytic techniques to account for linkage rates in studies of certain ethnic groups or certain causes of death among children and infants.

0166-S/P

POSITIVITY IMPLIES THE EXISTENCE OF INSTRUMENTAL VARIABLES

Jeremy Labrecque*, Jay Kaufman (Department of Epidemiology Biostatistics and Occupational Health, McGill University)

Objective: To demonstrate that satisfaction of the positivity assumption in causal inference is equivalent to implying the existence of at least one instrumental variable. **Methods:** We drew causal graphs with an exposure, outcome and different numbers of binary confounders and instrumental variables. Based on these causal graphs, we created data tables that corresponded to the data generating mechanism. We then constructed causal contrasts stratified by confounders. **Results:** When there is no instrumental variable in the data generating mechanism, positivity is necessarily violated and it is impossible to construct causal contrasts within strata of confounders. This is true because, within strata of the confounders, only an instrumental variable can create variation within strata of the confounders without biasing any causal estimate. **Conclusion:** This is a pedagogical finding that illustrates the equivalence between the positivity assumption and the existence of instrumental variables. In order for the positivity assumption to be satisfied, at least one cause of the exposure must meet all the criteria of an instrumental variable. This knowledge should encourage epidemiologists to think beyond simple satisfaction of the positivity assumption to the source of variation in the exposure that is causing positivity. If the positivity assumption is satisfied in the absence of an instrumental variable, then under faithfulness, this logically implies that the causal estimate must be biased. This implies that the no-unmeasured confounders causal identification strategy requires the same assumptions as instrumental variable analysis although sensitivity to violations of the assumptions differs between these two identification strategies. Future simulations aim to quantify the relative sensitivity to violations of the instrumental variable assumptions.

0168-S/P

THE ROLE OF MARITAL SATISFACTION IN EMOTIONAL DISTRESS AMONG WOMEN WITH SYSTEMIC SCLEROSIS: A COMPARISON OF CONTINUOUS VS. DICHOTOMOUS MEASUREMENTS OF MARITAL SATISFACTION

Brooke Levis*, Danielle Rice, Linda Kwakkenbos, Russell Steele, Mariet Hagedoorn, Marie Hudson, Murray Baron, Brett Thombs (McGill University)

Background: Marital status is often used as a proxy for social support. People in strained marriages, however, may be worse off than unmarried people. Existing studies have dichotomized married patients as satisfied or unsatisfied, which reduces statistical power and does not generate clinically useful information across the marital satisfaction spectrum. **Objective:** To demonstrate the use of an interaction term to simultaneously assess the relationship between marital status, continuously measured marital satisfaction, and depressive symptoms, and to compare this approach to dichotomization. **Methods:** Depressive symptoms were assessed with the Center for Epidemiologic Studies Depression Scale (CESD) and marital satisfaction with the Dyadic Adjustment Scale-7. The product of marital status (0 versus 1) and standardized marital satisfaction scores was used to integrate marital status and, among married women, marital satisfaction. **Results** were compared to a dichotomous model. Results: Of 725 women with systemic sclerosis from the Canadian Scleroderma Research Group Registry, 494 were married. Mean CESD scores were 2.0 points (0.19 SDs) lower for married than unmarried women. Among married women, each 1 SD marital satisfaction increase was associated with a 2.2 point CESD decrease. Married women's predicted CESD scores ranged from 6.7 points lower to 6.9 points higher than unmarried women, depending on marital satisfaction. Married women below the 19th percentile of marital satisfaction had greater predicted depressive symptoms than unmarried women. With the median split method, married women at or above the marital satisfaction median scored 3.4 points lower on the CESD than unmarried women. Married women below the median did not differ significantly from unmarried women. **Conclusion:** Integrating a continuous marital satisfaction variable into models with married and unmarried patients improves the ability to estimate the association of marriage and mental health outcomes.

0169

GROUP-BASED TRAJECTORY MODELING TO IDENTIFY THE REVOLVING DOOR PATTERN OF JAIL INCARCERATION AND HOMELESSNESS

Sungwoo Lim*, Mary ClareLennon, Tiffany Harris, Denis Nash, Lorna Thorpe (New York City Department of Health and Mental Hygiene)

The revolving door phenomenon, a cyclical pattern of institutional recidivism, has been a topic of public health concern because it could disrupt social integration, increase mortality risk, and excessively use public resources. To date, dynamics of the interplay between incarceration and homelessness have not been carefully examined despite substantial correlation between these events and potential health impacts, in part reflecting the methodological challenge of quantifying temporal exposure patterns from complex heterogeneous data. We addressed this by employing sequence analysis to identify and characterize distinct trajectory groups of jail incarceration and homelessness among New York City (NYC) adults who experienced both incarceration and sheltered homelessness in 2001-03. We used matched administrative data from NYC jails and single adult homeless shelters. Time spent in jail, shelters, and the community among 15,620 adults was identified in each of 36 months and summarized into trajectory groups using sequence analysis. We then assessed bivariate and multivariate associations between baseline characteristics and trajectory groups. Six distinct trajectory groups were identified. A ratio of mean within-cluster over between-cluster distances (validity criteria) determined that six-group solution was valid. A majority (61%) had sporadic experiences of brief incarcerations and homelessness, which was consistent with the concept of the revolving door pattern. The remaining 40% were characterized as having increasing, decreasing, or persistent trajectories. Baseline demographics and neighborhood poverty were largely similar across trajectory groups except for individuals with persistent homelessness, who were much older than the others and more likely to have serious mental illness. This study demonstrated that sequence analysis can identify homogeneous trajectories from complex data, providing opportunities to study their impacts on health and social outcomes.

0171-S/P

SPATIAL STATISTICS TO IDENTIFY RISK AREAS FOR TB IN BRAZIL

Carolina Sales*, Rodrigo Locatelli, Paula Freitas, Rita de Cássia, Lima Adelmo, Bertolde Mauro Sanchez, Ethel Maciel (Public Health Program/ Espirito Santo Federal University)

Objective: To identify and characterize areas of TB transmission risk in Brazil in 2010. **Methodology:** Ecological study, a retrospective of secondary data from the SINAN - TB, provided by the Ministry of Health in 2010. Demographic data and the map Digital were provided by IBGE from the census of 2010. The georeferencing of cases was made from the information of residence micro-regions - numbers of TB cases and population of micro-region in 2010. Spatial statistics were used to identify a cluster of risk (a geographically limited group of events, concentration and size, and distinct risk, so it is unlikely that a random occurrence). Data analysis and calculation of relative risk (RR) with 95% significance level, we used the software SaTScanTM version 9.0. The study was approved by the Ethics Committee on Health Sciences Center Search Federal University of Espirito Santo number 242 856. **Results:** In 2010 identified 88266 cases of TB in Brazil. The identification of the risk areas identified 12 conglomerates in Brazil, the micro-region of Rio de Janeiro as the higher risk (2.64), followed by the cluster of São Jerônimo, Porto Alegre and Camaquã in southern Brazil (2.13), Salvador (2.11) and the others were located in the regions belonging to the states of Pernambuco, Pará, Paraná, Amazonas, Ceará, Mato Grosso do Sul, Sao Paulo and Parana. **Conclusion:** This is an unprecedented study since there are no studies with micro-regions as units of analysis in Brazil. The use of risk identification with SATSCAN lets you view areas that need more attention and health planning especially in relation to the control of tuberculosis.

0170

ASSESSING THE CALIBRATION OF CLINICAL PREDICTION MODELS: WHICH METHODS ARE USEFUL?

Bradley Manktelow*, Miriam MacDonald, Sarah Seaton (University of Leicester)

Background: Prediction models for binary outcomes are used across epidemiology. Good calibration is vital for these models to be useful: i.e. agreement between observed outcome rates and predicted probabilities. While various methods have been proposed to assess calibration, their performance is unclear. A simulation study was undertaken in order to assess the performance of four proposed methods: Brier score (including Spiegelhalter's z-statistic); Hosmer-Lemeshow goodness of fit (Type 1 & Type 2); Farrington's statistic; Cox's calibration regression. **Methods:** First, observations were simulated from a known model in order to create a 'small' (N=1000) and 'large' dataset (N=10000) with a binary outcome and known covariates. Four different logistic regression models were specified and used to estimate predictive probabilities for each dataset: one model specified perfectly while the three other models were mis-specified in different ways, e.g. missing non-linear and interaction terms. For internal validation, the proposed calibration assessment methods were applied to the predicted probabilities from each of the four models. The process was repeated 1000 times and the distribution of the calibration statistics assessed. For external validation, in each case a second dataset of identical size was simulated and the estimated coefficients from the modelling of the first dataset were applied to the second dataset and calibration assessed as previously. **Results:** The Hosmer-Lemeshow Type 1 test showed good calibration performance for internal validation but not external validation, while Farrington's statistic worked well for large datasets for both internal and external validation. None of the other methods could discriminate between good and poor calibration in either internal or external validation. **Conclusions:** Most proposed calibration methods performed poorly in this study. The appropriate use of the Hosmer-Lemeshow Type 1 test and Farrington's statistic are recommended.

0174

ERRORS IN CAUSAL INFERENCE

Etsuji Suzuki*, Toshihide Tsuda, Toshiharu Mitsuhashi, Eiji Yamamoto (Okayama University)

Two broad kinds of error can occur in causal inference of studies in the health, life, and social sciences: systematic error and random error. Understanding these errors is of great significance to epidemiologists because it enables them to gain a deeper understanding of the relationship between accuracy, validity, and precision when examining cause-effect relationships. In this presentation, we provide an organizational schema for systematic error and random error in estimating causal measures, aimed at clarifying the concept of errors from the perspective of causal inference. We propose to divide systematic error into structural error and analytic error. Structural error is defined from the perspective of counterfactual reasoning, and divided into non-exchangeability bias (which comprises confounding bias and selection bias) and measurement bias. Directed acyclic graphs are useful to illustrate these biases. Non-exchangeability bias implies a lack of "exchangeability" between the (total) exposed group, the (total) unexposed group, the selected exposed group, and the selected unexposed group. A lack of exchangeability is not a primary concern of measurement bias, justifying its separation from confounding bias and selection bias. A form of analytic error is related to "consistency" in statistics, and analytic error also results from wrong (misspecified) regression models and inappropriate statistical methods. With regard to random error, our schema shows its four major sources: non-deterministic counterfactuals, sampling variability, a mechanism that generates exposure events, and measurement variability. Our organizational schema is helpful for understanding the relationship between systematic error and random error from a previously less investigated aspect.

0175-S/P

AGREEMENT BETWEEN PROXY AND SELF-REPORT STUDY OF MEDICATION USE Daniela Vicentini Albring*, Barbara Niegia Garcia de Goulart, Sotero Serrate Mengue (UFRGS)

Objective: The purpose of this study was to assess the agreement between proxy and self-report of drug used for treatment of non-transmissible chronic diseases and for acute events in the previous 15 days. **Methods:** Population-based cross-sectional study from an urban area in Southern Brazil. Convenience sampling selected two family member living in the same dwelling, without cognitive impairment to respond the survey. Proxy and subject respond the same questions. To assess the agreement Cohen's Kappa and PABAK was used and classified according Altman (1991). Medicines are classified according ATC classification. **Results:** 77 pairs of subject and proxy agree to answer the survey. Most of pair are spouses (62%; n=92), woman (58%; n=86) and aged 18 to 39 (42%; n=62). Prevalence for chronic diseases was 31% to hypertension, 10% to diabetes, 14% to heart diseases, 33% to hypercholesterolaemia, 14% to pulmonary diseases, 18% to depression, 10% to arthritis and 26% to another chronic disease. Moderate agreement was found for use of medicines to hypertension (K=0.46; PABAK=0.80) and heart diseases (K=0.55; PABAK=0.60). Fair agreement was found for use of medicines to hypercholesterolaemia (K=0.30; PABAK=0.29). The worse agreement among acute events was to medicines for pain (K=0.30; PABAK=0.29). Results for the use of medicines for other conditions are infection (K=0.58; PABAK=0.79), sleep (K=0.66; PABAK=0.84), flu/cold (K=0.5; PABAK=0.76) and vitamins/supplements (K=0.43; PABAK=0.81). Most prevalence ATC classes among medicines for chronic diseases was C (53.3%; n=95), A (14.6%; n=26) and N (10.7%; n=19). **Conclusion:** Despite good agreement for some prevalence diseases like hypertension, the use of this source of information should be taken with caution.

0177-S/P

PERFORMANCE OF THE PROPENSITY SCORE IN THE PRESENCE OF NONDIFFERENTIAL EXPOSURE MISCLASSIFICATION: A SIMULATION STUDY Mollie Wood*, Hedvig Nordeng, Stavroula Chrysanthopoulou, Kate Lapane (University of Oslo)

Propensity score (PS) methods applied with adjustment or matching reduce bias in observational studies under certain assumptions. These methods are often employed in large databases, including administrative claims data and drug registries, where misclassification of the exposure is likely. We conducted a simulation study to compare the bias and variance obtained from two common PS implementations for varying degrees of nondifferential exposure misclassification. Data were generated using estimates selected based on the literature on analgesic use during pregnancy and birth weight. First, five independent confounders were simulated, and a dichotomous exposure variable, A, was generated conditional on these confounders. Second, a normally distributed outcome variable, Y, was generated conditional on A and the set of confounders. We generated the outcome such that the true unbiased treatment effect was a mean difference in birthweight of 200g, and the true confounded treatment effect was a mean difference of 220g. Exposure was then misclassified using 16 combinations of sensitivity and specificity (1.0, 0.9, 0.8, 0.7 for each). We examined bias and variance associated with each combination of sensitivity and specificity, for both PS matching and adjustment. Nondifferential exposure misclassification resulted in bias towards the null, and exposure misclassification accounted for more bias than choice of PS method in all scenarios. Comparing propensity score matching and adjustment showed that after accounting for bias due to misclassification, PS adjustment outperformed matching in most scenarios (percent bias ranging from -1.1 to 8.3), particularly in cases of poor specificity. These preliminary results suggest that PS adjustment may result in less bias than matching in instances of nondifferential exposure misclassification. Future analyses will consider addition scenarios, including categorical outcomes and differential misclassification.

0176-S/P

THE WEIGHT OF A PLACE: COMPARING THE RELATIONSHIP BETWEEN HYPERTENSION IN PREGNANCY AND NEIGHBORHOOD DEPRIVATION AT THREE GEOGRAPHICAL SCALES Kelly Winter*, Tan Li, Wasim Maziak, Mary Jo Trepka, Jeffrey Onsted, Purnima Madhivanan (Robert Stempel College of Public Health & Social Work, Department of Epidemiology, Florida International University)

Background: While neighborhood deprivation has been associated with numerous unhealthy behaviors and negative health outcomes, no standard definition of "neighborhood" exists. Further, both scale and zoning factors can distort measures of association. This is known as the modifiable areal unit problem (MAUP). This study measured the effect of the MAUP on measurement of the relationship between hypertension in pregnancy prevalence and neighborhood deprivation. **Methods:** Neighborhood deprivation was measured using a standard index consisting of eight variables gathered from U.S. Census Bureau data. Hypertension in pregnancy prevalence was calculated using 2008-12 Miami-Dade County birth records. All data were geocoded at three different geographic scales: census tracts, ZIP code tabulation areas (ZCTAs), and "natural neighborhoods," which were created by aggregating census tracts into larger units based on socioeconomic variables. Three structural equation models were constructed based on the three geographic scales, and the R² values for the models were compared. **Results:** Neighborhood deprivation factor loadings were numerically similar and statistically significant in all three models. However, the R² value for natural neighborhoods (0.106) was three times larger than that of census tracts (0.031) and 10 times larger than ZCTAs (0.011). **Conclusion:** When analyzing relationships between health outcomes and area-level variables, researchers should consider using natural neighborhoods based on socio-economic variables. They may provide a more realistic estimation of actual neighborhoods and represent a sound compromise between qualitative and census-based definitions of neighborhoods.

0180-S/P

ENDOMETRIOSIS AND MAMMOGRAPHIC DENSITY Leslie V Farland*, Rulla M Tamimi, A. Heather Eliassen, Donna Spiegelman Kimberly A. Bertrand, Stacey A. Missmer (Department of Epidemiology, Harvard T. H. Chan School of Public Health)

Introduction: The association between endometriosis and breast cancer risk has been inconsistent in epidemiologic studies, with some suggesting a modest increased risk. We investigated the association between endometriosis and mammographic density, a consistent and independent marker of breast cancer risk. **Methods:** We conducted a cross-sectional study among 1,770 women not previously diagnosed with breast cancer in the Nurses' Health Study II. Average percent mammographic density was measured using a computer-assisted method. Multivariable linear regression was used to estimate the association between endometriosis and mammographic density among pre- and postmenopausal women separately. Current body mass index (BMI) and BMI at age 18 and were considered effect modifiers. Endometriosis and covariate status was determined near time of mammogram. **Results:** Among premenopausal women, average percent mammographic density was 43.1% among women with endometriosis (n=91) and 40.5% among women without endometriosis (n=1150). While the association between endometriosis with mammographic density varied by menopausal status (P= 0.02), within the strata of pre- or postmenopausal women, endometriosis was not significantly associated with mammographic density $\beta=2.00$ 95% CI: (-1.33, 5.33); $\beta=-0.89$ 95% CI: (-5.10, 3.33), respectively). Among premenopausal women, there was heterogeneity by BMI at age 18 (P=0.02), among women who were lean at age 18 (BMI < 20.6 kg/m²), there was a suggestion that those with endometriosis had denser breasts than those without endometriosis ($\beta=3.76$ 95% CI: (-0.28, 7.80). **Conclusion:** Endometriosis was not associated with average percent mammographic density suggesting that if endometriosis increases breast cancer risk, it may not be mediated through breast density. However, among women who were lean at age 18, those with endometriosis had moderately denser breasts in adulthood compared to women without endometriosis which warrants further investigation.

0182

ASSOCIATION OF PRE-DIAGNOSIS BMI, PHYSICAL ACTIVITY, AND COMORBIDITY WITH BREAST CANCER SURVIVAL AMONG LOW INCOME AFRICAN-AMERICAN WOMEN IN THE SOUTHERN COMMUNITY COHORT STUDY Sarah Nechuta*, Xiao Ou Shu., Maureen Sanderson, Ingrid Mayer, Loren Lipworth, Wei Zheng, William Blot (Vanderbilt University Medical Center)

BACKGROUND: Comorbidities and lifestyle factors have been shown to influence survival after a breast cancer diagnosis, yet few studies have examined associations among underserved and minority populations, particularly African American (AA) women. **METHODS:** We examined these associations among 404 incident AA breast cancer cases diagnosed in a prospective cohort of mainly low income US adults. Medical history, socioeconomic status, and lifestyle factors including physical activity (PA) and body mass index (BMI) were assessed at cohort enrollment, and cancer diagnosis and clinical factors from linkages to cancer registries. Total mortality (TM) and breast cancer-specific mortality (BCSM) were from death registry linkages. Cox regression models adjusting for potential confounders were used to derive hazard ratios (HRs) and 95% confidence intervals (CIs). **RESULTS:** Median follow-up was 5 years (109 deaths (70 from breast cancer)). The three most common comorbidities were hypertension (68%), arthritis (44%), and high cholesterol (42%); 35% had BMI (kg/m²) ≥ 35 . Diabetes (27%) was associated with increased mortality, significantly so for TM (HRs and 95% CIs for TM and BCSM: 1.69, 1.08-2.64 and 1.47, 0.81-2.67, respectively). Stroke (7.4%) and peptic ulcer (12%) were associated with TM (2.09, 1.09-4.01 and 2.02, 1.10-3.71, respectively), but not BCSM. Other comorbidities were not significantly associated with mortality. Compared to BMI 25-29.9, higher BMI was inversely associated with TM (BMI 30-34.9: 0.46, 0.24-0.87; BMI ≥ 35 : 0.85, 0.50-1.45) with similar results for BCSM. Higher quartiles (Q) of total PA (MET-h/d) were associated with reduced risk of TM (Q1:ref, Q2:0.69, 0.39-1.20, Q3:0.45, 0.24-0.84, Q4:0.50, 0.26-0.97, Ptrend=0.01) with similar results for BCSM (Ptrend=0.008). **CONCLUSIONS:** Comorbidities associated with TM were not significantly associated with BCSM in AA breast cancer survivors. Higher levels of PA were inversely associated with both TM and BCSM, as was higher BMI.

"S/P" indicates work done while a student/postdoc

0181-S/P

CHARACTERIZATION OF RISK FACTORS FOR ADJUVANT RADIOTHERAPY-ASSOCIATED PAIN IN A TRI-RACIAL/ETHNIC BREAST CANCER POPULATION Eunkyung Lee*, Jennifer Hu, Cristiane Takita, Jean Wright, Isildinha Reis, Wei Zhao, Omar Nelson (Department of Public Health Sciences, University of Miami School of Medicine)

Pain related to cancer or treatment is a critical quality of life (QOL) issue for breast cancer survivors. In a prospective study of 375 breast cancer patients (enrolled during 2008-2014), we characterized the risk factors for adjuvant radiotherapy (RT)-associated pain. Pain score was assessed at pre- and post-RT as the mean of four pain severity items (i.e., pain at its worst, least, average, and now) from the Brief Pain Inventory (BPI) with 11-point numeric rating scale (0-10). Pain scores of 4-10 were considered clinically-relevant pain. The study consists of 58 non-Hispanic whites (NHW; 15%), 78 black or African Americans (AA; 21%), and 239 Hispanic whites (HW; 64%). Overall, the prevalence of clinically-relevant pain was 16% at pre-RT, 31% at post-RT, and 20% RT-associated increase. In univariate analysis, AA and HW had significantly higher pre- and post-RT pain compared to NHW. In multivariable logistic regression analysis, pre-RT pain was significantly associated with HW and obesity; post-RT pain was significantly associated with AA, HW, younger age, ≥ 2 comorbid conditions, above median hotspot volume receiving >105% prescribed dose, and pre-RT pain score >4. RT-associated pain was significantly associated with AA (odds ratio [OR]=3.23; 95% confidence interval (CI)=1.05-9.93), younger age (OR=2.45, 95% CI=1.24-4.85), and 2 or >3 comorbid conditions (OR=3.05, 95% CI=1.29-7.21; OR=4.58, 95% CI=1.46-14.37, respectively). These risk factors may help to guide RT decision making process, such as hypofractionated RT schedule. Furthermore, effective pain management strategies are needed to improve QOL in breast cancer patients with clinically-relevant pain.

0183

ASSOCIATIONS OF MAMMOGRAPHIC BREAST DENSITY WITH THE RISK OF BREAST CANCER BY TUMOR STAGE, MENOPAUSAL STATUS, AND CURRENT POSTMENOPAUSAL HORMONE USE Lusine Yaghjian*, Rulla Tamimi, Kimberly Bertrand, Christopher Scott, Matthew Jensen, Shane Pankratz, Daniel Visscher, Aaron Norman, Fergus Couch, John Shepherd, Bo Fan, Yunn-Yi Chen, Lin Ma, Andrew Beck, Steven Cummings, Karla Kerlikowske, Celine Vachon (University of Florida)

Introduction: We examined associations of mammographic breast density phenotypes with breast cancer risk by tumor stage, menopausal status, and current postmenopausal hormone therapy. **Methods:** This study included 2,940 invasive breast cancer cases and 4,438 controls selected from participants of four cohort or case-control studies: the Mayo Mammography Health Study, the Nurses' Health Study, Nurses' Health Study II, and San Francisco Mammography Registry. Percent breast density (PD), absolute dense (DA) and non-dense areas (NDA) were assessed from digitized film-screen mammograms using a computer-assisted threshold technique and standardized across studies. We used polytomous logistic regression to describe the associations of breast density measures with breast cancer risk by tumor stage (I/IIa [early] or IIb/III [advanced] stage), stratified by woman's menopausal status and current hormone therapy (premenopausal, postmenopausal/ estrogen therapy, postmenopausal/ combined therapy, and postmenopausal/no hormones). Polytomous regression and contrasts were used to investigate differences in the strength of association of density phenotypes with breast cancer risk across categories. **Results:** Positive associations of PD and DA with breast cancer risk by tumor stage did not differ by menopausal status and type of current hormone therapy. We found a suggestive stronger inverse association of NDA with the risk of early stage compared to advanced stage tumors in postmenopausal women with current combined therapy (4th vs. 2nd quartile of NDA: Odds Ratio=0.52 vs. 0.64, p-heterogeneity=0.08). The associations of NDA with early stage and advanced stage tumors were similar in premenopausal women and postmenopausal women with no current hormones or current estrogen use. **Conclusion:** Our findings do not suggest that associations of mammographic density phenotypes with breast cancer risk strongly differ by tumor stage, woman's menopausal status and current hormone use.

0184-S/P

UVR EXPOSURE, SUN SENSITIVITY FACTORS, AND RISK OF BREAST CANCER: A U.S. NATIONWIDE COHORT STUDY

Rachel Zamoiski*, Cari Kitahara, D. Michal Freedman, Martha Linet, Wayne Liu, Lisa Cahoon (National Cancer Institute)

Although there are few modifiable breast cancer risk factors, some reports suggest that exposure to solar ultraviolet radiation (UVR) may lower risk. Prior studies, which have yielded inconsistent results, are limited by narrow ambient UVR ranges and imprecise exposure assessment. To address these issues, we studied a cohort with residences representing a wide range of ambient UVR, and assessed personal UVR exposure. Using the nationwide U.S. Radiologic Technologists study (USRT), we examined the association between self-reported breast cancer risk and UVR exposure based on ambient UVR, time spent outdoors, and sun susceptibility factors. Participants reported location of residence and hours spent outdoors during five age periods. To model ambient UVR, we linked satellite-based UVR to self-reported residences. Lifetime values for each of the metrics were calculated using a weighted average. Participants also reported sun susceptibility factors including skin complexion, eye color, hair color, skin reaction to sun exposure, and history of sunburn. Using Cox proportional hazards models, we modeled the risk of breast cancer in 36,773 participants followed up from baseline (2003-2005) through 2012-2013. Based on 863 self-reported incident breast cancer cases, risks were unrelated to ambient UVR (HR for lifetime 5th vs 1st quintile = 1.15 (95% CI 0.93-1.43), p-trend=0.55) or time outdoors (HR for lifetime 5th vs 1st quintile = 0.91 (95% CI 0.72-1.15), p-trend=0.40). Associations with sun susceptibility factors were also null. This study does not support the hypothesis that UVR exposure lowers the risk of breast cancer.

0190-S/P

ASSOCIATION BETWEEN BCG SCARS AND RISK OF TUBERCULOSIS TRANSMISSION AMONG HOUSEHOLD CONTACTS OF ACTIVE TUBERCULOSIS PATIENTS

Mohsin Ali*, Gustavo Velásquez, Megan Murray (Icahn School of Medicine at Mount Sinai, New York, NY, USA)

Background: Known risk factors do not explain the full variability in tuberculosis (TB) transmission. Analyses of other risk factors are required, including the bacille Calmette-Guérin (BCG) vaccine, whose effect for TB transmission is currently understood to be limited. **Methods:** Between September 2009 and August 2012, we enrolled active TB patients in Lima, Peru. Within one month of enrolment of index patients, study nurses visited patients' households to enroll household contacts. We assessed number of BCG scars on the household contact, among other risk factors related to the household contact, index TB case, or household. Household contacts underwent tuberculin skin testing (TST) to determine TB infection status at enrolment and at follow-up visits at six and twelve months, as appropriate. We used generalized estimating equations to model the association between number of BCG scars on the household contact and TB transmission as measured by (a) TST positivity at baseline and (b) TST conversion during follow-up. **Results:** Among 10,314 household contacts of 2,700 index patients, 4,204 (40.8%) contacts were TST-positive at enrollment. After adjusting for other risk factors, we found that household contacts with three or more BCG scars had 19% increased risk of being TST positive, compared to those without a BCG scar (adjusted RR, 1.19; 95% CI, 1.07–1.31; P<0.001). During the 12-month follow-up period, household contacts with three or more BCG scars had 72% increased risk of becoming TST positive every six months, compared to those without a BCG scar (adjusted RR, 1.72; 95% CI, 1.30–2.3; P<0.001). **Conclusion:** This is one of the largest cohort studies to date of TB transmission. Our analyses suggest household contacts with more BCG scars are more likely to become TST-positive in the context of exposure to active TB patients. However, our analyses to date cannot distinguish whether this reflects increased susceptibility to TB infection or another form of BCG boosting.

0192

EXPLORATION OF A GEOGRAPHIC AREA-ADJUSTED PREVALENCE RATE IN ASSESSING THE EPIDEMIC OF HIV/AIDS IN THE UNITED STATES

Kai Wang*, Xinguang Chen (Department of Epidemiology, University of Florida)

Data on number of persons living with HIV/AIDS (PLWHA) are useful for their value in assisting resource allocation, while data on prevalence rates are often used to assess the epidemic. Prevalence rates are comparable across states because they count the differences in total population. However, prevalence rates do not count geographic area size. For example, prevalence rate of 300/100,000 in Rhode Island with an area of 2.6k (km²) means very different from the same rate in Texas with an area of 676.6k. To investigate this issue, we used three indicators to assess PLWHA for the US states with data from CDC, total count, prevalence rate (/100,000), and area-adjusted prevalence rate (/100,000/100 km²). According to the total count, five states with least PLWHA were Wyoming, N. Dakota, S. Dakota, Montana and Alaska and five states with most PLWHA were California, New York, Florida, Texas, and Georgia. When assessed by prevalence rates, five least prevalent states were N. Dakota, S. Dakota, Wyoming, Montana and Idaho, and five most prevalent states were Washington DC, New York, Maryland, Florida and Georgia. When geographic-adjusted rates were used, five lowest were Alaska, Montana, Wyoming, N. Dakota and S. Dakota; and five highest were Washington DC, Delaware, Rhode Island, Connecticut, and Maryland. When maps with the three indicators were compared, a smooth geographic pattern was revealed only for the geographic-adjusted rates, showing a larger and highest risk region starting with Mississippi, extended all states toward east/northeast; a smaller region with mid-risk covering five western states, and a large low risk band region in the middle penetrated by Oklahoma and Colorado. In conclusion, the new geographic-adjusted rates appear to provide better information to assess HIV epidemic across US states. Additional research is needed to investigate this new measure for HIV research.

0191-S/P

THE EMBÚ DAS ARTES, BRAZIL, PRESCHOOL MENTAL HEALTH STUDY- AN EPIDEMIOLOGICAL STUDY OF MENTAL HEALTH AND TRAUMATIC EVENTS: AIMS AND METHODS

Melanie S. Askari*, Silvia S. Martins, Pamela J. Surkan, Marcos Ribeiro, Maria Conceição do Rosário, Zila Sanchez, Rosa Resegue, Jacy Perissinoto, Sheila C. Caetano (Columbia University Mailman School of Public Health)

The Embú das Artes Pre-school Mental Health Study is a longitudinal study of the intersection between traumatic events experienced during early childhood and potentially modifiable risk factors for the development of internalizing and externalizing symptoms. A random sample of Embú das Artes (in the São Paulo city metropolitan area) public pre-schools will be selected with a probability proportional to the number of 4-6 year-olds in each school within census tracts. The sample will include 1,250 children from 25 pre-schools, with 50 children from each school. We assumed an intra-cluster correlation (ICC) range of 0.01 to 0.1, corresponding to design effects of 1.49 to 5.90. Our sample will achieve 80% power to detect differences in symptoms by gender and neighborhood disadvantage level when assuming ICC values of 0.01, 0.05 and 0.1, respectively, with a 0.05 significance level using two-sided tests. We will assess participants using mental health and socio-demographic screening tools that were previously validated or translated and adapted to the Brazilian-Portuguese language, such as: the Ages and Stages Questionnaires: Social-Emotional (ASQ:SE) to examine child social interactions; the Child Behavior Checklist (CBCL) to evaluate internalizing and externalizing symptoms; and the Protective Factors Survey (PFS) to assess parent-child relationships. Psychologists and psychiatrists from Federal University of São Paulo will collect baseline data between January 2016 and December 2017. A November 2015 pilot study will determine optimal recruitment strategies, study logistics, and interview measures. In this presentation, we will report study design methodology and pilot study data. The interview involves components addressing social-environmental factors at the macro-, meso-, and micro-system levels, including individual and neighborhood level social determinants. Primary outcomes include child social-emotional development and parental reports of child behavior.

0193-S/P

NEIGHBORHOOD CHARACTERISTICS AND EXPOSURE TO TRAUMA: THE ASSOCIATION WITH PSYCHIATRIC DISORDERS IN BRAZILIAN YOUTH

Thiago Fidalgo*, Zila Sanchez Sheila Caetano Solange Andreoni, Quixuan Chen, Magdalena Cerdá, Sandro Galea, Silvia Martins (Federal University of Sao Paulo)

The effect of different levels of exposure to traumatic life events and their influence on psychiatric disorders in adolescence are understudied in middle-income countries. Brazil. Students enrolled in the 7th grade of nine neighborhood (one neighborhood with low level of exposure to urban violence, another with high exposure) public schools in São Paulo, Brazil were recruited. Students and parents answered questions about demographic characteristics, socioeconomic status (SES), neighborhood characteristics (disorder and crime, incivility and segregation) and prior traumatic events. All answered the Schedule for Affective Disorders and Schizophrenia for School-Age Children/Parent and Lifetime Version to obtain DSM-IV and DSM-5 diagnoses. The outcome was the diagnosis of any psychiatric disorder (major depression, generalized anxiety disorder, post-traumatic stress disorder, attention-deficit hyperactivity disorder, conduct disorder and oppositional defiant disorder). After descriptive analyses, data were analyzed using weighted logistic regression with neighborhood stratification, adjusted by neighborhood characteristics, gender, SES and previous traumatic events. We also tested for a multiplicative interaction between traumatic events and SES. The final sample was comprised of 180 individuals (52.4% girls), 61.3% from low SES strata; and 39.3% had experienced at least one traumatic event. The weighted prevalence of psychiatric disorders was 21.7% (DSM-IV) and 23.4% (DSM-5). Having experienced any traumatic event and being from a low SES was associated with any mental disorder according to DSM-IV (aOR = 4.4, [1.6-12.3]) and DSM-5 criteria (aOR = 3.5, [1.1-7.5]). Investing on diminishing SES inequalities may improve mental health of youths from low SES. Strategies to prevent traumatic events, such as physical and sexual abuse and domestic violence, during childhood may also have a positive impact on youths' mental health.

0194-S/P

THE EFFECT OF PAID MATERNITY LEAVE POLICIES ON EARLY CHILDHOOD GROWTH IN LOW AND MIDDLE-INCOME COUNTRIES

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Undernutrition remains a major cause of child mortality in low and middle-income countries (LMICs). Previous work suggests that improved access to paid maternity leave may improve young children's growth by facilitating breastfeeding, use of social services, and better caring practices. However, despite evidence on these mechanisms, the impact of maternity leave policies on children's growth has not been evaluated. This study used data from 576,919 live births in 38 LMICs surveyed as part of the Demographic and Health Surveys (2000 to 2014) to estimate the effect of paid maternity leave on children's growth. We used a quasi-experimental difference-in-differences design to compare the change in children's growth in five countries that increased their legislated duration of paid maternity leave between 2002 and 2006 (Uganda, Zambia, Zimbabwe, Bangladesh and Lesotho) relative to 33 other countries that did not. The exposure was measured as the length of paid maternity leave in the child's birth year, and the outcome was children's growth, i.e. height-for-age z-scores. We use linear regression to estimate the effect of maternity leave on children's growth. Fixed effects for country and birth year accounted for unobserved, time-fixed confounders that varied across countries; we also adjusted for time-varying country-level covariates including wage replacement rate, GDP per capita and the female labour force participation rate. Robust standard errors were used to account for clustering by country. The overall mean height-for-age z-score was -1.39 (SD = 1.58), while the mean in countries with policy changes was slightly lower (m = -1.70; SD = 1.63). A one-week increase in the duration of paid maternity leave increased the mean height-for-age z-score by 0.02 (95% CI 0.01 to 0.03). Our results suggest that paid maternity leave legislation has the potential to improve early childhood growth.

0196-S/P

ASSOCIATION BETWEEN VOLUME AND QUALITY OF MATERNAL CARE IN LOW- AND MIDDLE-INCOME COUNTRIES: ANALYSIS OF FIVE NATIONALLY REPRESENTATIVE FACILITY SURVEYS

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Background Reducing maternal mortality remains a global health priority in the Sustainable Development Goal era. Efforts to increase facility-based delivery may not improve maternal health if facilities provide poor quality care, yet limited research has addressed quality of maternal care in developing countries. We examined the relationship between facility delivery volume and quality in 5 countries in sub-Saharan Africa. **Methods** We drew data from nationally representative health facility surveys conducted by the DHS Program in Kenya, Namibia, Rwanda, Tanzania, and Uganda. We constructed a maternal care quality index of 21 items in 3 domains: infrastructure and staff, routine maternal care, and basic emergency care. We regressed quality on logged delivery volume, controlling for management type, presence of HIV treatment services, ratio of skilled staff to beds, and country. We then stratified by capacity to provide Cesarean section. We performed bias analysis for missing data and a series of sensitivity analyses. **Results** The sample of 1450 facilities included 523,505 deliveries; 89% of facilities (site of 46% of births) did not provide Cesarean section. Average delivery volume and quality score were substantially lower in these primary care facilities (186 births vs. 1714; quality index 0.49 vs. 0.81). A doubling of volume was associated with a difference of 0.05 (95% confidence interval [CI] 0.05, 0.06) and 0.04 (95% CI 0.03, 0.05) in quality in primary and secondary care facilities respectively. This association was robust to sensitivity checks of missing data, model form, quality definition, and exclusion criteria. **Conclusions** Quality as measured by core infrastructure and basic processes of maternal care was low in study countries; nearly one in five deliveries took place in facilities scoring below 50% on our index of basic quality. Reducing maternal mortality and morbidity requires a shift in focus from coverage to quality of care in health facilities.

0195

ESTIMATING THE BURDEN OF DISEASE DUE TO MATERNAL DISORDER USING DISABILITY ADJUSTED LIFE YEAR (DALY)

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The maternal disorder means maternal mortality and morbidities. Maternal disorder is very important health issue because it can affect not only mother's health but also baby's health. The aims of this study was to estimate the burden of maternal disorder using Disability-Adjusted Life Years (DALY) in Korea. In this study, maternal disorder refer maternal hemorrhage (O20, O44, O45, O46, O67), maternal sepsis (O75.3, O85), hypertensive disorders of pregnancy (O10-O16), obstructed labor (O64-O66) and the abortion (O00-O08). DALY was calculated using mortality data and the National Health Insurance Data in 2012. The burden of maternal disorder in Korea is 95,812.4 DALYs (YLL: 1,722.2, YLD: 94,090.2). Among the maternal disorder, Abortion (DALYs: 50,798.3, YLL: 50,411.3, YLD: 387.0) was the highest, followed by maternal hemorrhage (DALY: 21,937.9, YLD: 21,397.2, YLL: 540.7), obstructed labor (DALY: 20,228.6, YLD: 20,228.6, YLL: 0), hypertensive disorder of pregnancy (DALY: 1,923.1, YLD: 1,516.2, YLL: 406.9), maternal sepsis (DALY: 924.3, YLD: 536.9, YLL: 387.4). These result could be used to evaluate the effects of the pregnancy and childbirth support policies. And this data may be helpful to set the pregnancy and childbirth support policies.

0197

ASSOCIATIONS BETWEEN NEIGHBORHOOD-LEVEL UNEMPLOYMENT, EDUCATION AND MARITAL STATUS WITH DSM-IV MENTAL DISORDERS IN FOUR LARGE CITIES IN LATIN AMERICA: RESULTS FROM THE WORLD MENTAL HEALTH SURVEYS

Silvia Martins*, Laura Sampson, Alexandre Chiavegatto-Filho, Laura Andrade, Maria Carmen Viana, Maria Elena Medina-Mora, Yolanda Torres, Marina Piazza, Sergio Aguilar-Gaxiola, Alan Zavasky, Ronald Kessler, Sandro Galea (Columbia University)

Introduction. There is a need to better understand the association between contextual factors and mental disorders in areas of the world with wide inequality gaps and rapid urbanization such as Latin America, where more than 80% of the population lives in urban areas. Our objective was to examine the association of area-level education, marital status and unemployment with the presence of DSM-IV mental disorders in four large cities in Latin America. **Methodology.** Data came from the World Mental Health Surveys conducted in Latin America, comprised of four cross-sectional household surveys of community-dwelling adults: 1) São Paulo, 2) Lima, 3) Medellín, and 4) Mexico city. A total of 6,425 respondents answered the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). Area of residence was defined by the strata used for sampling based on local approximations for neighborhood (n=71 areas of residence). **Results.** The weighted prevalence was 21.47% for past 12-month mental disorders and 36.78% for lifetime mental disorders. After controlling for individual factors, living in an area with a higher proportion of unemployed individuals was significantly associated with elevated odds of any lifetime (AOR: 1.38[1.12-1.70]) and past-year (AOR: 1.32[1.07-1.63]) mental disorder. Living in an area with a higher proportion of married individuals was significantly associated with elevated odds of lifetime mental disorder. Living in an area with a high proportion of highly educated individuals was associated with lower odds of past-year disorder (AOR: 0.66 [0.50-0.86]). **Conclusion.** Understanding which neighborhood-level features affect mental disorders in urban populations in Latin America can generate information for potential interventions to, ultimately, change the distribution of common mental disorders in urban populations and shape the burden of disease in urban settings.

“-S/P” indicates work done while a student/postdoc

0198

SOCIAL NETWORKS AND DIARRHEAL DISEASE TRANSMISSION: A LOOK AT SOCIAL ORGANIZATION AND BEHAVIOR CHANGE OVER TIME Sonia Hegde*, James Trostle, Andres Acevedo, Joseph Eisenberg (PhD)

Candidate Transmission studies of infectious diseases typically use social networks as maps of direct contact to model person-to-person transmission. Social organization and connectedness, however, are also observed in social networks and are critical to the functioning of communities and possibly disease reduction; the more relationships an individual is associated with decreased individual-level risk as a result of behavior change. Prior cross-sectional analyses investigating water and sanitation practices in Ecuador have suggested a greater density of social ties between individuals in remote communities may lead to spread of sanitation practices, both individual and collective, that help reduce transmission of diarrheal disease. With longitudinal social network data, from 2003-2013, from the same cohort of villages in Ecuador, we sought to evaluate the rate of change of social connectedness over time as related to disease transmission and link social connectedness to changes in sanitation and water practices in three villages of different remoteness values, as this has not been looked at. We hypothesize that an increase in density of ties in a community affects household sanitation practices over time and therefore reduces diarrheal disease transmission. We conducted temporal social network analysis and generated random network structures to run deterministic models of diarrheal disease transmission. From this, we developed a threshold of social connectivity at which diarrheal disease is reduced. We then compared this to a MCMC bayesian model investigating the effect of networks in time on diarrheal disease occurrence. Furthermore, we used ethnographic data on differences between community structures to support our quantitative data. In order to understand how social networks influence disease risk in these villages, it is critical to understand how social organization and behavior change can inhibit or encourage pathogen transmission in the environment.

0200

THE USE OF RACE AND ETHNICITY IN THREE EPIDEMIOLOGY JOURNALS: 2003-2013

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Background: Government policies require the inclusion of racial and ethnic minorities in federally-funded health research. This study assesses the extent to which recent epidemiologic research is adhering to these policies, if adherence has improved from 2003 to 2013, and how epidemiologists have dealt with the related variables of socioeconomic status (SES). **Methods:** We examined epidemiologic studies published during three years during the decade 2003-2013 (December 2002 - December 2003, December 2007 - December 2008, and December 2012 - December 2013) in *Annals of Epidemiology*, *American Journal of Epidemiology* and *Epidemiology*. Inclusion criteria were non-tissue empirical human studies with individual-level outcomes conducted in the United States. Articles were examined to determine: funding sources; rationale and method for collecting racial/ethnic data; use of racial/ethnic data in the study; analytic methods; and inclusion of race/ethnicity in results, interpretation, and discussion. **Results:** There were 196-215 studies meeting our inclusion criteria during each of the three years. Race/ethnicity of the study population was mentioned in the majority of the studies (e.g., 86% of these studies in 2002-2003, 81% in 2007-2008) with about three-quarters of the studies including race/ethnicity in analysis. However, the results of these analyses were discussed in only half of the studies and fewer than half provided a rationale for including racial/ethnic data. **Conclusions:** Our findings suggest that many authors are not following biomedical journal editor guidelines or federal policies for the inclusion of racial/ethnic data, and large improvements have not been made. We found additional inconsistencies in usage of socioeconomic variables, leading to barriers in the understanding of the interaction between SES and race/ethnicity in health outcomes.

0202-S/P

QUANTIFYING UNSAFE SLEEP IN MISSISSIPPI

Shana Geary*, Juanita Graham (University of South Florida)

Mechanisms for completing death certificates do not always reveal unsafe sleep risks, which are often masked by cause of death labels, such as SIDS, that are used without proper investigation. To quantify the number of sleep related deaths in Mississippi (MS), matched 2013 birth and death certificates were used to observe infant death cases. Coroner records were accessed to identify cases influenced by unsafe sleep factors that were not regarded as such on the death certificates. The county coroner and state medical examiner offices were contacted to obtain information for cases that did not have supporting documents available through online coroner records. Of the 373 infant deaths that occurred in MS in 2013, 47 (12.6%) were related to unsafe sleep factors, including co-sleeping, positional asphyxia, and other (sleeping on back or side, unsafe surfaces, unsafe environment). The infant mortality (IM) rate in MS in 2013 was 9.7 per 1000 live births. If the deaths related to unsafe sleep were prevented there would be a reduction in the IM rate by 12.4% to 8.5 per 1000 live births. Of the 47 deaths, 30 were related to co-sleeping, 7 to positional asphyxia, and 10 to other factors. The majority of deaths occurred in Central MS (43%). Most infants were African American (55%) and between 0 and 6 months old (96%). According to Section 19-21-103 of the Mississippi Code of 1972, the county coroner position only requires a high school diploma or equivalent, minimum age of 21, and a valid voter registration in the county of election. No prior medical experience or education is required, impacting the ability of coroners to properly classify infant deaths. The practice of using SIDS or SUID as automatic labels for infant deaths without conducting a full investigation underestimates the true magnitude of unsafe sleep related deaths. This practice poses a risk of repeat cases, and distracts public health professionals from a focus of IM efforts towards unsafe sleep.

0201-S/P

INEQUALITIES IN THE ACCESS TO MEDICINES FOR CHRONIC DISEASES IN BRAZIL

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Introduction: Access to essential medicines is as important indicator of the access to health care. In Brazil, the government, free of charge, provides many chronic disease medicines. Nonetheless, inequalities in this access still exist. **Objective:** Describe the prevalence of access to medicines in the Brazilian Unified National Health System among patients that had prescription of medicine for chronic disease. **Methods:** Our data are from the National Household Sample Survey (PNAD 2008). The sample consisted of individuals with chronic conditions (n=76,577). We analyzed the access to medicines for chronic diseases thru the National Health System (SUS). For those that did not receive the medicine in SUS, we investigated whether they bought it or not. **Results:** Our results show that 20.4% of the Brazilian population need some medicine for chronic disease. Of those, 18.9% receive some of the needed medicines, and 48.9% did not receive any thru the SUS. Of those that did not have access thru the SUS, 17.2% did not buy some or any of the needed medicines. The lack of access was associated with lower income, older ages and black skin color. **Discussion:** Brazil have greatly improved the access to health care and to medicines in the past years. However, our results showed that there is still a great number of people without access to the needed medicines, highlighting the necessity of policies to reduce these inequalities.

0203-S/P

SEXUAL ORIENTATION IDENTITY DISPARITIES IN HEALTH BEHAVIORS AND OUTCOMES AMONG MEN AND WOMEN IN THE UNITED STATES

Chandra Jackson*, Harvard University)

Background: Research suggests that sexual minorities (self-identifying as lesbian, gay, or bisexual) generally experience poorer health compared to heterosexuals. However, data on health behaviors and outcomes remain scarce. **Methods:** Using a nationally representative sample of 69,270 US adults in the 2013 and 2014 National Health Interview Survey, we estimated prevalence ratios for health behaviors and outcomes among sexual minority men and women compared to heterosexuals using Poisson regression models with robust variance adjusting for socioeconomic status, health status, and other potential confounders. **Results:** Compared to heterosexuals, heavy drinking ranged from 65% (prevalence ratio (PR)=1.65 [95% confidence interval (CI): 1.14, 2.37]) to an over 2-fold higher prevalence (PR=2.16 [1.46, 3.18]) among women who were lesbian, bisexual, or other. Bisexual men and women were also more likely to report consuming 5+ drinks on at least 2 days in the past year. While there was no difference in health insurance status, gay/lesbian and bisexual men and women were more likely than heterosexuals to report getting an HPV vaccination, ever being tested for HIV, and to delay seeking healthcare because of costs. Lesbians had a 20% higher prevalence (PR=1.20 [1.02, 1.42]) of obesity than heterosexual women, 96% higher prevalence (PR=1.96 [1.14, 3.39]) of stroke, and were 17% more likely (PR=1.17 [1.02, 1.34]) to have a functional limitation. Bisexual women had over a 2-fold higher prevalence (PR=2.49 [1.44, 4.32]) of sustaining an injury in the past 3 months. Gay men were 21% (PR=1.21 [1.03, 1.43]) more likely to have hypertension and 39% (PR=1.39 [1.02, 1.88]) more likely to have heart disease. Sexual minority men were more likely to have a functional limitation. **Conclusion:** Sexual minorities had a higher prevalence of certain poor health behaviors and outcomes. Further research is needed to identify and address the sociocultural factors that contribute to health disparities.

0204

KNOWLEDGE, ATTITUDE AND BEHAVIORS AND BELIEFS OF KIDNEY DISEASE IN RACIAL/ETHNIC MINORITY ADULTS: A COMMUNITY-BASED STUDY

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Background: Chronic Kidney Disease (CKD), 9th leading cause of death in the U.S., is problematic for racial/ethnic minorities, who are more likely to have increased CKD incidence, prevalence, and severity. As many people with CKD remain undiagnosed, early detection is essential. **Methods:** A community-based survey project was undertaken by the Indiana Minority Health Coalition and an academic research partner. Information on socio-demographics, health status, healthcare access and utilization, CKD screening, awareness and attitudes toward health was collected. The survey was translated into Spanish and Hahka Chin; verified by native-speaking community members. Fifteen community groups from 26 Indiana counties were oriented to the project and trained in survey administration. A scale to measure knowledge and attitudes toward CKD was created from survey items. A subset of 831 participants who indicated at least one CKD risk factor were analyzed using logistic regression to find predictors of reporting having been screened for CKD. **Results:** 1425 surveys from self-identified African Americans (59%), Hispanics (22%), American Indians/Alaskan Natives (11%), and Asian/Pacific Islanders (8%) were analyzed. Being older; having higher self-rated health; being employed; higher educational attainment, having a regular provider; and being Hispanic; and reporting high blood pressure, diabetes, or kidney disease were independently associated with higher CKD awareness, while being Burmese and not being able to see a provider because of cost were related to lower awareness. 28.5% reporting at least one risk factor also reported having been screened. Among those with risk factors, having been screened was related to higher CKD awareness and attitude, having high blood pressure or kidney disease, and having a regular provider. **Conclusions:** This study is congruent with previous investigations finding that CKD is underdiagnosed and is associated with impaired access to health care in racial/ethnic minorities

0206

COMPOSITE COVERAGE INDEX AND COVERAGE: HOW CAN WE MAKE THE BEST USE OF THEM?

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Background: composite coverage index (CCI) and coverage are two combined indicators developed to assess the status of reproductive, maternal, neonatal and child health (RMNCH) interventions in a given country. The aim is to compare these two indicators in order to identify the best use for each one. **Methods:** we used 62 Demographic and Health Surveys (DHS) from low- and middle-income countries. CCI is calculated as a weighted estimate based on the continuum of care for children aged 0-59 months (family planning, antenatal care, skilled birth attendance, immunization and management of disease) while coverage is a simple sum of eight essential preventive interventions for children aged 12-59 months (antenatal care, skilled birth attendance, immunization [tetanus toxoid in pregnancy, BCG, DPT and measles vaccines], vitamin A supplementation and safe source of drinking water). Coverage was used as children receiving 6+ and < 3 interventions. We used Pearson correlation between the two indicators and partial correlation (adjusted for GDP per capita) of each indicator with health impact measures (under-five and neonatal mortality rates and stunting). **Results:** the mean of CCI was 67.1% ranging from 22.3% in Chad to 86.8% in Albania. Around 2/3 of the children in Chad are lagging behind (< 3 interventions in coverage) and only 0.1% in Egypt and Moldova. The mean of children receiving 6+ interventions was 56.0%. CCI is more strongly correlated with < 3 interventions in coverage ($r = -0.86$) than with 6+ interventions ($r = 0.75$). Also, correlations with health impact measures (adjusted for GDP) are higher when CCI is used (under five mortality rate, $r = -0.79$; neonatal mortality rate, $r = -0.73$ and stunting, $r = -0.56$) compared with coverage indicators. **Conclusions:** CCI seems to be a better indicator (and easier to deal with) when country performance in RMNCH is evaluated, but coverage is especially useful when trying to identify groups that are left behind.

0205-S/P

SOCIOECONOMIC AND URBAN/RURAL INEQUALITIES IN MATERNAL AND CHILD HEALTH INDICATORS IN 98 LOW AND MIDDLE-INCOME COUNTRIES

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Background: Analyses of within-country inequalities are usually based on a single stratifier. We examined inequalities in maternal and child health indicators using double stratification by both wealth and residence. **Methods:** We analyzed the most recent DHS or MICS surveys for 98 countries. We assessed coverage of skilled birth attendant (SBA), prevalence of stunting, total fertility rate and under-five mortality rate. Indicators were broken down into ten subgroups according to residence (urban or rural) and wealth quintiles (five groups). In-depth analyses were carried out in seven countries (Bangladesh, Egypt, Indonesia, Nigeria, Philippines, Rwanda and Senegal). **Results:** Globally, SBA coverage was higher and fertility lower in urban compared to rural areas within each wealth quintile. Stunting prevalence was similar in urban and rural children in any given quintile. Under-five mortality rates were also similar, except for the richest quintile where urban children are less likely to die than rural children. In-depth analyses showed that the rural/urban gap in SBA gets narrower as income increases in most countries. The most extreme pattern was observed in Nigeria where the rural/urban ratio is less than 0.2 in the poorest quintile and 0.9 in the richest. Nigeria and Senegal have higher stunting prevalence in the rural poor than the urban poor, but among the rich the ratio is reversed, with higher prevalence among urban children. In four countries (Bangladesh, Ghana, Indonesia, Nigeria), fertility was higher in the rural poor than in the urban poor and in three countries (Bangladesh, Egypt and Philippines), fertility was higher in the rural rich than the urban rich. In the Philippines, mortality in the richest quintile is substantially higher for rural than for urban children. **Conclusion:** There are substantial variations in patterns of inequalities from country to country, and double stratification can help identify high-risk groups.

0207-S/P

A PROSPECTIVE INVESTIGATION OF NEIGHBORHOOD SOCIOECONOMIC DEPRIVATION AND WEIGHT CHANGE IN A LARGE US COHORT

Qian Xiao*, Charles Matthews, David Berri-gan (National Cancer Institute)

Background Residents of neighborhoods with more severe socioeconomic deprivation have higher risks for multiple diseases and premature death. Substantial weight loss and weight gain have both been linked to poor health outcomes and higher mortality, particularly in the older population. Although a number of studies examined the relationship between neighborhood conditions and weight status, most of them were cross-sectional and only focused on weight gain and obesity. No study has prospectively investigated neighborhood characteristics in relation to excessive weight gain and weight loss separately. **Methods** Our study included 153690 men and 105179 women (age 50-71) in the NIH-AARP Health and Diet Study, who reported weight at both baseline (1995-96) and follow-up (2004-06). Baseline home address was linked with the 2000 US Census. Demographic variables at census tract level were used to generate a socioeconomic deprivation index by principle component analysis. Multiple logistic regression with robust variance estimation was used to estimate the relative risk of gaining or losing $\geq 10\%$ of baseline body weight at follow up across quintiles of deprivation. **Results** Neighborhood Socioeconomic deprivation was associated with a higher risk of gaining or losing $\geq 10\%$ of baseline bodyweight in both men and women after adjusting for individual indicators of socioeconomic status, disease conditions, and life-style factors ((OR Q5 vs Q1 (95% CI), weight gain, 1.36 (1.28, 1.45) for men and 1.20 (1.13, 1.27) for women; weight loss, 1.09 (1.02, 1.17) for men and 1.23 (1.14, 1.32) for women). The higher risk of weight gain or loss was fairly consistent across subpopulations with different demographics and life-style factors, but was modified by baseline BMI and smoking, with stronger associations observed among never smokers and people with BMI<25. **Conclusion** Neighborhood socioeconomic deprivation predicts higher risk of excessive weight gain and weight loss over 10 years of follow-up.

0210

THE EFFECT OF HISTORY OF INSURANCE ON UTILIZATION OF HEALTHCARE SERVICES: FINDINGS FROM MEDICAL EXPENDITURE PANEL SURVEY

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Background: There is a generally accepted assumption that health insurance coverage makes health care more affordable and therefore, induces greater medical care utilization. However, the relationship between gaining coverage and use of services is complicated as not all individuals would start using more once insured, and even among those who would use more, the amount of increase varies. Investigating this complicity has historically been an intriguing subject to health services researchers. By drawing evidence and comparing patterns of health care use between newly-insured and continuously-insured adults from a nationally-representative survey, this study makes a contribution to the literature on the subject. **Methods:** Medical Expenditure Panel Survey-Household Components (MEPS-HC) data from 2002 to 2011 were used in this study. Adults 20 to 64 year-old were assigned to continuously-insured (CI) and newly-insured (NI) groups. Sample size in CI and NI groups were 44,632 and 413, respectively. Counts of physician office-based visits (OBV), ambulatory emergency room (ER) visits, and inpatient night-stays in hospital (night-stay) were the measures of healthcare use. OLS and difference-in-difference methods were applied to model data. **Results:** NI and CI groups are different in age, race categories proportion, education, and poverty category. Gender, education, employment status, and poverty category are significant predictors of service use across the three services. "Becoming insured" is associated with significant increase in service use for OBV and night-stays, but not ER visits. After becoming insured, an average person utilizes office-based physician visit and night-stays at 0.94 and 0.36 units more, respectively. **Conclusion:** This study showed significant association between gaining coverage and use of some services in certain population characteristics. Despite increased rate of use in some services, results failed to provide evidence in favor of pent-up demand.

0212

USING SEMANTIC WEB TECHNOLOGIES TO IMPROVE DATA QUALITY OF TUBERCULOSIS RECORDS

Luciana Cavallini*, Joyce Nogueira, Nathália Ahiadzo, Timothy Cook (Fluminense Federal University)

Data quality is essential for effective tuberculosis control, and achieving semantic interoperability among ambulatory notes, hospital records and death certificates is essential to provide such quality. Controlled vocabularies, such as the International Classification of Diseases (ICD), are considered essential for achieving semantic interoperability. However, the isolated adoption of controlled vocabularies, hard coded in the source code and database of healthcare information systems has not been enough to improve data quality for tuberculosis control. This study has the objective to present a Semantic Web compliant technology that provides semantic interoperability between independent healthcare information systems, using the ICD-10 Diagnosis Group for tuberculosis as the use case. Anonymized data from the Brazilian Public Hospital Discharge and the Mortality Information Systems were converted to Data Models as proposed by the Multilevel Healthcare Information Modeling (MLHIM) specifications. The MLHIM Data Models for Tuberculosis were structured with a combination of eXtensible Markup Language (XML) structure and Resource Description Framework (RDF) semantic annotation. The ICD-10 Codes for Tuberculosis were recorded for the Primary Cause of Hospital Admission and Underlying Cause of Death, with semantics stored as RDF Triples. The data validation rate for both systems was 100% and all data instances could be stored, queried and visualized uniformly. This study demonstrated the ability of Semantic Web compliant technologies such as the MLHIM specifications to provide semantic interoperability and thus improve data quality for tuberculosis control. The model presented here for the case of tuberculosis can be extended for other disease control programs.

0211-S/P

EDUCAÇÃO PERMANENTE

Ana Paula Fried* (UFF EDUCAÇÃO PERMANENTE: UM ESPAÇO DE NOVOS ENCONTROS)

OBJETIVO GERAL: Analisar a rotina e o processo de trabalho da equipe de saúde que pertence a Unidade de Saúde da Família, localizada em um município do Estado do Rio de Janeiro. **OBJETIVOS ESPECÍFICOS:** 1) colocar em análise o trabalho, as práticas cotidianas, 2) colocar em questão a relevância social do ensino e as articulações da formação com a mudança no conhecimento e no exercício profissional, trazendo, junto dos saberes técnicos e científicos, as dimensões éticas da vida, do trabalho, do homem, da saúde, da educação e das relações. **Metodologia** Trata-se de um estudo exploratório descritivo, através entrevistas individuais semi-estruturadas, cujas contribuições serão analisadas, sistematizadas e validadas pelos entrevistados num novo encontro. O enfoque será qualitativo. O método de análise escolhida será a análise de conteúdo temática de Bardin. **Resultados** O trabalho do profissional em saúde necessita ser re-significado, pois uma nova prática é exigida para o enfrentamento dos problemas de saúde da população, os quais são complexos, requerendo várias habilidades e distintos profissionais de saúde para intervenção que proporcione a transformação da dinâmica de promoção à saúde. A respeito da importância da pesquisa para o município, tenho a dizer que este trabalho pretende demonstrar caminhos, apontar sugestões e despertar para as mudanças que poderão acontecer na prática do dia a dia do trabalho da saúde. **Discussão** A EPS provoca uma reflexão crítica da produção do cuidado em saúde, criando possibilidades para o desenvolvimento de ações educ

0213

MANAGEMENT AND CONTROL OF HYPERTENSION AND DIABETES WITHIN THE FAMILY HEALTH STRATEGY IN THE STATE OF PERNAMBUCO, NORTH-EAST BRAZIL

Eduarda AP Cesse*, Eduardo Freese de Carvalho, Adriana FB Bezerra, Wayner V de Souza, Annick Fontbonne (Department of Community Health, Aggeu Magalhães Research Center, Fiocruz Recife/PE, Brazil)

Background: The Brazilian Family Health Strategy (FHS) offers primary care to low-income populations through structured teams of physician, nurse and community health workers. Its pro-active mode of operation, in a geographically-defined community, is theoretically well-adapted to chronic diseases' management. The objective of the SERVÍDIAH Study was to evaluate the actual management and control of hypertension and diabetes within the FHS in the state of Pernambuco, North-East Brazil. **Methods:** A multi-stage random sample of 785 hypertensive (without diabetes) and 822 diabetic patients (with or without hypertension) was drawn from 208 FHS teams randomly selected over 35 municipalities of the state of Pernambuco. They were interviewed about various aspects of the care they received from their FHS team. Blood pressure, weight and height were measured. Diabetic patients had A1c measured with a point-of-care device. **Results:** Mean age was 60 years, sex ratio 1 to 2.3. About 75% of the patients were overweight or obese; 43.7% of hypertensive subjects had blood pressure below 140/90 mmHg, and 30.5% of diabetic subjects had A1c below 7% (25.8% had blood pressure below 130/80 mmHg). One half (48.4%) of the diabetic, and 39.1% of the hypertensive patients, reported having received the advice to lose weight. However, only 15% declared following a hypocaloric diet, and 70% were physically inactive. Besides, if on their last visit with the FHS team, more than 90% of the patients had their blood pressure measured, only 57.3% of the hypertensive and 59.8% of the diabetic patients were weighed. **Conclusions:** This situation, although objectively unsatisfactory, is close to observations made in developed countries. It probably reflects the persistence of traditional management in the approach of patients with chronic conditions, and the difficulty, even within a recent and original system of primary healthcare, to change practices and adapt to an essentially preventive model of care.

0214

DENTAL INFECTIONS, INFLAMMATORY MEDIATORS AND LEPROSY REACTIONS IN INDIVIDUALS WITH MULTI-BACILLARY LEPROSY. Denise Cortela*, Eliane Ignat (UNIVERSIDADE ESTADUAL DE MATO GROSSO)

Objective: To analyze dental infections as the dental and gingival-periodontal conditions, as well as the inflammatory mediators involved as potential determinants of leprosy reactions. **Method:** Developed in 3 parts: observational case-control study unpaired residents leprosy patients in the state of Mato Grosso, with the first episode reaction (cases) compared to those without leprosy reaction (controls) according to variables related to dental conditions and gingival-periodontal parameters; review of primary literature on inflammatory mediators involved in immunopathological process of leprosy reactions and dental infections; and laboratory analysis of inflammatory mediators involved in the immune response of chronic periodontal disease (CPD) and leprosy reactions by RT-qPCR technique of skin biopsies and gum tissue and the ELISA serum mediators. **Results:** The study included 57 patients with multi-bacillary leprosy, 23 (40.4%) with the reactional episode of leprosy (cases) and 34 (59.6%) were non-reactive (controls). CPD (ORaj = 4.3; $p = 0.033$), periodontal pocket (ORaj = 3.6; $p = 0.033$), the need for dental extraction (ORaj = 24.6; $p = 0.006$) and the presence of alveolar bone loss (ORaj = 6.5; $p = 0.030$) were associated leprosy reactions. The principal mediators involved in immunopathological process of CPD and leprosy reactions were IL-6, IFN- γ , TNF- α , IL-1 β and IL-4. Reactive patients had greater mean values for IL-6 ($p = 0.036$) in serum. Among patients with CPD and reactive serum levels of IFN- γ they proved to be higher when compared to that seen for no CPD and not reactive group ($p = 0.044$). **Conclusion:** Characterized as clinical potential determinants of leprosy reactions the presence of periodontal pockets, alveolar bone resorption, teeth requiring extraction and chronic periodontal disease. As immunological determinants involved in the immunopathogenesis of reactions include the IL-4, IL-6 and IFN- γ .

0216-S/P

BRAZILIAN UNIFIED HEALTH SYSTEM & ACCESS TO MEDICATION Camila Nascimento Monteiro*, Sheila Rizzato Stopa Reinaldo, Gianini Marilisa, Berti Azevedo Barros, Chester Luiz, Galvão Cesar Moisés Goldbaum (University of São Paulo)

Background: Brazilian Unified Health System (SUS) is universal and aims to provide pharmaceutical care to all. Since 2003, public health policies and programs have been increasing access to medication in Brazil and particularly in São Paulo. The present study aims to explore the SUS coverage to medication from 2003 to 2008 and to analyze the socioeconomic differences in SUS coverage in 2003 and in 2008. **Method:** Data obtained from the cross-sectional population-based household surveys from São Paulo, Brazil (ISA-Capital 2003 and ISA-Capital 2008), which investigated living and health conditions and use of health care services in São Paulo. The access to medication from private sector and SUS was studied. We used logistic regression to analyze the associations between socioeconomic indicators and SUS coverage to medication. Also, the differences between 2003 and 2008 regarding socioeconomic characteristics and SUS coverage to medication were studied. **Results:** Access to medication was very high and did not change in the period. The SUS coverage to medication was 26.40% in 2003 and 48.55% in 2008 and was higher in people of lower socioeconomic position. **Conclusions:** The findings indicate the expansion of SUS users, with the incorporation of population with higher socioeconomic position in the public sector. As the SUS gives more support to people of lower socioeconomic position in terms of medication provision, the SUS tends to equity. The universal coverage for medication is still a challenge for the Brazilian public health system.

0215-S/P

ASSESSMENT OF IMPLEMENTATION OF NATIONAL TUBERCULOSIS PROGRAM IN THE MEDICAL SCHOOLS OF SOUTHERN STATES IN INDIA Abel K Samuel Johnson*, Anil Jacob Purty Ramesh, Chand Chauhan, Zile Singh (Post Graduate Student, Department of Community Medicine, Pondicherry Institute of Medical Sciences, Pondicherry, South India.)

Introduction : Due to the large number of tuberculosis (TB) patients treated as well as their role in imparting knowledge and skill to students, medical schools play a crucial role in TB control. Recognizing the potential of involving medical schools in TB control, National tuberculosis program (NTP) of India, for the first time in the World, conceived and implemented the unique experiment of involving medical schools through national co-ordination mechanism of National Task Force (NTF), Zonal Task Force (ZTF) and State Task Force (STF). **Objective :** To assess the implementation of the National Tuberculosis Program in the medical schools of Tamil Nadu, Kerala and Puducherry. **Methodology:** All the medical schools in the 3 southern most states of Tamil Nadu, Kerala and Puducherry ($n = 72$) were included in the study. The study was carried out from Jan 2014 to Jan 2015. Approval from Institute Ethics Committee was taken prior to the study. Data was collected by postal survey. Non-responders were further contacted through e-mail and phone calls. Among the responders of the postal survey ($n = 52$), every 4th medical college was selected for an on site visit to verify the information collected by postal survey. Data was entered in MS excel and means & proportions were calculated. **Results & Conclusion :** Most of the medical colleges (98%) included in the study had a designated microscopy centre. The quality assurance mechanism was available in 92% of the medical schools. The treatment for drug resistant tuberculosis was available in 39% of the medical schools. Special TB wards were available in 44% of the medical schools. Majority of the medical schools (60%) were involved in operational research activity on NTP. This is the first attempt in the sort of a study to assess the implementation of NTP in the medical schools. NTP has to be implemented uniformly in all the medical schools focussing on the deficiencies in each of the medical colleges.

0218-S/P

GENERALIZABILITY OF NLP METHODS FOR AUTOMATED ADVERSE EVENT DETECTION USING ELECTRONIC HEALTH RECORD Zhe Tian*, Simon Sun, Tewodros Eguale, Christian Rocheforte (Department of epidemiology, biostatistics and occupational Health, McGill University)

Introduction: Adverse events (AEs) are a leading cause of mortality, morbidity and cost increase during hospital stay. Studies have suggested that natural language processing (NLP) techniques could be used for AE surveillance and for benchmarking purposes. However, scant attention has been given to the generalizability of NLP techniques across institutions. The objective of this study was to assess the generalizability of NLP techniques for the surveillance of pneumonia, a common AE. **Methods:** We obtained a random sample of 6,281 narrative chest X-ray reports from two university health networks (UHN) in Canada, UHN1 ($n = 4,000$) and UHN2 ($n = 2,281$). Each report was manually reviewed, which served as our reference standard. Data from UHN1 was randomly split into a training set ($n=2000$) and internal validation set ($n=2000$). Data from UHN2 served as the external validation set. Using the training set, we iteratively constructed symbolic NLP decision rules, while experimenting with three alternative approaches for handling negated/contextual statements: a) expert-generated rules; b) NegEx; c) support vector machine models. The best performing NLP rules were then applied on the internal and external validation sets, and accuracy was measured. **Results:** On manual review, 943 (15%) reports were positive for pneumonia; 343 (17.1%) in the development set, 297 (15%) in the internal validation set and 303 (13.2%) in the external validation set. In the development set, the best performances were achieved with an NLP model using expert-generated rules for negation/context detection. In the internal validation set, this model achieved 91% sensitivity, 94% specificity and 73% PPV. In the external validation set, this model achieved 85% sensitivity, 94% specificity and 67% PPV. **Conclusion:** We found that the NLP model was accurate locally, and the main obstacle to generalizability is the accurate detection of negated statements. Future studies are needed to determine if local recalibration improves performance.

0220-S/P

THE ROLE OF NGO-ACADEMIC PARTNERSHIPS IN EVIDENCE-BASED COMMUNITY HIV PREVENTION STRATEGIES FOR YOUTH IN KAMPALA SLUMS: FINDINGS FROM SURVEY OF 55 NGOS IN EASTERN AFRICA Lynette Ametewee*, Monica Swahn, Rogers Kasirye (Georgia State University)

Purpose: Unmet health needs for young people with HIV remain a public health burden in Eastern Africa. Because of weak infrastructure and limited public health policies, underserved communities have growing unmet needs that cannot be met by government. Thus, some Non-Governmental Organizations (NGOs) are repositioning their roles to fill the growing disparity gap in service provision and research through innovative partnerships with academic institutions. However, few studies if any, examine the role of NGO-Academic partnerships as a strategy to address risk factors for HIV/AIDS in Africa. **Methods:** A cross-sectional survey (funded by NIH) was conducted with 55 NGO leaders in October 2014 to assess their organizational structure and operational priorities. NGOs who participated in national/regional health policy alliances and coalitions were invited (N=150) via email to take an online survey through the Qualtrics platform. The survey was completed by 55 NGO leaders (36.6% response rate). Chi-square analyses are presented to examine associations between NGO characteristics and public health strategies. **Results:** In terms of programs and services, NGOs (84%) reported offering alcohol prevention or care services to children and youth; 86% of participants reported offering reproductive and sexual health programs and 89% provided sex education programs. In terms of research for evidence based strategies, 51% indicated experience with research institutions, 37% of NGOs indicated training in human subjects protocol preparation. All participants expressed an interest in building additional research capacity. **Conclusions:** NGOs in Eastern Africa are interested in participating in NGO-Academic partnerships to improve strategies to reduce the spread of HIV/AIDS. However, lack of resources and weak infrastructures remain key barriers to progress and proactive engagement. Strategies for how to provide additional support to NGOs for evidence-based public health policy making are needed to combat spread of HIV.

0222-S/P

GENDER INEQUALITY IN HEPATITIS C RELATED RISK BEHAVIORS AMONG LATINO OFFENDERS IN MIAMI, FLORIDA: A NEED FOR MANDATORY HCV SCREENING Rehab Auf*, Michelle Agudo, Daniel O'Connell, Steve Martin, Gladys Ibanez (Florida International University)

Introduction: HCV has been coined the "secrete epidemic" in the USA, as around 75% of infected people are unaware. Currently, correctional populations represents 1/3 of all HCV cases in the U.S. We wanted to examine gender differences in risky sexual behavior and the desire to be tested for HCV, while controlling for participants knowledge of risky behavior that can lead to HCV. **Methods:** Latino offenders in Miami (n = 184), with history of recent drug use, were interviewed to assess the study aim, while employing a multivariate backward stepwise logistic regression. **Results:** 120 males (65.2%) and 64 females (34.8%) participated with age range between 18-51 years (average: males 29.8 & females 30.8). Around 82% reported having at least high school diploma & 63% had a yearly income < \$40,000. In the multivariate logistic regression, which explained 69% of the variance, female offenders were more likely to have a greater number of partners (OR=4, 95% CI: 1.1 – 14.7), have sex with partners who were high or drunk (OR=2, 95% CI: 1.3 – 3.3), but there was no difference in their interest to be tested for HCV compared to males (<10% took part in the study free HCV testing). Women were more likely to report that injection drugs is mainly a risk factor for HIV rather than HCV (OR=1.7, 95% CI: 1.06 – 2.8), but they were more likely to be aware that HCV infection does not lead to an immediate jaundice (OR=4.9, 95% CI: 2.3 – 10.8) and having sex while high puts individuals at greater risk (OR=1.7, 95% CI: 1 – 2.7) compared to men with no differences observed in other knowledge items, while controlling for all other variables. **Conclusion:** Female offenders are at higher risk for HCV infection due to being engaged in risky behavior; yet were no more likely to be interested in HCV testing than males, even after controlling for knowledge & sociodemographic factors. Our results underscore a strong need to provide mandatory HCV screening for female offenders with history of drug intake as vulnerable group.

"-S/P" indicates work done while a student/postdoc

0221

SPATIAL ANALYSIS OF THE RELATIONSHIP BETWEEN SOCIAL INDICATORS AND MORTALITY DUE TO TUBERCULOSIS IN TWO PRIORITY MUNICIPALITIES TO CONTROL THE DISEASE. Ricardo Alexandre Arcêncio*, Luiz Henrique Arroyo, Melina Yamamura, Marcelino Santos Neto, Juliane de Almeida Crispim, Danielle Talita dos Santos, Ana Angélica Rêgo de Queiroz, Aylana de Souza Benchior (Ribeirão Preto School of Nursing, University of São Paulo)

The Objective of the study was to analyze the spatial relationship between social indicators and mortality due to tuberculosis in two priority municipalities for the disease control. An ecological study that considered cases of deaths due to tuberculosis as the primary cause in the urban area of São Luís and Ribeirão Preto municipalities, which are available in the Mortality Information System. Multiple linear regression was used through the least squares method, and spatial regression for relation analysis of spatial dependence between social indicators and death rates. The autocorrelation of multiple linear regression was tested using the Global Moran Test. Death cases geocoding was processed through TerraView 4.2.2, and in the analysis, Arcgis 10.1, Statistica 12.0 and OpenGeoDa 1.0. For the best spatial regression model diagnosis, it was possible to Lagrange Multiplier test. It was established, in all tests, a significance level, in alpha, of 5% (p < 0.05). There were 193 death cases due to pulmonary tuberculosis, in São Luís, and 50 deaths due to all forms of TB, in Ribeirão Preto. Most deaths occurred in males, in São Luís (n=142; 73.60%) and Ribeirão Preto (n=41; 82%), with a median age 52 and 65 years. In the modeling to verify the spatial relationship between social indicators and mortality, it was possible to observe that social inequality indicator was statistically significant (p=0.002). Space error was the best explanatory model of mortality from TB, in São Luís, with the value of λ (lambda) estimated at 0.49 and significant (p=0.032). In Ribeirão Preto, social equity was a statistically significant indicator (p=0.0013) to explain mortality. Spatial Lag Model was the best method to test spatial dependence, with a value of ρ (rho) estimated in 0.53 and highly significant (p=0.0014). The research contributed to the knowledge advancement that mortality from TB is socially determined as it results from social or environmental factors.

0223-S/P

COLLEGE FOOTBALL GAMES ARE PREDICTORS OF GENITAL HERPES DIAGNOSES AT A LARGE UNIVERSITY'S STUDENT HEALTH CARE CENTER: AN ANALYSIS OF 9 YEARS OF ELECTRONIC MEDICAL RECORDS Jacob Ball*, Sheldon Waugh, Guy Nicolette, Xinguang Chen, Travis Gerke (University of Florida Department of Epidemiology)

College football "gamedays" are characterized by widespread, public drinking, and are thereby associated with risky sex. This investigation attempts to quantify the association between football game characteristics and genital herpes diagnoses at a student health care center (SHCC) at a large university with a heavy football following. Genital herpes visits from the months of August - December from the years 2009 - 2014 were identified and filtered according to their final ICD-9 code. Football game dates and characteristics--whether the game was played at home or away, whether the game was against a team in the same division or a different division/conference, and whether the outcome was a win or a loss--were obtained from publicly available data. We subtracted 4 days from the date of each visit to account for the incubation period and then assigned them the most recent football game's characteristics. Poisson regression was performed using daily counts of diagnoses as the outcome variable and adjusting for sex, age, year, month, weekday, each of the football characteristics, and three interaction terms. Genital herpes visits were 22.34 times more likely to follow in-division games (95%CI: 5.364, 93.063) and 6.78 times more likely to follow wins (95%CI: 1.564, 29.375). Interactions between in-division games and home games, and between winning games and home games, had incidence rate ratios of 2.71 (95%CI: 1.318, 5.553) and 12.44 (95%CI: 7.264, 21.302), respectively, for genital herpes visits. These results suggest that genital herpes incidence on college campuses is strongly associated with football game characteristics and outcomes. Football games and tailgates may be relevant locations for intervention campaigns to reduce transmission. Findings of this study underscore the need to investigate other STIs in order to understand the magnitude and robustness of the effect that football games and their outcomes have on sexual health."

0224-S/P

EVALUATING THE EFFECT OF ADDING TARGETED PREP TO AN ONGOING TREATMENT-AS-PREVENTION TRIAL

Laura Balzer*, Patrick Staples, Jukka-Pekka Onnela, Victor De Gruttola (Harvard T.H. Chan School of Public Health)

Several large cluster randomized trials are underway to investigate the implementation and effectiveness of treatment-as-prevention (TasP) on the HIV epidemic in Sub-Saharan Africa. We consider nesting studies of pre-exposure prophylaxis (PrEP) within ongoing TasP trials. We address (i) how to target PrEP to high-risk groups, (ii) how to maximize power to detect the joint effect of TasP with PrEP as well as the individual effects, and (iii) how the structure of the underlying sexual contact network may influence the optimal PrEP strategy, study design and analysis. To investigate these questions, we use a stochastic block model to generate bipartite (male-female) networks and simulate an agent-based SIR epidemic process on these networks. Briefly, an HIV+ individual has a fixed probability of infecting any of its contacts at each time step. This probability depends on the characteristics of the HIV+ individual, characteristics of its contacts, and the intervention regimes. We consider two strategies for antiretroviral therapy eligibility: (i) treating all HIV+ individuals and (ii) treating all HIV+ non-controllers (individuals with untreated viral loads above specific thresholds). In the latter, some resources are saved by treating only non-controllers, and additional resources are devoted to PrEP. We explore four strategies for targeting PrEP: (i) the HIV- contacts of an HIV+ individual (a ring-based strategy), (ii) all HIV- individuals who self-identify as high risk (on demand PrEP), (iii) highly connected HIV- individuals, and (iv) all HIV- individuals who are identified by their HIV+ partner (serodiscordant couples). We vary the infectiousness of HIV+ individuals, effectiveness of PrEP and the coverage of the intervention regimes. Our results suggest that nesting a PrEP study within a TasP trial can lead to combined intervention effects much greater than those of TasP alone and can provide information about the efficacy of PrEP in the presence of TasP.

0226

ASSOCIATION BETWEEN THE PREVALENCE OF INFECTION AND THE RISK OF ILLNESS DUE TO LEISHMANIA (LEISHMANIA) INFANTUM IN DIFFERENT ENDEMIC AREAS OF A BRAZILIAN METROPOLIS

Mariângela Carneiro*, Leticia Helena Santos, Marques Iara Caixeta, Marques Rocha, Ilka Afonso Reis, Gisele Macedo, Rodrigues Cunha, Edward Oliveira, Valdelaine Miranda Araújo, Maria Helna Franco Morais, Ana Rabello (Federal University of Minas Gerais)

Understanding the transmission of visceral leishmaniasis (VL) in urban area of Brazil is essential for the identification and monitoring of the areas. The aim was to evaluate the association between asymptomatic infection and the risk of illness in an endemic area in Belo Horizonte, MG. Ecological study was conducted using a Bayesian approach to estimate the relative risk (RR) on the basis of the frequency of VL cases between 2008-2011. The results allowed the identification of three coverage areas with low, medium, and high risk of illness, which were evaluated using a cross-sectional study to estimate the prevalence of asymptomatic infection due to *L. infantum*. The infection was identified using enzyme-linked immunosorbent assays (antigens: rK39 and soluble). The prevalence rates of asymptomatic infection were estimated in different areas and were compared with the RR. Multilevel logistic regression was used to identify the association between asymptomatic infection and the variables analyzed. The map generated in the ecological study showed that the RR of illness due to VL was distributed heterogeneously in the municipality. A total of 935 children living in the three assessed areas participated in the cross-sectional study. The prevalence rates determined by area were 34.9% (95%CI 29.7–40.4) in area 1, 29.3% (95%CI 24.5–34.5) in area 2, and 33.6% (95%CI 28.5–38.9) in area 3. No significant differences were observed in the prevalence rates of infection between these areas. The variables ‘presence of yards in the neighborhood’ (OR: 1.14; 95%CI, 1.01–1.29) and ‘younger age among children (OR: 0.99; CI95%, 0.98–0.99) remained in the final multi-level model. The infection rates and the homogeneous distribution of asymptomatic individuals in the assessed areas indicate that infection due to *L. infantum* in areas with different levels of risk to the clinical form of VL affects a significant percentage of children in Belo Horizonte, regardless of the risk of illness.

0225-S/P

WEATHER RELATED EFFECTS ON DENGUE FEVER TRANSMISSION: USING DATA DRIVEN MODELS TO PREDICT DISEASE SPREAD

Corey Benedum*, Tim A. Postlethwaite, Karen A. Stark, Natasha Markuzon (Draper Laboratory)

Dengue fever is a potentially lethal mosquito-borne viral infection. Changing weather conditions affect dengue fever transmission by influencing vector populations and the extrinsic incubation period. Due to the lack of treatment options, identification of high risk transmission periods is imperative in implementing timely vector control measures in order to curb disease spread. Advances in data driven computational methods offer the opportunity to improve forecasting and to identify previously unknown patterns contributing to disease spread. In this study we used a variety of parametric and non-parametric techniques (such as regression forest and k-nearest neighbor) to forecast dengue fever incidence as a function of weather and landscape factors. The study areas include Iquitos Peru and San Juan Puerto Rico during the 2000-2009 and 1990-2009 seasons respectively. Weekly case counts from these locations, provided by the NOAA dengue forecasting challenge, were linked with climate and land-cover variables in order to predict disease spread in the next several weeks. Sensitivity analysis was performed to evaluate the significance of different weather related factors across time. Models’ predictive ability were assessed via mean absolute error. We demonstrate that the best models’ predictions follow the actual epidemic curve shape quite accurately, and predictive power reached a mean absolute error of 4. We also demonstrate that weather pattern information had a significant impact on the prediction. We analyze the predictive power of models for varying time horizons, and identify the primary drivers contributing to the disease spread. Finally, we discuss steps to optimize model accuracy and forecasting ability. This study is supported by DTRA contract number HDTRA1-15-C-0003.

0227

COMPARATIVE EPIDEMIOLOGY OF MRSA AND VRE IN AN ACUTE-CARE HOSPITAL AND ITS AFFILIATED INTERMEDIATE- AND LONG-TERM CARE FACILITIES: A LONGITUDINAL STUDY

Angela Chow*, Kala Kanagasabai, Kelvin Phua, Hanley Ho, Jia-Wei Lim, Pei-Yun Hon, Kalisvar Marimuthu, David Lye, Ian Leong, Prabha Krishnan, Brenda Ang (Institute of Infectious Diseases and Epidemiology, Tan Tock Seng Hospital Singapore)

Background Prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant *Enterococcus* (VRE) is increasing. We compared the epidemiology and risk factors for MRSA and VRE colonization among patients of an acute hospital and its affiliated intermediate- and long-term care facilities (ILTCs), longitudinally over 2 years. **Methods** We conducted period prevalence surveys screening for MRSA and VRE in 2014 and 2015, in an adult acute tertiary-care hospital and its five affiliated ILTCs, in Singapore. Epidemiologic data was obtained from electronic records. To control for confounding and account for repeated measures, multivariable mixed-effects logistic regression models were constructed using SAS Proc Glimmix. **Results** 3313 patients were screened. MRSA prevalence was higher in ILTCs (30.5%) than acute hospital (12.9%) ($P < 0.0001$); the converse was observed for VRE (4.8% ILTCs, 16.8% acute hospital, $P < 0.0001$). MRSA prevalence increased from 25.1% in 2014 to 36.0% in 2015 ($P < .0001$) in ILTCs, but remained low in the acute hospital (12.0% [2014], 13.8% [2015], $P = 0.2194$). VRE prevalence declined from 19.8% in 2014 to 13.7% in 2015 ($P = 0.0003$) in the acute hospital. In contrast, VRE prevalence increased from 2.7% to 7.0% in ILTCs ($P = 0.0002$). Age (OR 1.01, 95% CI 1.00-1.02), male gender (OR 1.82, 95% CI 1.50-2.20), length of stay (LOS) >7 days (OR 2.90, 95% CI 2.19-3.84), and VRE co-colonization (OR 2.24, 95% CI 1.71-2.93) were positively associated with MRSA colonization, after accounting for healthcare institution and year of screening. LOS >7 days (OR 2.48, 95% CI 1.89-3.24) and MRSA co-colonization (OR 2.23, 95% CI 1.71-2.92) were independently associated with VRE colonization. **Conclusion** LOS >7 days and co-colonization were associated with both MRSA and VRE colonization. Active surveillance and infection control strategies should be targeted at long-staying patients in acute hospitals and ILTCs, to prevent transmission across healthcare settings.

“-S/P” indicates work done while a student/postdoc

0228 S/P

DELAYED DIAGNOSIS OF HIV AMONG NON-LATINO BLACK WEST INDIAN IMMIGRANTS IN FLORIDA 2000-2014

Elena Cyrus*, Diana Sheehan, Mary Jo Trepka, Mariana Sanchez, Kristopher Fennie, Marsha Cameron, Lorene Maddox (Florida International University)

Background: Prompt HIV diagnosis can decrease the risk of HIV transmission and improve health outcomes. The purpose of this study was to examine disparities in delayed HIV diagnosis among non-Latino black West Indian immigrants in Florida. **Methods:** The analysis included US and West Indian born blacks aged ≥ 13 whose HIV infection was reported to the Florida Enhanced HIV/AIDS Reporting System. Delayed HIV diagnosis was defined as AIDS diagnosis within three months of HIV diagnosis. Multilevel logistic regressions were used to estimate adjusted odds ratios (AOR) for delayed diagnosis, and to address correlation among cases residing in the same zip code at time of HIV diagnosis. **Results:** Of 39,008 HIV cases, 18.8% were born in the West Indies. Compared to US blacks, individuals from US Virgin Islands, Bahamas and Haiti had higher rates of delayed diagnosis (39.6%, 39.3%, 38.6%; $p < .0001$). After adjusting for demographic factors, year of HIV diagnosis, transmission mode, neighborhood level socioeconomic status, and rural-urban residence, West Indians born in Bahamas and Haiti were at increased risk for delayed diagnosis compared with US-born blacks. The effect was stronger among male Bahamian- and Haitian-born blacks (AOR 1.77, 95% confidence interval [CI] 1.27 – 2.48; AOR 1.41, 95% CI 1.30 – 1.54), than among female Bahamian- and Haitian-born blacks (AOR 1.49, 95% CI 1.07 – 2.09; AOR 1.13, 95% CI 1.02 – 1.25). Compared to US blacks, Bahamian and Haitian-born blacks had a lower percentage of IDU transmission (4.8% and 1.98%, $p < .0001$), and a higher percentage of heterosexual transmission (71.2% and 56.8%, $p < .0001$). **Conclusion:** Immigrants from Bahamas and Haiti had a higher likelihood of delayed diagnosis of HIV, especially for males. Differences in transmission mode suggest the need for targeted, culturally relevant interventions to reduce delayed diagnosis incidence.

0230-S/P

CHANGES IN PERCEIVED COLLECTIVE EFFICACY AMONG LATINA IMMIGRANTS: IMPLICATIONS FOR HIV RISK?

Christyl Dawson*, Elena Cyrus, Frank Dillon, Mary Jo Trepka, Mario De La Rosa (Florida International University)

Background: The social environment of immigrant-receiving communities has been found to influence HIV risk behaviors. This may be particularly important for Latina immigrants, who are disproportionately affected by HIV/AIDS in the United States. It is unknown whether collective efficacy, a component of the social environment, affects HIV risk behavior among this population. **Objective:** The purpose of the study was to assess changes in collective efficacy among Latina immigrants over a year. **Methods:** Women were recruited using respondent-driven sampling in Miami-Dade County, FL. Structured interviews were conducted in Spanish at baseline in April 2013 and follow-up in April 2014. Collective efficacy was assessed using the Collective Efficacy Scale (Sampson et al., 1997). Wilcoxon signed-ranks tests were used to compare baseline and follow-up mean scores for the scale and its subscales. **Results:** Overall, there was a statistically significant decrease between baseline and follow-up in mean collective efficacy scores [3.36(SD=0.89)-3.30(SD=0.57), $p = 0.04$] in one year. Mean subscale scores decreased significantly for informal social control [3.48(SD=1.00)-3.42(SD=0.74), $p = 0.05$], but not social cohesion/trust [3.24(SD=0.90)-3.19(SD=0.55), $p = 0.11$]. Stratification of mean subscale scores showed that those who were documented had a significant decrease for both subscales [informal social control= 3.53(SD=0.94)-3.43(SD=0.74), $p = 0.01$; social cohesion/trust= 3.26(SD=0.83)-3.19(SD=0.52), $p = 0.04$] compared to those who were undocumented. Cubans had a statistically significant decrease in the social cohesion/trust subscale [3.31(SD=0.66)-3.16(SD=0.55), $p = 0.01$], but non-Cubans did not. **Conclusion:** Findings suggest variation in change of perceived collective efficacy over a year in receiving communities. Further research is needed to investigate the influence of changes in collective efficacy on HIV risk behavior among Latina immigrants.

“S/P” indicates work done while a student/postdoc

0229-S/P

EPIDEMIOLOGY TREND OF MALARIA IN THE BRAZILIAN AMAZON

Isac da S. F. Lima*, Isac Da Silva Ferreira Lima, Oscar M. M. Lapouble, Elisabeth C. Duarte (University of Brasilia)

Background: Despite all the efforts to reduce malaria incidence and to prevent deaths, the disease persists as an important public health problem in the Brazilian Amazon. Over the last eight decades, malaria transmission in Brazil has shown marked cyclical variations. To this day, however, there has been a relevant reduction in malaria incidence in the region. The aim of this study is, therefore, to describe, investigate and quantify the reduction trends of malaria in Brazilian Amazon. **Methodology:** This was an ecological time-series study using the population-based malaria surveillance database obtained from the Ministry of Health for the period between 2004 and 2013. The incidence rates of malaria per 1,000 habitants were calculated for each Brazilian Amazon State and year of study. Joinpoint Regression was used to analyse the time trend of malaria in each State. Statistical significance was set at 0.05. **Principal Findings:** Between 2004 and 2006, the State of Acre had a sharp increase in the incidence rate from 48 cases per 1,000 habitants to 135 cases per 1,000 habitants followed by two decreasing trend periods. In the States of Amapa, Amazonas, Rondonia and Roraima the incidence rates had shown statistically significant reduction trends over the study period. The highest reduction occurred in Rondonia with a significant Average Annual Percentage Change (AAPC) reduction of 21% (AAPC: -21.7%; 95%CI: -25.4% to -17.8%) between 2004 and 2013, followed by Amazonas (AAPC: -14.4%; IC 95%: -19.1%, -9.4%) e Amapa (AAPC: -9.8%; IC 95%: -14.3%, -5.2%). **Conclusions:** There has been a marked decrease trend of malaria incidence in the Brazilian Amazon. Nevertheless, continuous progress is needed to reinforce effective malaria surveillance and vector control in the region. Malaria has a high potential for being avoided and it seems Brazil is in the right track to interrupting malaria transmission, which will, hopefully, occur in the next few decades.

0231

CONCORDANCE OF SEXUAL ORIENTATION AND SEXUAL BEHAVIOR IN SENTINEL SURVEILLANCE OF GONOCOCCAL ANTIMICROBIAL RESISTANCE

Alex de Voux*, Elizabeth Torrone, Robert Kirkcaldy, Richard Hedenquist (Centers for Disease Control and Prevention)

Background: Antimicrobial resistant gonorrhea is an urgent public health threat with higher prevalence of resistance among men who have sex with men (MSM). The Gonococcal Isolate Surveillance Project (GISP) monitors resistance, including stratification by sexual orientation. However sexual orientation may not accurately reflect sexual behavior (sex of sex partner). We compared sexual orientation in GISP patients to sexual behaviors documented in their medical record in one of 27 participating STD clinics. **Methods:** Reported sexual orientation (heterosexual, homosexual and bisexual) and behaviors were compared for the first 25 men presenting with symptomatic urethral gonorrhea each month at a clinic in Atlanta between January–June 2014. Sexual behaviors included sex of recent partner and type of sexual activity (e.g., receptive anal sex) and were ascertained separately from sexual orientation. We calculated sensitivity and positive predictive value of sexual orientation using any indication of same-sex behavior as the gold standard. **Results:** Among 149 men, the median age was 26 years (range: 16, 67), 100% were Black, 19% were HIV positive. 71% (n=106) identified as heterosexual, 23% (n=34) homosexual and 9% (n=9) bisexual. All men who identified as heterosexual reported sex exclusively with women. All men who identified as homosexual or bisexual described at least one same-sex behavior. In this sample, the sensitivity and positive predictive value of sexual orientation was 100%. **Conclusion:** Although previous research documented discordance between sexual orientation and behavior particularly among MSM of color, we found high concordance of sexual orientation and behavior in a sample of STD clinic patients with gonorrhea. Our results suggest that sexual orientation as documented in a medical record serves as a good proxy for self-reported sexual behaviors and suggests that misclassification of sex of sex partners in existing sentinel surveillance is minimal.

0232-S/P

COMPARING THE SPATIAL DISTRIBUTION AND LOCATION CHARACTERISTICS OF HIV+ AND HIV- CANCER CASES IN SOUTH CAROLINA Benjamin Hallowell*, Sara Robb, Kristina Kintziger (University of Georgia)

Objective: To compare the spatial distribution and location characteristics of HIV-positive (HIV+) and HIV-negative (HIV-) individuals with a diagnosis of cancer in South Carolina (SC). **Methods:** We obtained linked HIV and cancer data from SC's enhanced HIV/AIDS Reporting System and cancer data from SC's Central Cancer Registry. Location-related information on SC residents (e.g., employment status, income levels, race of householder, and educational attainment) was obtained from the 2000 US Census. ArcGIS hotspot analysis was used to analyze the spatial distribution of HIV+ and HIV- cancer cases, while logistic regression analyses were used to assess whether census tract demographic and geographic characteristics were associated with HIV+ cancer case hotspots. **Results:** A total of 1,133 HIV+ cancer cases and 5,988 HIV- matched cancer controls were included in the final analysis. Hotspot analysis results detected statistically significant clusters of higher rates of HIV+ cancer cases present in Charleston and Columbia, a pattern that was not observed with HIV- matched cancer controls. HIV+ cancer case hotspots were more likely to occur in census tracts with higher percentages of African Americans (OR: 1.04; 95% CI: 1.02, 1.05); individuals over 25 who graduated high school (OR: 1.12; 95% CI: 1.09, 1.15); urban classification (OR: 1.02; 95% CI: 1.10, 1.03); and poverty levels (OR: 1.38; 95% CI: 1.08, 1.77). Selected demographic and geographic characteristics were not found to be risk factors for HIV- cancer case hotspots. **Conclusion:** Charleston and Columbia, SC should be the first priority for HIV+ cancer screenings, prevention, and future research efforts. Based on our results, educational attainment, urban classification, African American population, and poverty levels should be used in future projects to identify areas for prevention, research, or screening programs. **Keywords:** HIV, GIS, Disparities, AIDS, South Carolina, Spatial Analysis

0234

VIRAL HEPATITIS AMONG NON-HISPANIC ASIAN ADULTS IN THE UNITED STATES: THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES), 2011-2014 Deanna Kruszon-Moran*, Geraldine McQuillan (CDC/NCHS/DHANES)

Hepatitis infection is a leading cause of liver disease including cancer. To estimate the prevalence of 3 common types of Hepatitis, serologic data on hepatitis A virus antibody (HAV) from infection or immunization, hepatitis B virus antibody (HBV) among current and ever infected, and hepatitis C virus RNA (HCV) from current infection were collected among those 18 and older in NHANES. NHANES is a representative sample of the U.S. civilian population with data released every two years. Starting in 2011-2012, estimates for non-Hispanic Asians (Asians) were available for the first time. Prevalence of HAV antibody, was 36.5% and higher among Asians (70.9%) than non-Hispanic whites (NHW) (25.4%) and non-Hispanic blacks (NHB) (38.0%) ($p<0.001$) but not Hispanics (73.1%). HAV prevalence was also higher among non-US born (76.6%) than U.S. born (41.3%) Asians ($p<0.001$). Prevalence of ever infected with HBV was 4.7% and higher among Asians (22.6%) than NHW (2.6%), NHB (10.2%) and Hispanics (3.6%) ($p<0.001$) and higher among non-US born (26.5%) than U.S. born (2.7%) Asians ($p<0.001$). Prevalence of current HBV infection was 0.39% with differences similar across race/Hispanic origin and U.S. birth subgroups. Prevalence of HCV was 0.89% and low among Asians (0.2% 95%CI: 0.02-0.61) compared with NHW (0.8%), NHB (1.9%), and Hispanics (0.8%). However, the Asian estimate was based on only 2 positive persons in the survey. These are the first national estimates of hepatitis among Asians in the U.S. Prevalence was higher for HAV (infection or immunization) and HBV (both current and ever infected) but low for HCV (current infection). Prevalence was higher among those born outside the U.S. for HAV and HBV as well. These data can help identify vulnerable subgroups and target intervention and vaccine efforts in the US population.

0233-S/P

ENTERIC PATHOGEN TRANSPORT THROUGH RIVER NETWORKS: REVISING THE BIASED RANDOM WALK FRAMEWORK Alicia Kraay*, Andrew Brouwer, Joseph N.S. Eisenberg (University of Michigan-Ann Arbor)

Background: Because enteric pathogens can be transmitted through the consumption of contaminated water, accurately modelling the flow of pathogens through a river network is important for modelling disease spread between communities in a watershed. However, the commonly used biased random walk model makes several problematic assumptions and does not consider differences by pathogen. **Objectives:** We aimed to develop a framework for adapting the biased random walk model that better accounts for pathogen differences and hydrological features and use this framework to identify pathogen and river network conditions when the simpler biased random walk model is adequate and when a more nuanced model is needed. **Methods:** A five-patch SIRW type model was used to model spread of an infection along a river network by adapting the biased random walk method to account for different path lengths, flow rates, and dispersion in arrival times. The pathogen decay rate and speed were altered to demonstrate differences by pathogen. **Results:** On a random river network, accounting for unequal flow rates had little impact when all communities were located close together (RR=1.03, 95% CI: 1.01, 1.04). However, when communities were far apart and flow rates varied along the river, projected case counts were 47% lower after accounting for those features compared to expected estimates with the standard biased random walk method (RR=.53, 95% CI: .52, .55). Furthermore, the time to epidemic peak was 21 days longer. The simpler model also performed worse for pathogens with higher decay rates. **Conclusions:** Accounting for differential flow rates and distances may not be important when communities are generally close together. However, when these conditions are not met, failing to account for these river network features may overestimate the size of the outbreak, particularly for pathogens with low survival time.

0235-S/P

PEOPLE LIVING WITH HIV DIAGNOSED IN HIV TESTING AND COUNSELING CLINICS: WHO ARE WE MISSING? Stephanie Kujawski*, Maria Lahuerta, Matthew Lamb, Fatima Abacassamo, Laurence Ahoua, Batya Elul (Columbia University Mailman School of Public Health)

The new WHO antiretroviral treatment guidelines place the HIV care continuum at the forefront of HIV service scale-up. While determinants of outcomes along the continuum have been examined among people living with HIV (PLWH) enrolled in HIV care, far less is known about "leaks" in the first step in the continuum: ensuring PLWH know their status. We used data from an implementation science study and the 2009 AIDS Indicator Survey (AIS) to compare characteristics of PLWH diagnosed in HIV clinics to the general population of PLWH in Mozambique. The Engage4Health (E4H) study enrolled 1,901 adults testing HIV-positive in 10 HIV clinics in Maputo City and Inhambane Province from 4/2013-6/2015. The Mozambican AIS included HIV testing and interviews from a nationally representative sample. For this analysis, the AIS sample was restricted to 287 individuals who tested HIV-positive, resided in the study areas, and met E4H eligibility criteria. "Leaks" in testing coverage were estimated by comparing demographics and HIV knowledge across study populations using descriptive statistics and were further stratified by sex. We assessed subgroup representation in the health system by comparing proportions in the clinic-based sample to the proportion in the general population, referred to as the program-to-population ratio (PPR). Relative to PLWH in the AIS, those with higher socioeconomic status (SES) (PPR=1.13, $p=0.02$) and more education (PPR=1.23, $p=0.046$) were overrepresented in the clinic sample, while those with higher HIV knowledge (PPR=0.81, $p=0.00$) were underrepresented. Gender distribution was similar between the two samples (female PPR=1.05, $p=0.32$). Differences remained for HIV knowledge among men (PPR=0.74, $p=0.00$) and women (PPR=0.85, $p=0.008$) in sex-stratified analyses. Differences in SES (PPR=1.16, $p=0.04$) and education (PPR=1.38, $p=0.002$) persisted among women. Comparing data from HIV clinics to population-based samples can inform efforts to ensure that all PLWH know their status.

0236-S/P

VALIDATION OF DPP® CVL TEST AS A KINETIC FIELD ASSAY FOR LEISHMANIASIS DIAGNOSIS Mandy Larson*, Angela Toepp, Benjamin Scott, Melissa Kurtz, Hailie Fowler, Javan Esfandiari, Randall Howland, Christine Petersen (Department of Epidemiology, College of Public Health, University of Iowa)

Leishmaniasis is a zoonotic disease caused by the obligate intracellular protozoan parasite *Leishmania*. The domestic dog is the primary reservoir host of *L. infantum*. Quantitative molecular diagnosis of leishmaniasis in resource-poor settings, where the majority of cases occur, has proven to be challenging. Current tests are not sufficiently quantitative, rapid, or reliable for field use. Over the last decade, development of recombinant *Leishmania* proteins for use in diagnostics revolutionized diagnosis. An immunochromatographic test was adapted to a Dual-Path Platform (DPP®) format for field use. This test, the DPP® canine visceral leishmaniasis (CVL) test, is used by the Brazilian Department of Public Health to identify and cull infected dogs as part of their overarching program to combat visceral leishmaniasis (VL). Based on this use, there was need to assess whether this test could be used as a quantitative, kinetic assay. A statistically significant correlation was found between increased anti-K28 *Leishmania* antibody titer and faster time-to-positive-band on the DPP® CVL test. This evaluation of the DPP® CVL test provides strong evidence that even simple immunochromatographic assays can provide robust quantitative data. Our data indicated that the DPP® CVL test may be used in resource-poor settings to provide better correlation between diagnostic results and probable outcomes of leishmaniasis for evidence-based treatment decisions.

0238

ESTIMATED NUMBER OF PATIENTS WITH INFLUENZA A (H1)PDM09, OR OTHER VIRAL TYPES, FROM 2010 TO 2014 IN JAPAN Yoshitaka Murakami*, Shuji Hashimoto, Miyuki Kawado, Akiko Ohta, Kiyosu Taniguchi, Tomimasa Sunagawa, Tamano Matsui Masaki Nagai (Department of Medical Statistics, Toho University)

Introduction; Infectious disease surveillance systems provide information crucial for protecting populations from influenza epidemics. However, few have reported the nationwide number of patients with influenza-like illness, detailing virological type. **Methods;** Using data from the infectious disease surveillance system in Japan, we estimated the weekly number of influenza-like illness cases by virological type, including pandemic influenza (A(H1)pdm09) and seasonal-type influenza (A(H3) and B) over a four-year period (week 36 of 2010 to week 18 of 2014). We used the reported number of influenza cases from nationwide sentinel surveillance and the proportions of virological types from infectious agents surveillance. Using a stratified random sampling technique, we estimated the total number of cases of influenza-like illness and their approximate 95% confidence intervals. **Results;** For the 2010/11 season, influenza type A(H1)pdm09 was dominant: 6.48 million (6.33–6.63), followed by types A(H3): 4.05 million (3.90–4.21) and B: 2.84 million (2.71–2.97). In the 2011/12 season, seasonal influenza type A(H3) was dominant: 10.89 million (10.64–11.14), followed by type B: 5.54 million (5.32–5.75). During these period, approximately 50% of patients were aged 5–19 or younger, with few patients aged 60 and over, for all of the virus types. Type B influenza incidence showed a particularly strong relationship with younger age groups. **Conclusion;** Close monitoring of the estimated number of influenza-like illness cases by virological type not only highlights the huge impact of previous influenza epidemics in Japan, it may also aid the prediction of future outbreaks, allowing for implementation of control and prevention measures.

0237-S/P

SMOKING AND LATENT TUBERCULOSIS INFECTION (LTBI) IN PRIMARY HEALTH CARE WORKERS IN BRAZIL Rafaela Loureiro*, Ethel Maciel Renata Peres, Geisa Fregona, José Braga (Institute of Social Medicine, State University of Rio de Janeiro/Lab-Epi, Laboratory of Epidemiology, Federal University of Espirito Santo)

Background. Health Care Workers (HCW) make up one of the groups most vulnerable to infection by *Mycobacterium tuberculosis* (Mtb). The discovery of a new diagnostic technology, detection tests of interferon gamma (Quantiferon-TB Gold-IN-Tube - FTQ-GIT), has contributed to the advancement of research groups with potential risk for illness from tuberculosis. Objective. Analyze the impact of smoking on the risk of LTBI among Health Care Workers of primary health care in Brazil. **Methodology.** This is a cross-sectional study was conducted, between January 2011 and December 2013, in primary Health Care Workers in Brazil, in the range of 18 to 60 years old. A multiple logistic regression model with hierarchical selection, using stepwise technique type backward was developed for models of every size and for the final model, with Odds Ratio at the 95% confidence interval (95% CI). We used Stata statistical software. **Results.** Of the 708 Health Care Workers included in the sample was observed association with LTBI for male [OR = 1.89; 95% CI: 1.11-3.20], age ≥ 41 years [OR = 1.56; 95% CI: 1.09-2.22], contact with a family with TB [OR = 1.55; 95% CI: 1.02-2.36] status smoker [OR = 1.75; 95% CI: 1.03-2.98] and professional category of nursing [OR = 1.44; 95% CI: 1.02-2.03]. It was observed that the presence of BCG vaccination scar acted as a protective factor for LTBI [OR = 0.44; 95% CI: 0.27-0.71]. **Conclusion.** The LTBI among primary Health Care Workers is associated with the smoking and the professional category of nursing. It is recommended the implementation of policy measures to control smoking, especially in environments of risk to contract LTBI.

0239-S/P

LINKING COMMUNITY BASED PARTICIPATORY RESEARCH AND INTEGRATED VECTOR MANAGEMENT TO TACKLE PUBLIC HEALTH PROBLEMS OF CHIKUNGUNYA AND DENGUE IN ECUADOR Diana Naranjo *, Whitney Qualls, John Beier, Eduardo Gomez, Alejandra Garcia (University of Miami)

Background: Chikungunya (CHIK) and dengue fever (DF) have grown massively given the spread of the vector, *Aedes aegypti*, in the Americas. Integrated vector management (IVM) aims to control these vector borne diseases (VBDs). Yet, evidence on how IVM relates to community engagement is lacking. Our model proposes using community based participatory research (CBPR) principles to enhance IVM for the control of CHIK and DF in Ecuador. **Methods:** CBPR approaches helped identify individual, sector, community, and environmental factors suitable for CHIK and DF development. Experts in vector control, bio-socio-ecological sciences, government members, and academia, met with the community to design a research project. Urban aspects were included as environmental factors. From focus groups, meetings, and communications a study population was selected, themes and sites were assessed, and tools were culturally adapted. **Results:** About 300000 residents live in Durán. The city is a model of urban risk disparities within its informal settlements and uneven infrastructure coverage. Census and disease knowledge and perception surveys assessed socio-demographics, sector quality, and risk behaviors. Integration of residents and government workers was achieved through participation and feedback in the research process. **Conclusion:** The IVM-CBPR is based on inputs as background information of the city, social and political settings, team selection, and resources assessment. Such took substantial time investment. To sustain continuation of further studies, baseline information and adapted trainings were built around activities to identify assets, specific entomological and epidemiological indicators, feasibility tests, and design approaches. Outcomes were maximizing the use of resources and capacity building while highlighting policies for environmental management. Multi-sectorial cooperation supported the understanding of the bio-socio-ecological spheres of CHIK and DF.

0240-S/P

RISK FACTORS ASSOCIATED WITH MATERNAL-CHILD HIV TRANSMISSION IN A THIRD LEVEL HOSPITAL IN MEXICO Mónica Grisel, Rivera Mahey*, JoseAntonio MataMarín, Alberto Chaparro Sánchez, Luz Alejandra, Solís Cordero, Enrique Alcalá Martínez (Instituto mexicano del seguro social)

Objective: To identify sociodemographic, maternal, and clinical factors associated with maternal-child HIV transmission in a third level hospital in Mexico. **Methods:** This is a case-control study conducted in the hospital de infectología, “La Raza” national medical center, a third level and reference center in Mexico city from may 1, 2008 to december 31, 2015. We included cases of HIV infected mothers who transmitted HIV infection to their children, and controls HIV mothers with children with negative results for HIV. We excluded patients with incomplete records. We analyze sociodemographic, maternal, and clinical factors associated with maternal-child HIV transmission (MCT). OR and CI95% was obtained with chi squared test. **Results:** 60 cases and 120 controls were analyzed, median age was 25 years (IQR 21-24), 89% of the cases were diagnosed after pregnant and 60% of controls were diagnosed at this time. Median weeks under ART in controls was 17 (IQR 11-24). The most common regimen of treatment was zidovudine/lamivudine + lopinavir/ritonavir. Risk factors associated with MCT were vaginal delivery (OR 8; IC95% 4.0 - 18.9, $p < 0.001$); premature rupture of membranes (OR: 2, C95% 0.52 - 13.55, $p = 0.310$); mothers who practiced breastfeeding (OR 18, IC95%: 7.71- 42.44, $p = < 0.0001$), and mothers who practiced mixed breastfeeding (OR 9, IC95% 4.01 - 23.7, $p = < 0.0001$). No cases of maternal-infant transmission of HIV occurred was initiated ART before delivery. **conclusion:** maternal child transmission of HIV is preventable if a series of documented efficiency strategies is applied. Breastfeeding was a high risk to transmission of HIV infection.

0242

PROFILE OF MORTALITY BY AIDS IN TERESINA, PIAUÍ, BRAZIL, 2003 TO 2013 Cristina Sousa*, Camila Almeida, Carolinne Damasceno, Moisés Carvalho, Ellen Araújo, Luana Silva, Adelia Oliveira, Isabela Souza (Centro Universitário UNINOVAFAP)

Objective: To describe the AIDS mortality profile, in the city of Teresina, Piauí, Brazil, in the 2003-2013 period. **Methods:** descriptive and exploratory study, based on analysis of data on mortality from AIDS, available at the Information System Teresina Mortality was conducted. The variables were: gender, age, education, marital status, race/color, occupation, location, type of property, death of the occurrence of the year, underlying causes and associated. The study followed the national and international standards of ethics involving human subjects. **Results:** Of the 1066 deaths analyzed, it was found that 69.7% were men, whichever is aged between 28-41 years (47.2%), with schooling 4-7 years (32.7%), mixed race/color (66.9%), single (55.7%), home occupation (15.3%). The higher incidence of deaths was in the hospital environment (97%), in public hospitals (91%). Respiratory failure was the main cause of death. As for the causes associated prevailed infectious and parasitic diseases (99.0%). An increase of 160 % of the values from 5.5 deaths/100,000 inhabitants in 2003 to 14.3 in 2013, with the year 2012 with greater significance. **Conclusion:** The results suggest that mortality due to AIDS in the city of Teresina hits, heterogeneously, different segments of the population, and even with the advent of antiretroviral drugs, the resulting numbers of deaths the disease also are growing. Knowledge of mortality from AIDS in Teresina can guide actions aimed at greater investments in prevention strategies and disease control this major public health problem. **Keywords:** Health Profile. Mortality. Acquired Immunodeficiency Syndrome. Health Information Systems. Epidemiology. Brazil.

0241-S/P

RISK FACTORS FOR CHRONIC KIDNEY DISEASE IN HIV-1 INFECTED MEXICAN PATIENTS INITIATING ANTIRETROVIRAL THERAPY Ricardo Rojas Aguilar*, José Antonio Mata Marín, Mónica Grisel, Rivera Mahey, Enrique Alcalá Martínez (IMSS)

Objective: To evaluate the incidence and risk factors for chronic kidney disease (CKD) among treatment-naïve patients infected with HIV after starting antiretroviral therapy (ART). **Methods:** we conducted a retrospective cohort. The study sample included treatment-naïve HIV-infected patients, aged between 18 and 60 years, who had indications to start treatment, with eGFR above 90 mL/min per 1.73m², and who attended the HIV clinic. The enrolled patients' medical records were reviewed for data including CD4 cell count, and plasma HIV-1 RNA level. The eGFR was calculated using the Chronic Kidney Disease Epidemiological Collaboration (CKD-EPI). The incidence and predictors of a decrease from ≥ 90 to < 90 mL/min/1.73 m² after 48 weeks of starting ART were evaluated. **Results:** A total of 119 patients were included in the study, all of them were men. Median age was 33 years old (IQR 28-43). Baseline median of serum creatinine was 0.9 mg/dL (IQR 0.8-1.0), total cholesterol 173 mg/dL (IQR 147-205), and eGFR 108 mL/min (IQR 97-119). A total of 22 (18%) patients had eGFR < 90 mL/min/1.73 m² during the follow up period. Risk factors associated to decrease of eGFR < 90 mL/min/1.73 m² were baseline HIV-1 RNA viral load $\geq 100,000$ copies/mL (OR 1.2; 95% CI 0.83-1.79; $p = 0.328$); baseline CD4+ count < 200 cells/ μ L (OR 3.37; 95% CI 1.20-9.45; $p = 0.18$), TDF-containing regimen (OR 1.30 95% CI 0.72-2.35 $p = 0.398$), PI-containing regimen (OR 0.65 95% CI 0.36-1.18 $p = 0.090$, tryglicerides > 150 (OR 1.68 95% CI 1.23-2.31 $p = 0.006$), and change of ART during the first year of treatment (OR 1.31 95% CI 1.07-1.61 $p = 0.006$). **Conclusions.** Decrease of eGFR was common during the first year of initiation of ART, some factors were associated with the reduction such as dyslipidemia and change of ART during the first year of treatment.

0243

THE CHANGING TRENDS AND PROFILE OF PNEUMOCYSTOSIS MORTALITY IN THE UNITED STATES, 1999-2013 Ranjana Wickramasekaran*, Mirna Jewell, Frank Sorvillo, Tony Kuo (Los Angeles County Department of Public Health)

Background: Although an important cause of death in persons with immunosuppression, Pneumocystosis (PCP) mortality in the United States has received less attention in recent years. To address this gap, we analyzed the national multiple cause of death data and estimated lost productivity for 1999-2013. **Methods.** Crude and age-adjusted rates for PCP mortality were calculated for age, sex, race, and year. Matched odds ratios (MOR) were generated to describe the associations between PCP deaths and other conditions listed on the death certificates. We examined demographic differences among PCP deaths where human immunodeficiency virus (HIV) was listed as a co-diagnosis versus non-HIV. **Results.** Results showed that a total of 6,309 PCP deaths occurred during 1999-2013. The age-adjusted mortality rate decreased from 1999 (0.293 per 100,000 population; 95% CI, 0.273-0.313) to 2013 (0.096 per 100,000 population; 95% CI, 0.085-0.106). Overall, age-adjusted rates of PCP mortality in men were 1.97 times higher than women (95% CI, 1.88-2.07). Whites accounted for approximately 55% of all deaths, but the age-adjusted mortality rates for blacks were 3.30 times higher than whites (95% CI, 3.19-3.42). HIV accounted for a little over a third of all PCP deaths whereas HIV accounted for 3% of control deaths (MOR=36.97; CI, 32.27-42.36). However, an HIV co-diagnosis only accounted for about 21% of PCP mortality in 2013 versus nearly 52% in 1999. Other comorbid conditions such as leukemia (MOR=7.09; 95% CI, 6.03-8.33) and rheumatoid arthritis (MOR=7.21; 95% CI, 5.37-9.68) were associated with a PCP co-diagnosis. Relatively large productivity losses are anticipated. **Conclusions.** The widespread use of antiretroviral therapy and PCP prophylaxis as a standard treatment for HIV infection likely contributed to the overall decrease in PCP deaths during 1999-2013. However, other non-HIV immune-compromised populations remain at risk for PCP and death from this fungal disease.

244-S/P

EVALUATION OF ARKANSAS HEALTH DEPARTMENT ADULT INVASIVE PNEUMOCOCCAL DISEASE SURVEILLANCE SYSTEM Angy P. Perez Martinez*, Jennifer A. Dillaha (University of Michigan)

Purpose: Invasive pneumococcal disease (IPD) is a serious infection with a high mortality especially among the elderly. IPD is a nationally notifiable, thus all cases that present to hospitals or clinics should be reported to the appropriate health department and then relayed to the Center for Disease Control (CDC) through the National Notifiable Diseases Surveillance System (NNDSS). **Methods:** The Arkansas IPD surveillance system was evaluated using the current CDC recommended guidelines for evaluating public health surveillance systems. System attributes that were evaluated were: simplicity, data quality, timeliness, sensitivity and representativeness and graded in a 1 to 3 scale. All IPD cases 18 years and older from 2003 to 2013 in hospital discharge data were matched to the Arkansas NNDSS database. **Results:** Simplicity, data quality and timeliness were acceptable. Despite a steady and significant increase in sensitivity over the past 10 years, only 30% of adult IPD cases found in hospital discharge data were reported to the surveillance system. Low sensitivity also impacts representativeness of cases in the surveillance system, who were younger and less racially diverse than those in national statistics (Active Bacterial Core Surveillance reports). **Conclusion:** It is recommended to identify healthy facilities and health workers that are not reporting, educate them about notification requirements and encourage them to report all cases. Increasing reporting may also improve representativeness of cases and thus improve surveillance efforts.

0250

HELMET USE AND HEALTH OUTCOMES OF TEXAS CYCLISTS INVOLVED IN MOTOR VEHICLE-RELATED CRASHES Natalie Archer*, Emily Hall, Nina Leung (Texas Department of State Health Services)

The popularity of bicycling has increased in the United States over the past decade. While physical activity is associated with multiple health benefits, cyclists are also at risk of injury during collisions. Although helmet use has been shown to reduce the risk of severe injuries, Texas has no law requiring cyclists of any age to wear helmets. Our study examined associations between bicycle helmet use and the likelihood of fatalities, traumatic brain injuries (TBI), and facial injuries among cyclists involved in crashes with motor vehicles and seen in hospital emergency departments in Texas. Traffic collision data from the Texas Department of Transportation (TXDOT) were linked with Texas Department of State Health Services EMS & Trauma Registries (ETR) hospital emergency department data. Cyclists with crashes in 2012-2013 were included in our analyses. Multiple logistic regression analyses were used to determine associations between helmet use and each adverse outcome. Potential covariates examined included age, race/ethnicity, sex, and revised trauma score (used to adjust for crash severity). Helmet status was available for 488 of 559 cyclists involved in a crash reported to both TXDOT and ETR in 2012-2013. 81% of these cyclists were not wearing a helmet at the time of the crash. After adjusting for revised trauma score, helmet use was significantly associated with decreased odds of fatality (OR=0.12, p=0.03) and TBI (OR=0.53, p=0.04), compared to cyclists not wearing helmets. Helmet use was not significantly associated with the odds of facial injuries. Results show that helmet use decreased odds of fatality and TBI among cyclists in Texas. A large majority of individuals in this analysis were not wearing helmets; this is likely also true of the general cyclist population in Texas. Public health interventions in Texas may be needed to make cyclists aware of the importance of wearing helmets as this activity continues to increase in popularity.

0252

THE ASSOCIATION BETWEEN STATES' HANDHELD PHONE BAN AND THE PREVALENCE OF HANDHELD PHONE USE AMONG YOUNG DRIVERS IN THE UNITED STATES Motao Zhu*, Toni Rudisill, Steven Heeringa (West Virginia University)

Background Cell phone use while driving (distracted driving) is a prevalent public health and traffic safety hazard among young drivers. While numerous distracted driving laws have been passed, limited studies have examined their effectiveness. We examined which distracted driving laws were associated with reduced handheld phone use among U.S. drivers under 25 years of age. **Methods** Data from the 2008-2013 National Occupant Protection Use Survey were merged with states' distracted driving legislation. The survey collects roadside-observed driver electronic device use at randomly selected stop signs or traffic lights between 7am and 6pm. The prevalence of handheld phone use while driving was assessed for different laws using logistic regression. **Results** Approximately 5.9% of young drivers were observed using a handheld phone at a typical daylight moment in 2013, relative to 8.3% in 2008. Compared with states without a handheld phone ban for all age drivers, the adjusted odds ratio (OR) of handheld phone use while driving was 0.44 (95% confidence interval 0.34, 0.57) in states with such bans. The OR was 0.43 (0.33, 0.56) for primary enforcement laws (allowing police officers to stop and cite an individual for the observed violation), 0.58 (0.45, 0.75) for secondary enforcement laws (only allowing officers to cite an individual if the violation is observed in conjunction with a primary violation), compared with no laws. The OR was similar for states regardless of whether the fine was greater than or less than \$100. The OR was 0.62 (0.44, 0.88) for laws that were effective for less than one year, 0.46 (0.31, 0.68) for one to two years, and 0.37 (0.28, 0.49) for two years or longer, relative to no laws in effect. **Conclusions** Handheld phone bans for all drivers may be effective, whether it is a primary or secondary enforcement. The longer a distracted driving law is in effect, the more effective it may be. The greater fine (> \$100) is not associated with increased effectiveness.

0251

DESCRIPTIVE EPIDEMIOLOGY OF MUSCULOSKELETAL INJURIES AMONG AIR FORCE SPECIAL OPERATIONS COMMAND OPERATORS AND THE IMPACT OF THESE INJURIES ON HEALTHCARE UTILIZATION Mita Lovalekar*, Timothy Sell, Meleesa Wohleber, Deirdre Rafferty, Andrew Simonson (University of Pittsburgh)

Introduction/purpose: The elite Operators of the Air Force Special Operations Command (AFSOC) are exposed to unique occupational demands and are at high risk of musculoskeletal injuries. The aim of this analysis was to describe musculoskeletal injuries and their impact on healthcare utilization in a sample of AFSOC Operators. **Methods:** Medical records for a period of one year were reviewed for a sample of 130 AFSOC Operators (age: 29.1 ± 5.2 years (mean \pm SD), height: 1.8 ± 0.1 meters, weight: 83.7 ± 8.2 kilograms). Musculoskeletal injuries were described and classified according to their frequency, anatomic location and sub-location, injury cause, activity when injury occurred, and injury type. **Results:** The frequency of musculoskeletal injuries was 83.8 injuries per 100 Operators per year. Frequent anatomic locations for the injuries were the lower extremity (44/109 = 40.4% of the injuries) and spine (38/109 = 34.9%). Frequent anatomic sub-locations were the shoulder (23/109 = 21.1%) and lumbo-pelvic spine (17/109 = 15.6%). Lifting was a common cause of the injuries (24/109 = 22.0%). Operators were engaged in either physical or tactical training when a large proportion of the injuries (61/109 = 56.0%) occurred. Common injury types were pain/spasm/ache (48/109 = 44.0%), followed by sprain, strain and tendonitis/tenosynovitis/tendinopathy (each 13/109 = 11.9%). A large proportion of the injuries (47/109, 43.1%) were classified as potentially preventable by an injury prevention training program. Ninety five injuries (95/109 = 87.2%) required physical therapy/rehabilitation exercises, 25 injuries (25/109 = 22.9%) required radiologic assessment, and 29 injuries (29/109, 26.6%) required pain medication. **Conclusions:** Musculoskeletal injuries are an important cause of morbidity and healthcare utilization in this sample of AFSOC Operators. There is a need to develop a customized injury prevention program to reduce the frequency of musculoskeletal injuries in this population.

0253

TRAUMA INCIDENCE IN A RURAL COMMUNITY SERVED BY HOSPITALS AFFILIATED WITH A VERIFIED TRAUMA CENTER IN NORTHEAST INDIANA Thein Zhu*, Sarah Yde, Daniyal Munir, Dazar Opoku, Lisa Hollister (Parkview Adult and Pediatric Level II Trauma Center, Fort Wayne, IN 46845)

Background: Population-based (non-fatal) trauma incidence data are scarce for rural America. **Purpose:** This study measured incidence rates (IRs) and place of injury occurrence by age, sex, and cause of injury in four northeast Indiana counties. **Methods:** Cases were identified and selected from the Parkview Health System Alliance software for 2013 emergency department trauma visits (N=8,726) to six participating hospitals affiliated with Parkview Adult and Pediatric Level II Trauma Center in Fort Wayne, Indiana. The rural hospitals serve about 155,300 residents of four counties in an area of 1,500 square miles. Classification of ICD-9-CM E-Codes (E800-E999) into groups, priority, and ranking for case selection and analysis were based on the method used by Barancik et al. in the American Journal of Public Health, 1983; 73:746-751. The first hospital visits (97.0%) for injury events were considered for analysis. IRs were expressed in 1,000 residents. County Population was taken from the 2013 estimated U.S. Population Census. **Results:** The trauma IR for the counties was 51.2 (95% confidence interval: 47.8, 54.8). The leading causes of injury by rank order in percentage were: falls, 32.9 (IR 16.8); striking or struck by object, 17.5 (IR 9.0); cut/piercing, 10.3 (IR 5.3); and motor vehicle collisions, 7.6 (IR 3.9). The IR for falls (54.5) was greatest in ages 75 years and above. Ages 10-14 years had the highest IR for object strikes (18.2). Ages 15-24 years had the highest IRs for motor vehicle collisions (9.1) and cuts (8.8). IR for falls in females age 75 years and above was 62.8 vs. 41.3 in males. Injuries mostly occurred at home in the youngest (0-4 years, 77.1%) and oldest (65 years and above, 70.7%) subjects, at recreation and sports events for ages 10-14 years (46.9%) and on roadways for ages 15-34 years (21.9%). **Conclusions:** This study illustrates the magnitude of rural trauma incidents and provides data to inform cause-related injury prevention strategies.

0260

QUALITY OF LIFE, LIMITATIONS, AND DEPRESSIVE SYMPTOMS AMONG A POPULATION-BASED SAMPLE OF YOUNG ADULTS WITH CONGENITAL HEART DEFECTS Sherry Farr*, Matthew Oster, Regina Simeone, Suzanne Gilboa, Margaret Honein (Centers for Disease Control and Prevention)

Little is known about limitations and health-related quality of life (HRQoL) in adults with congenital heart defects (CHD). We used 2004-2012 Medical Expenditure Panel Survey data to identify a population-based sample of adults ages 18-40 years reporting health symptoms or healthcare encounters in the previous year. Comparing adults reporting CHD to others, we examined the prevalence of cognitive, physical, and activity limitations, based on household respondent report, depressive symptoms, based on the 2-item Patient Health Questionnaire, and physical and mental HRQoL, based on the 12-item Short Form. We used chi square tests to examine differences in demographic characteristics, logistic regression to generate adjusted prevalence ratios (aPR), and linear regression to examine HRQoL. Multivariable associations were adjusted for sex, age, race/ethnicity, survey year, federal poverty level, marital status, obesity, and smoking status. All analyses were conducted in SUDAAN using weights to account for clustering within sampling units and non-response. Fifty-nine adults reported CHD (weighted prevalence=0.1%) and 54,011 did not. No demographic characteristics differed significantly by CHD status except health insurance; 31.5% of adults with CHD, compared to 11.0% without, reported public insurance ($p=0.01$). Adults reporting CHD, compared to their counterparts, had a higher prevalence of cognitive (aPR=2.8, 95% confidence interval (CI): 1.2, 6.6), physical (aPR=4.3, 95% CI: 2.2, 8.5), and activity limitations (aPR= 5.2, 95% CI: 3.0, 9.3), and poorer physical HRQoL ($p=0.003$). No differences were seen in depressive symptoms and mental HRQoL by CHD status. Physical health and cognitive abilities of adults with CHD were compromised compared to adults without CHD.

0262-S/P

THE UTILITY OF STANDARDIZED OR CRUDE WEIGHT MEASURES IN MODELING OF POSTNATAL GROWTH TRAJECTORIES: ARE THERE DIFFERENCES? Ann Von Holle*, Kari North, Sheila Gahagan, Ran Tao (University of North Carolina, Chapel Hill)

Child growth trajectories are a frequently used metric in life course epidemiology. Z-scores, of weight, length or a combination of the two, are measures typically used when modeling growth trajectories. In terms of parsimony, advantages of Z-scores on a cross-sectional basis include linear scale properties and the ability to combine genders in one model without additional covariates. As a result, Z-scores are frequently used in modeling infant growth, but their properties relative to crude measurements have not been fully explored. We undertook a series of simulations to compare tests of differences in infant weight change across time (growth velocity) across two exposure groups with a referent model including crude weight as an outcome and time as a continuous measure. Models with weight Z-score or weight percentile outcomes were then compared to the referent model using data from three different countries (Portugal, Chile and Italy). To assess differences between the models we calculated power, type I error, and median estimates. Simulation results demonstrate lower power when using Z-scores as an outcome. Also, evidence supports situations in which the crude weight model velocity differences between exposed and unexposed are in the opposite direction of those estimated in the Z-score or percentile model. These contradictory estimates occur when there are group differences in weight at baseline. The Z-score standards were developed for cross-sectional use, and a within-child increase in crude weight over time may not translate to an increase in Z-score or vice versa. This characteristic can help explain the discrepancies in velocity differences across outcome measures. We conclude that infant growth models calculated using Z-scores and percentiles can produce inference contradicting results from models using crude weight measures. These results emphasize the need for careful consideration of the appropriate scale when modeling infant growth trajectories.

0261- S/P

DESCRIPTIVE STUDY OF DEATH RECORDS OF MICHIGAN RESIDENTS WITH CEREBRAL PALSY 2008-2012 Edward Jados* (Graduate Student)

This study is a cause-specific research that uses death records to determine the underlying cause of death for those with Cerebral Palsy has been sparse. To evaluate death records in people diagnosed with Cerebral Palsy in the State of Michigan by: describing the distribution of the underlying cause of death; describing the distribution of the contributing cause leading to death; analyzing the use of death records as the source of data. People with Cerebral Palsy who died between 01 January 2008 and 31 December 2012 residing in the State of Michigan were included in the study. This descriptive study used ICD-10 coded death records from the Michigan Department of Community Health – The State of Michigan Vital Records Office. 525 death records were acquired of Michigan residents who died during the study timeframe. The most common underlying cause of death was attributed to Cerebral Palsy (201 of 525; 38.3%). Respiratory failure or arrest, pneumonia, and foreign body in respiratory tract were commonly identified as a contributory cause of death. Using death records to ascertain the cause of death for people with Cerebral palsy is limited as the accuracy of the true underlying cause of death may be in question. The data needs to be carefully interpreted and should not be used as the sole source to determine of the cause of death for this population.

0263-S/P

CHILDHOOD RESIDENTIAL MOBILITY AND ADULT BODY MASS INDEX Maeve Wallace*, Emily Harville (Tulane University School of Public Health and Tropical Medicine)

Frequent moves in early life may have negative health impacts by altering supportive familial and household conditions and often co-occurring with other early life adversities. Residential instability during childhood has been linked to adverse mental health outcomes in childhood and adolescence, but less is known about the longer-term impact on physical health during adulthood. This study aimed to examine residential mobility across two potentially sensitive periods: childhood (age<12) and adolescence (age 12-18) on average adult (age >18) body mass index (BMI, kg/m²). Women participants in the Bogalusa Heart Study (n=996) were interviewed about the number of household moves they made as children and adolescents (categorized as none, 1-3, 4-5, 6 or more). Linear regression estimated the association between adult BMI and moves at each time period separately as well as each conditioning on the other, controlling for race, education, maternal and paternal education, ever smoking, and adulthood perceived financial status. Crude adult BMI tended to increase across move categories in childhood (27.8, 27.6, 27.7, 29.1) and adolescence (27.4, 28.3, 28.9, 29.4) but means were not significantly different. After adjustments, there was no difference between those that moved 1-3 or 4-5 times and those that did not move before age 12, but women who moved more than 6 times before age 12 had significantly higher BMI than those that did not move (Beta=2.48, $p<0.05$). This association was consistent regardless of the number of moves that occurred later in adolescence. Moves in adolescence alone were not associated with adult BMI. High frequency residential mobility especially in early childhood may have implications for later life physical health outcomes.

0265-S/P

ASSOCIATION BETWEEN CHILDHOOD SOCIOECONOMIC STATUS AND VEGETABLE/FRUIT CONSUMPTION BY AGE GROUP IN ELDERLY JAPANESE: JAGES PROJECT Natsuyo Yanagi*, Takeo Fujiwara, Akira Hata, Katsunori Kondo (Department of Public Health, Chiba University Graduate School of medicine, Chiba, Japan)

Vegetable and fruit consumption is recommended to prevent non-communicable diseases (NCDs). Although food preference is considered to be determined in early life stage, the association between childhood socioeconomic status (SES) and vegetable consumption in older age has been studied in only a few report. We aimed to examine the association between childhood SES and vegetable consumption in a Japanese population, stratified by age groups to consider the impact of WWII. The data of 20,758 independent individuals aged 65 and over recruited from nation-wide 31 municipalities in The Japan Gerontological Evaluation Study in 2010 were used. Childhood SES was asked about social status at 15 years old, recategorized in three groups (low, middle, and high). Current consumption of vegetables/ fruit were evaluated via self-administered questionnaire. Poisson regression was employed due to higher prevalence of vegetable consumption (>20%). Other childhood circumstances, education, adulthood SES, health behaviors, NCDs, access to vegetable store, social relationships, and GDS were used as covariates. 22.3%, 20.3%, 19.3%, 16.5 % in each group aged 65-69, 70-74, 75-79, 80+ consumed vegetables/fruit less than once a day. After adjustment for only sex and continuous age in each group, the population with low childhood SES in age group 65-69, 70-74, 75-79, 80+ were 1.12(95% confidence interval: 0.93-1.34), 1.48 (95% CI: 1.21-1.81) , 1.34 (95% CI: 1.08-1.68), and 1.65 (95% CI: 1.30-2.08) times less likely to consume vegetable than those with high childhood SES, respectively. However, after adjustment of adult circumstances inclusive depression, no associations were found in all age groups. In conclusions, individuals with lower childhood SES were less likely to be vegetable/fruit consumer in old Japanese aged 70 and over, who spend WWII in their toddlerhood, childhood or adolescent. The association between childhood SES and vegetable/fruit consumption might be partly mediated through geriatric depress.

0270

RISK OF KNEE OSTEOARTHRITIS INCIDENCE AND PROGRESSION: A CLUSTER ANALYSES USING DATA FROM THE OSTEOARTHRITIS INITIATIVE Archan Bhattacharya*, Kimberley Edwards (Arthritis Research UK Centre for Sport Exercise and Osteoarthritis, University of Nottingham)

Background Osteoarthritis is a debilitating condition affecting millions of people and has many risk factors, some of which are modifiable. Accordingly there is a need to examine risk factors collectively or to classify populations using these risk factors simultaneously. **Objective** To use multiple risk factors to identify clusters and to determine the corresponding risks of incidence or progression of knee OA (kOA). **Methods** Data for these analyses are from the OA Initiative (OAI) public use data sets. The incident group had no symptomatic kOA at baseline; the progression group had radiographic tibiofemoral kOA at baseline (Kellgren and Lawrence (K-L) grade ≥ 2). Risk factors were gender, age, ethnicity, BMI, family history of knee/hip replacement, prior injury, physical activity levels and pain. Progression and incidence were defined using change in K-L grades at 24 and 72 months. K-means cluster analysis was employed separately for the two sub-cohorts. **Results** Four clusters were detected in incidence group (n=1787) and progression group (n=2489) using optimal selection criteria. "Inactive non-Caucasian females with higher BMI and pain" had highest risk of incident kOA (11%, 24 months; 18%, 72 months). "Older inactive Caucasian females" and "moderately active Caucasian females with family history" had highest risk of progression kOA (22%/37%; 21%/36% 24/72 months respectively). Clusters were found to be significantly different for incidence at 24 months ($p=0.0494$) and progression at 72 months ($p=0.0463$). **Conclusion** Four distinct clusters with differing risk of incident and progressive kOA were identified. Using these clusters and the associated risks, "inactive non-Caucasian females with higher BMI and pain" (late fifties) were shown to be at highest risk of incidence of kOA. Whereas, "older inactive Caucasian females" (late sixties) or "moderately active Caucasian females with family history" (early sixties) should be more watchful for kOA progression.

0272

IDENTIFYING EPIDEMIOLOGICALLY DISTINCT SUBGROUPS AMONG PRIMARY CARE PATIENTS WITH 'NON-SPECIFIC' LOW BACK PAIN Anthony Perruccio*, Lauren Della Mora, Elizabeth Badley, J Denise Power, Y Raja Rampersaud (Dalla Lana School of Public Health, University of Toronto; Health Care and Outcomes Research, Toronto Western Research Institute)

Purpose: Low back pain (LBP) is among the leading causes of years lived with disability globally. While LBP can have a wide range of etiologies and symptom profiles, the majority of primary care cases are considered 'non-specific', with an implied mechanical or non-specific etiology. Based on dominant clinical pain pattern (back dominant pain aggravated by flexion (P1) or extension (P2), or leg dominant constant (P3) or intermittent (P4) pain), we examined whether these 'non-specific' LBP subgroups are epidemiologically distinct. **Methods:** Patients were from 220 primary care practitioners across 3 cities in Ontario, Canada, seeking care for LBP of <12 months duration and aged 18+ years. Exclusions: LBP as a result of injury, pregnancy or other pain-related conditions. Age, sex, body mass index, general health status (EuroQol-5D) and comorbidity count were compared across subgroups. Multinomial logistic regression analysis investigated adjusted associations between these epidemiological factors and LBP subgroup (reference: P1). **Results:** N=1,020: 42% 'P1', 31% 'P2', 17% 'P3', 10% 'P4'. P1 and P2 groups had higher proportions of females. P2 and P4 had higher mean ages and comorbidity counts. P3 and P4 had more overweight/obese individuals and poorer general health scores. Adjusted models: increasing age positively associated with P2 and P4 (odds ratio (OR): 1.02 and 1.06; $p<0.01$). Being male or overweight/obese was associated with nearly 2 times greater odds of being in P3 and P4 ($p\leq 0.03$). Increasing comorbidity count increased the odds of being in P2 (OR 1.14; $p<0.05$), and better health (EQ-5D) was associated with decreased odds of being in P3 (OR: 0.40; $p=0.033$). **Conclusions:** LBP pattern subgroups appear to have distinct epidemiological profiles, suggesting potentially unique risk factors and different underlying etiologies. Further epidemiological work is needed to better characterize these groups, with implications for a stratified approach to LBP in both research and clinical settings.

"S/P" indicates work done while a student/postdoc

0271

BACK PAIN AND HEALTH RELATED QUALITY OF LIFE (SF-36): A POPULATION-BASED STUDY IN CAMPINAS, BRAZIL Margareth Guimarães Lima*, Aparecida Mari Iguti, Marilisa Berti A Barros (State University of Campinas - UNICAMP)

Introduction: The prevalence of back pain is high and, despite the impact on quality of life, few studies have analyzed the association of back pain and health related quality of life (HRQL) in a population based. **Objective:** To verify the HRQL according to back pain on adults (age=18 to 59) of Campinas, SP, Brazil. **Method:** It is a population-based, cross-sectional study, carried out with data from the Campinas Health Survey developed in 2014/2015. The dependent variables were the eight scales of the instrument "The Medical Outcomes Study 36-item Short Form Survey", version 2 (SF-36). The principal independent variable was back pain: (1) without morbidity; (2) report back pain without limitation in daily activities due to the morbidity; (3) report back pain with limitation. Mean and confidence interval of the SF-36 scale scores were estimated according to back pain, by simple and multiple linear regression models (adjusted by age, schooling, chronic disease). The analysis were stratified by gender and performed with svy commands of STATA 11.0. **Results:** The sample was constituted of 1.195 individuals (mean age=35.7). Prevalence of back pain was 33.4% and 57.6% reported limitations. Comparing with no back pain, men and women that reported the morbidity without limitation had the lower mean SF-36 scores only in pain, and women also for vitality. Comparing with individuals that reported limitation, the associations were more expressive. Among men, the mean scales of pain, vitality and mental health were significantly lower. In women, beside these, the physical functioning, role physical, general health and social functioning scales were affected. **Conclusion:** Back pain with limitation has an great effect in HRQL in both sexes and women are affected in more health domain than men. This results point out to need for strategies to prevent limitation due to back pain, maintain the quality of life of people with this morbidity.

0273

MALES HAVE AN INCREASED RISK OF REVISION FOLLOWING PRIMARY TOTAL HIP ARTHROPLASTY PROCEDURE: A SYSTEMATIC REVIEW AND META-ANALYSIS Kevin Towle*, Andrew Monnot, Rebecca Ward (Cardno ChemRisk)

Total hip arthroplasty (THA) has been a successful reconstructive procedure to mitigate pain associated with diseases of the hip joint. However, some THA procedures require revision, a re-operation of the hip replacement, due to mechanical or biological failure, including dislocation, infection, and aseptic loosening. Previous research has identified gender as a risk factor for the rate of revision, potentially due to anatomic hip differences in the femoral neck length and femoral shaft orientation. The purpose of this study was to employ a standardized protocol to synthesize and evaluate the risk of revision by gender following primary THA procedures. We conducted a systematic literature review and identified studies by electronic-database searching of PUBMED, EMBASE, and SCOPUS databases. Studies reporting gender-stratified revision risk estimates from cox proportional hazards models met the eligibility criteria. Overlapping cohorts were assessed and selected based on length of follow-up and size of study population. A random effects meta-analysis was performed on selected cohort studies from arthroplasty registers and medical centers to estimate the pooled relative risk of revision by gender for any cause (n=6), infection (n=4), and aseptic-loosening (n=7) revisions. Men had an increased risk of revision due to any cause meta-RR 1.13 (95% CI: 0.91-1.39), infection meta-RR 1.55 (95% CI: 1.11-2.15), and aseptic loosening meta-RR 1.54 (95% CI: 1.05-2.25), when compared to women. These results provide evidence for an increased risk of revision following THA among males. Findings suggest that a better understanding of the underlying drivers of gender-specific risks, including differences in hip anatomy, physical activity, degree of surgical trauma, and torsional strength capacity, would be helpful to reduce post-surgery complications.

0280

COHORT ANALYSIS OF GENDER DIFFERENTIAL IN RISK OF MULTIPLE SCLEROSIS IN KUWAIT: 1950-2013. Saeed Akhtar*, Raed Alroughani, Samar Ahmed, Jasem Al-Hashel (Department of Community Medicine & Behavioural Sciences, Faculty of Medicine, University of Kuwait PO Box 24923, Safat 13110, Kuwait)

Background: Despite an increase in multiple sclerosis (MS) incidence in the Middle-East, there is a paucity of published data on sex ratio among MS patients in the region. Therefore, this study determined sex-ratio by year of birth of MS patients diagnosed between January 1950 and December 31, 2000 and recorded in Kuwait National Multiple Sclerosis Registry. **Methods:** Patients were classified into 5-year periods according to their year of birth. Sex ratio (female: male) and its 95% confidence interval (C) for each period was computed. Using binomial logistic regression model, sex ratio in MS patients was modeled with respect to birth year and nationality. **Results:** Of 1035 patients with MS, 675 (65.2%) were women and 798 (77.1%) Kuwaiti. Sex ratio (female: male) of MS cases for entire study period was 1.9 (range: 0.4 to 3.0). Multivariable logistic regression model showed that with each passing year of birth, there was statistically significant 3% increase in sex ratio (female: male) for vulnerability to MS risk (Adjusted odds ratio = 1.03; 95% CI: 1.01 – 1.04; $p < 0.0001$). **Conclusions:** There was a statistically significant steady increase on logarithmic scale in the gender disparity for MS risk over the study period. This study from the Middle-East adds to the existing persuasive evidence of enhanced MS risk in females. Further insight in the context of differential risk factors including the role of sex hormones and vitamin D deficiency in MS pathogenesis may help designing preventive strategies.

0282-S/P

REPRODUCTIVE FACTORS, ESTROGEN METABOLIZING SNPS AND PARKINSON'S DISEASE Cynthia Kusters*, Beate Ritz, Naomi Greene (UCLA School of Public Health)

Background and purpose: Parkinson's disease (PD) is more prevalent in males than females, with a ratio of 1.5 to 1. We combined both genetic and reproductive variables to identify the role of estrogen in the etiology of Parkinson's disease. **Methods:** We combined data from two population-based case control studies of PD conducted in the US and Denmark, totaling 2119 female Caucasians (992 cases and 1127 controls). We collected reproductive characteristics and examined them together with three genes in the estrogen metabolizing pathway, the CYP1A2 (rs762551, rs2472304), ESR1 (rs3798577) and ESR2 gene (rs1255998, rs1256049, and rs126049) using logistic regression. We used an additive effect model for analyzing the association between the genetic variables and PD. **Results:** In the combined data, there was no strong association between PD and female reproductive factors, specifically patterns were not consistent across the studies. However, the rs2472304, rs1255998 and possibly rs762551 variant (VT, minor) alleles were associated with a decreased risk for PD. There was a significant interaction between women with premenopausal hormone supplementation (PHS) and VT alleles of the rs1256053 SNP with a p -value of 0.04. In the stratified analysis for rs1256053, women with the WT of rs1256053 had an increased risk of PD when taking PHS (OR for PHS is 1.37 (95%CI: 1.04-1.79)). Among women with the VT alleles, there appeared to be no association between PHS and PD (OR for PHS is 0.78 (95%CI 0.29-2.12)). **Conclusion:** Both the ESR2 and CYP1A2-polymorphism VT alleles appeared to have a protective effect on PD in women and there were some interactions with reproductive factors and exogenous estrogen use in this large pooled case control study of women in the US and Denmark.

0281-S/P

LIFETIME CIGARETTE SMOKING AND GRAY MATTER BRAIN VOLUME IN A COHORT OF MIDDLE-AGED ADULTS Martine Elbejjani*, David R Jacobs, David C Goff, Reto Auer, R. Nick Bryan, Lenore J Launer (National Institute on Aging)

Prior studies report an association between cigarette smoking and increased risk of dementia. However, the mechanisms behind this association remain unknown and few epidemiological data exist on the link between smoking and brain volumes. We examined the relationship of smoking history with gray matter (GM) volume in community-dwelling middle-aged adults ($n=709$) participating in the Coronary Artery Risk Development in Young Adults CARDIA -brain magnetic resonance imaging sub-study. Data on smoking were recorded at 8 study exams (over 25 years); GM volumes were measured at the year-25 follow-up (mean age=50). Multivariable linear regression analyses, adjusted for potential confounders, revealed that current smokers had significantly smaller total GM volume (-7.66 cm^3 (95%CI= $-12.24, -3.07$) compared to never-smokers; former-smokers also had smaller total GM volume (-2.88 cm^3 (95%CI= $-6.51, 0.74$)) but this association did not reach statistical significance. In sensitivity analyses, we used inverse probability treatment weighing to account for potential confounding and mediation by other vascular risk factors and conditions (body mass index, hypertension, hypercholesterolemia, diabetes) and conclusions were comparable to the adjusted models. We explored the importance of the extent of smoking and found that lifetime pack-years were associated with smaller total GM volumes (-0.21 cm^3 (95%CI= $-0.38, -0.05$)) smaller GM volume per pack-year). In conclusion, current cigarette smoking was associated with smaller GM volumes. This association was independent of several confounders (including other vascular risk factors). Lifetime pack-years were also associated with smaller GM, suggesting the importance of dosage/duration in the identification of links between smoking and brain outcomes.

0283

MATERNAL SMOKING AND RISKS FOR AUTISM IN YOUNG CHILDREN: A CALIFORNIA STATEWIDE POPULATION-BASED STUDY Ondine von Ehrenstein*, Xin Cui, Beate Ritz (University of California Los Angeles)

Background: Prenatal exposures are suspected to contribute to the risk of autism in childhood. Findings on associations between maternal smoking and autism in offspring thus far are equivocal. Population based information about smoking during pregnancy recorded at birth are rare in studies of autism. Aims: We hypothesized that maternal smoking may increase their offspring's risks to develop autism. **Methods:** We used a registry linkage design; this analysis includes statewide California births data 2007 – 2010 retrieved from birth rolls. Autism cases diagnosed by December 2013 were identified through records maintained by the California Department of Developmental Services and linked to their respective birth records. Controls were matched randomly by sex and birth year. The final sample for this analysis included 11,644 cases and 118,372 controls. Information on maternal smoking, other maternal and social demographic data were derived from birth records. Associations between maternal smoking and child autism were examined using adjusted logistic regression models. **Results:** Preliminary results indicate among mothers who had information on smoking recorded on the birth record, 2.5% reported smoking in the first trimester. Any smoking during pregnancy was associated with an estimated odds ratio of 1.19 (95% CI: 1.05-1.35) adjusted for a range of potential confounders including maternal age, education, and race/ethnicity, compared to non-smoking. **Conclusion:** These preliminary findings suggest that maternal smoking in pregnancy may increase their offspring's risk for developing autism.

0290

PRICE OF FOOD IN BRAZIL: ECONOMIC INCENTIVES FOR THE ADOPTION OF A HEALTHY DIET. Rafael Claro*, Emanuella Maia, Bruna Costa (Nutrition Department/ Universidade Federal de Minas Gerais)

Current evidence from developed nations indicates the presence of economic incentives to the adoption of unhealthy eating habits. Meanwhile, such evidence is still scarce in developing countries. Recently, in 2014, the Ministry of Health of Brazil publicize a new version of the national dietary guidelines, emphasizing the importance of the consumption of a diet rich in fresh or minimally processed items over ultra processed items such as soft drinks and chips. Although, the economic impact of this recommendation remains unknown. This study aims to describe the price of food groups consumed in Brazil considering the nature, extent and purpose of its processing. Data from the Household Budget Survey 2008/09 were used. The average price of food groups (fresh, cooking ingredients, processed and ultra processed) and their sub-groups was estimated for the entire country and according to income, geographic region and area (urban or rural). The fresh products and cooking ingredients had lower price per calorie compared to the other groups, suggesting an economic advantage in the preparation of meals at home compared to their replacement by ultra processed. The families of high socioeconomic status, paid higher value for their purchases, while the Northeast, North and rural areas paid the lower prices. While fresh foods such as fruits and vegetables tend to cost more than ultra processed products, the adoption of a diet rich in whole cereals and pulses still emerge as a cost-effective alternative to adopting healthy eating habits.

0292-S/P

ASSOCIATIONS OF DIETARY PATTERNS WITH ABDOMINAL ADIPOSITY AMONG POSTMENOPAUSAL WOMEN Felicia Leung*, Ilona Csizmad, Anthony Hanley, Victoria Kirsh, JuliaK-night (Dalla Lana School of Public Health, University of Toronto)

Background: Evaluating the effects of overall dietary patterns is valuable as it considers the complex interactions among foods and nutrients. Existing research on the relationships between dietary patterns and abdominal adiposity has been inconsistent. **Objective:** The aims were to describe empirically-derived dietary patterns of a group of Canadian postmenopausal women and examine the associations of these dietary patterns with abdominal adiposity. **Methods:** 357 postmenopausal women aged 50-69 y participated in a cross-sectional study. Past-year usual dietary intake was assessed with the Canadian Diet History Questionnaire II, a food frequency questionnaire. Questionnaire food items were aggregated into 43 food groups. Dietary patterns were derived from these food groups using principal components analysis. Trunk fat mass, assessed with dual-energy x-ray absorptiometry, was the measure of abdominal adiposity. Multivariable linear regression analysis was conducted to examine the associations of dietary patterns with abdominal adiposity, while adjusting for energy intake, demographics, and lifestyle variables. **Results:** Two dietary patterns were identified. The Western dietary pattern was characterized by greater intake of meat, potatoes, butter, and sweetened foods. The prudent dietary pattern was characterized by greater intake of vegetables, fruits, legumes, fish and seafood, oils, and rice, grains, and pasta. The Western pattern score was positively associated with trunk fat mass. The highest quartile of the Western pattern score was associated with 4.1 kg (95% CI: 1.9, 6.4) higher trunk fat mass compared to the lowest quartile of this pattern, after adjusting for covariates. The prudent pattern score was not associated with trunk fat mass. **Conclusion:** Among these postmenopausal women, the Western dietary pattern was associated with greater trunk fat mass. This finding is relevant to public health programs, as dietary patterns are more easily translated to populations.

0291

ASSOCIATED FACTORS TO THE ADEQUATE INTAKE OF ADDED SUGAR BY ADOLESCENTS: A POPULATION BASED STUDY IN CAMPINAS, SP, BRAZIL. Antonio de Azevedo Barros-Filho*, Marici Braz, Daniela de Assumpção, Marilisa Berti de Azevedo Barros (State University of Campinas (UNICAMP))

Background: Increased nutritional and energy demand during adolescence, associated with greater autonomy to make choices relative to diet can result in lower consumption of healthy foods and increased intake of ultra processed foods with high added sugar content. Decreased consumption of micronutrients, tooth decay and high weight gain can also be consequence of this kind of food intake. **Objective:** The objective of this cross-sectional population based study based on data obtained by the Campinas Health Survey (ISACamp 2008/09) was to analyze the association of adequate intake of added sugar by adolescents 10-19 years, according to demographic and socioeconomic variables, health related behaviors, morbidities and body mass index. **Methods:** The data were obtained by a 24 hours diet recall in household interviews and the nutrients calculated through the NDRS program. It was considered as adequate intake of added sugar a daily maximum of 100kcal or 24g for women and 150kcal or 36g for men, equivalent to 5% of total daily caloric intake. Crude and adjusted prevalence and prevalence ratios (PR) were estimated by simple and multiple Poisson regression with 95% confidence intervals (95% CI). All interviews were performed according to international and national ethical recommendations. **Results:** The analyses of 924 adolescents showed association of adequate intake of sugar by male PR 1.99 (95% CI: 1.64 – 2.41), by age 15-19y PR 1.27 (1.06 – 1.52), less than seven equipments in the household PR 1.57 (1.18 – 2.10) and inversely proportional association with consumption of soft drink more than seven times a week PR 0.57 (0.42 – 0.79), and the consumption of raw vegetables less than four times a week PR 0.82 (0.67 – 0.99). **Conclusions:** Adequate intake of added sugar was more prevalent among male adolescents, with 15-19y, those with lower socioeconomic conditions and those which have healthier life style, consuming less soft drinks and higher intake of raw vegetables.

0294

ANTHROPOMETRIC PROFILE OF CHILDREN ACCORDING TO THE STRUCTURE OF DAYCARE CENTERS Dixis Pedraza*, (Universidade Estadual da Paraíba)

Objectives: To evaluate the structure of public daycare centers and the anthropometric profile of children in the city of Campina Grande, Paraíba. **Methods:** Cross-sectional study involving 793 children assisted in daycare centers. Were included information to characterize the daycare centers (structure related to the capacity of demand attend and the processing power of school meals, reception system of children, location area) and anthropometric status of children (Height/Age, Weight/Height). **Results:** The mean Z-scores for height/age and weight/height were lower in children from daycare centers with more number of children by employee, in part time scheme and located in rural zone. The Z-scores for height/age were also lower in child who lived in classroom and dormitory room with higher quantitative of child. **Conclusions:** Realize up structural problems in the daycare centers related to human resource capacity to pay attention to child and to the ways of living together (clumping), which can score differences on the nutritional status of children. In turn, the frequency at daycare full time and the urbanization can predispose positively children's growth. **Key words:** Child Day Care Centers. Children. Anthropometry. Body height. Growth. Nutritional status.

0295-S/P

BIAS IN WOMEN'S ESTIMATES OF MACRONUTRIENTS' INTAKE DERIVED FROM FOOD FREQUENCY QUESTIONNAIRE AND SEVEN-DAY DIETARY RECALL Maria Sevoyan*, James Hebert, Thomas Hurley (Department of Epidemiology and Biostatistics, University of South Carolina, Columbia, SC, USA)

Aim: To evaluate bias associated with social desirability and social approval in estimating total fat, total protein and total carbohydrate derived from a food frequency questionnaire (FFQ) and a seven-day dietary recall (7DDR) relative to the average of seven 24-hour recall interviews (24HR). **Methods:** Seven 24HR were administered over 14 days to 80 healthy white women (mean age 49.1 years). FFQ and 7DDR were administered on day 0 and 13. Macronutrients derived from the FFQ and 7DDR were treated as dependent variables and social desirability, social approval, and body mass index were treated as independent variables in multiple linear regression models used to estimate regression coefficients and associated 95% CI. **Results:** For women with \geq college education 7DDR-derived total fat and total carbohydrate intake were underestimated by 3.50 grams and 6.91 grams/day/1-point increase for social desirability, respectively; (b fat = -3.50, 95% CI: -5.90, -1.11; and b carbohydrate = -6.91; 95% CI: -12.95, -0.88). Similar results were observed for saturated fatty acids and total polyunsaturated fatty acid intake. Findings were virtually identical for the FFQ. Among women with < college education, significant overestimation of total carbohydrate intake was observed with social approval on the 7DDR scale (5.21 grams/day/1-point increase in social approval; 95% CI: 1.14, 9.28). No significant difference by educational status was observed on either questionnaire for either social approval or social variability for total protein intake. **Conclusions:** Social desirability and social approval tend to bias the FFQ and 7DDR-derived macronutrients intake. The change in macronutrients estimates varies by educational level. In more educated women social desirability tends to be associated with underestimating total fat and total carbohydrate intake derived from the FFQ and 7DDR. Less educated women overestimate 7DDR-derived total carbohydrate intake with increases in social approval.

0300

CHARACTERISTIC OF THE LIFESTYLE OF THE OBESE UNIVERSITY STUDENT Keiko Aoishi-Hase*, Toshiharu Eto (School of Nursing, Faculty of Medicine, University of Miyazaki, Japan)

The purpose of this study is to clarify the characteristic of the lifestyle of the obese university student. We carried out the questionnaire survey about the lifestyle to university students. We performed single variable analysis by using obese presence as a dependent variable and each lifestyle as an independent variable. We performed a multiplex logistic-regression analysis by extracting significantly different items. The level of significance assumed it 5%. Object number was 229 and obese students (BMI ≥ 25.0 kg/m²) were 90 and non-obese students were 139. The item which was significantly different for a simple linear regression analysis was the hour of rising, bedtime, appointed hour going to bed, midnight snack, regularity of the mealtime, intake speed, smoking and the weight difference from high school days. The item which was able to be extracted as an obesity-related factor was getting up time after 8:00 a.m. (OR=3.00; 95%CI=1.38-6.33), fast meal intake speed (OR=2.81; 95%CI=1.49-5.28), midnight snack (OR=2.48; 95%CI=1.22-5.02), the weight difference from high school days (OR=3.03; 95%CI=1.48-6.22) by multiplex logistic-regression analysis. In conclusion, in the lifestyle about the meal, an irregular mealtime influenced obesity, but an early meal intake speed was an obese risk of approximately 2.8 times. On the other hand, the quantity of meal was not related with obesity. From these results, the quantity of meal and custom of sleep did not participate in the obesity of the university student, but it was suggested that a custom of the fast eating speed was a highest risk factor. Generally, it is thought that the disorder of the dietary habits such as undernourishment or the midnight snack results in obesity. However, our result was different, it is thought that they become obese after graduation from university, because it is difficult for them to change the lifestyle of college student days easily. The establishment of a basic lifestyle from young time was important.

0302

FACTORS ASSOCIATED WITH METABOLICALLY HEALTHY STATUS IN OBESITY, OVERWEIGHT AND NORMAL WEIGHT AT BASELINE OF BRAZILIAN LONGITUDINAL STUDY OF ADULT HEALTH (ELSA-BRASIL). Sandhi Maria Barreto*, Maria de Fatima Haueisen, Sander Diniz Alline Maria Rezende Beleigoli, Antônio Luiz Pinho Ribeiro, Pedro Guatimosim Vidigal, Isabela Maria Bensenor², Paulo Andrade Lotufo, Bruce Bartolow Duncan, Maria Inês Schmidt, Sandhi Maria Barreto (Universidade Federal de Minas Gerais)

Objective: To evaluate metabolically healthy status (MHS) in obesity, overweight and normal weight and associated epidemiological, clinical and behavioral characteristics to this phenotype using baseline data of Brazilian Longitudinal Study of Adult Health (ELSA-Brasil). To investigate agreement among four different MHS criteria. **Methods:** The study included 14545 participants aged 35-74 years, 54.1% female, 22.7% (n=3,298) obese, 40.8% (n=5,934) overweight and 37.5% (n=5,313) normal weight. Socio-demographic, behavioral, and anthropometric factors related with MHS were ascertained, and logistic regression models were used to estimate the odds of associations. We used four different criteria separately and in combination to define MHS: National Health and Nutrition Examination Survey (NHANES), National Cholesterol Education Program (NCEP-ATPIII), International Diabetes Federation (IDF) and comorbidities, and the agreement between them were evaluated by Cohen's-Kappa coefficient. **Results:** MHS was present among 12.0% (n=396) of obese, 25.5% (n=1,514) of overweight and 48.6% (n=2,582) of normal weight participants according to the combination of the four criteria. The agreement between all the four MHS criteria was strong and significant (kappa 0.73 p<0.001). In final logistic models, MHS was associated with lower age, female sex, lower body mass index (BMI) and % relative weight change within all BMI categories. **Conclusions:** Baseline data of this large cohort showed that, despite differences in prevalence among the four criteria, MHS was associated with common characteristics at every BMI category.

0301

DISPARITIES IN EARLY TRANSITIONS TO OBESITY IN CONTEMPORARY MULTI-ETHNIC U.S. POPULATIONS Christy Avery*, Katelyn Holliday, Sujatro Chakladar, Joseph Engeda, Shakia Hardy, Gerardo Heiss, Danyu Lin, Christina Shay, Donglin Zeng (Department of Epidemiology, University of North Carolina at Chapel Hill)

Early transitions from normal weight are associated with increased disease burden and may be more common in minority populations. However, few studies have evaluated weight transitions in contemporary multi-ethnic populations spanning early childhood to late adulthood despite the ability of such research to inform obesity prevention and control. We therefore leveraged nationally representative cross-sectional National Health and Nutrition Examination Survey data (n=21,220; 2007-2012) and novel Markov models to estimate race/ethnic (African Americans, Caucasians, and Mexican Americans)-, age (2-80 years)-, and sex-specific normal weight, overweight, and obesity one-year net transition probabilities. At age two, the obesity prevalence ranged from 7.3% in Caucasian males to 16.1% in Mexican American males. For all populations, estimated overweight to obesity net transition probabilities peaked at age two and were highest for Mexican American males, for whom a net 12.3% (95% CI: 7.6-17.0%) of the overweight population transitioned to obesity by age three. Elevated overweight to obesity net transition probabilities also were estimated for African American females [11.9% (95% CI: 8.5-15.3%)] and African American males [10.5% (95% CI: 7.1-13.9%)]. However, when extrapolated to the 2010 civilian noninstitutionalized U.S. population, Mexican American males were the only population for whom the largest net increases in obesity occurred during early childhood. For African Americans and Mexican American females, age-specific net increases in obesity were approximately constant through the second decade of life, whereas net increases in obesity peaked at age 20 for Caucasians. Disparities in the ages associated with the largest obesity increases reflect interplay between several factors including the magnitude of net transition probabilities and the prevalence of normal weight, overweight, and obesity, presenting multiple opportunities for targeted interventions to decrease longstanding inequalities.

0303

THE ASSOCIATION BETWEEN BODY MASS INDEX AND RISK OF ALLOGENEIC RED BLOOD CELL TRANSFUSION AND MORTALITY IN ELDERLY PATIENTS UNDERGOING HIP FRACTURE SURGERY Alma Becic Pedersen*, Deirdre Cronin Fenton, Mette Nørgaard, Nickolaj, Risbo Kristensen Bjarne, Kuno Møller, Christian Erikstrup (Department of Clinical Epidemiology, Aarhus University Hospital, Denmark)

Background: We examined the risk of red blood cell (RBC) transfusion (as an indirect measure of blood loss) and subsequent mortality by body mass index (BMI) level in patients aged 65 and over undergoing hip fracture surgery. **Methods:** Population-based cohort study using medical databases. We included all patients who underwent surgery for hip fracture during 2005-2013. We calculated the cumulative risk of RBC transfusion within seven days of surgery treating death as a competing risk and, among transfused patients, short (8-30 days post-surgery) and long-term mortality (31-365 days post-surgery). Adjusted relative risk (aRR) for RBC transfusion and hazard ratio (aHR) for death with 95% confidence intervals (CIs) was calculated comparing underweight, overweight, and obese with normal-weight patients. **Results:** Among 56,420 patients 47.7% received at least one RBC transfusion within 7 days of surgery. In patients with normal weight the risk was 48.8% compared with 57.0% in underweight patients (aRR=1.11; CI: 1.08-1.15), 42.1% in overweight patients (aRR=0.89; CI: 0.86-0.91) and 42.2% in obese patients (aRR=0.87; CI: 0.84-0.91). Among transfused patients, aHRs for short-term mortality were 1.52 (CI: 1.34-1.71), 0.70 (CI: 0.61-0.80), and 0.58 (CI: 0.43-0.77) for underweight, overweight and obese patients, respectively, compared with normal-weight patients. The corresponding aHRs for long-term mortality were 1.45 (CI: 1.33-1.57), 0.80 (CI: 0.74-0.86), and 0.58 (CI: 0.50-0.69). **Conclusions:** Underweight patients had a higher risk of RBC transfusion and death in the first year of surgery than normal-weight patients, even when controlling for age and comorbidity. Opposite findings were seen for overweight and obese patients.

0304-S/P

OVERWEIGHT AND OBESITY AMONG PATIENTS WITH NON-DIALYTIC CHRONIC KIDNEY DISEASE Geraldo Bezerra da Silva Junior*, Lincoln Gomes de Mesquita, Ana Carla Novaes, Sobral Bentes, Sheila Maria Alvim de Matos (Collective Health Graduate Program, Health Sciences Center, University of Fortaleza. Fortaleza, Ceara, Brazil)

Introduction: Overweight and obesity presents increasing incidence all over the world. The association between obesity and chronic kidney disease (CKD) is not completely understood. The aim of this study was to investigate the occurrence of overweight and obesity among patients with non-dialytic CKD. **Methods:** This is a cross-sectional study conducted at the Nephrology outpatients' clinics of the University of Fortaleza, Ceara, Brazil, from January to December 2014. CKD was considered as the presence of glomerular filtration rate below 60mL/min/1.73m² or proteinuria for more than 3 months. Overweight was considered as body mass index (BMI) between 25 and 29.9kg/m², and obesity as BMI higher than 30kg/m². All patients attending the Nephrology service in the study period were included. Statistical analysis was done with SPSS program v. 20. **Results:** A total of 132 patients were included, with mean age of 67±13 years (range 33 to 93 years), and 54.5% were male. CKD was classified as stage I (0.7%), II (19.69%), III (50%) and IV (25.45%). The main causes of CKD were hypertension (46.9%) and diabetes (45.4%). Overweight was found in 30 patients (22.7%) and obesity in 15 (11.3%). According to CKD stage, there overweight was found in 1 patient with CKD stage I, 11 patients in stage II (42.3%), 16 patients in stage III (24.2%) and 2 patients in stage IV (7.4%). Obesity was found in 4 patients in stage II (15.3%), 9 patients in stage III (13.6%) and 2 patients in stage IV (7.4%). **Conclusion:** Overweight and obesity were found in a significant part of patients with CKD (more than 30% of cases). It was more frequent among patients in the early stages of CKD, maybe due to the possible occurrence of malnutrition in the most advanced stages of the disease (consumption syndrome). Early identification of nutritional abnormalities is important to adopt measures to better control body weight and to correct dietary inadequacies.

0306-S/P

BARIATRIC SURGERY AND INSURANCE STATUS IN FLORIDA Alisha Monnette*, Tulay Koru-Sengul, Nadia Fleurantin, Majid Sultan, Al Maqbali, WayWay Hlaing (University of Miami Department of Public Health Sciences)

Introduction: Bariatric surgery is becoming increasingly prevalent as overweight and obesity among populations increase. The aim of this study was to evaluate the association between insurance status and the type of bariatric surgery among patients hospitalized in Florida. **Methods:** Using the 2013 Florida Agency for Health Care Administration (AHCA) inpatients data, we extracted records with procedure codes for all types of bariatric surgery. Of 8 International Classification of Diseases 9th edition Clinical Modification (ICD-9-CM) codes corresponding to the bariatric procedures, we further categorized into 3 main types: open and closed Laparoscopic, Roux-en-Y Gastric Bypass, Laparoscopic Adjustable Gastric Banding, and Sleeve Gastrectomy. Of approximately 2.6 million records, analysis was restricted to 7,465 records with bariatric procedures. Analysis was done to describe the characteristics of those with bariatric codes, including insurance status. **Results:** The mean age of inpatients that underwent bariatric procedures (n=7,465) was 47.4 years. They were predominantly white women (43%). About 3,680 (49.30%) of patients had Commercial insurance, followed by 2,112 (28.29%) Federal, and 819 (10.97%) State insurance. And 844 (11.44%) were either underinsured or uninsured (P < .0001). Sleeve Gastrectomy procedure was the most common (52.50%) procedure followed by Roux-en-Y Gastric Bypass (39.65%) and Adjustable Gastric Banding (7.85%) procedures. Among those with Sleeve procedure, 54.99%, 23.25%, and 7.81% had Commercial, Federal, and State insurance, respectively. There were 543 (13.86%) underinsured or uninsured Sleeve procedure recipients (P < .0001). **Conclusions:** Our preliminary analysis showed that Sleeve Gastrectomy was the most common procedure and majority of patients had Commercial insurance coverage for all types of procedures. Future studies should explore the difference in requirements for bariatric procedures among insured and uninsured.

0305-S/P

RURAL-URBAN DISPARITY IN PREVALENCE OF OVER NUTRITION AMONG INDIAN SCHOOL GOING CHILDREN- A META-ANALYSIS Jugal Kishore*, Pratap Jena, Jugal Kishore, Jeena B (KSPH, HSRIL, Premier Research Group, and Nitte University)

Meta-analyses of studies during 2005 to 2015 were conducted to assess the prevalence of over nutrition (overweight and obesity) among Indian school children considering WHO cut off points. Twenty two studies involving both boys and girls in the age group of 2-17 years conducted involving schools either in rural or urban or both areas were included in the meta-analysis as per PRISMA guidelines. Studies using IOTF or CDC or other criteria for defining obesity or overweight, studies on only one gender or schools having affluent children were excluded in the analysis. Fixed effects, heterogeneity model, yielded overall prevalence of over nutrition as 13.3 percent (95% CI: 5.6%-22.2%). The prevalence of over nutrition in rural school children was 4.2 percent (95% CI: 0%-10.4%) and urban school children was 12.1 percent (95% CI: 3.7%-22.1%). Higher prevalence of over nutrition among urban school children necessitates fast tracking of implementation of Scholl health interventions for over nutrition prevention. Limited rural studies needs to be addressed in order for monitoring of spread of over nutrition to rural areas. Use of multiple cutoffs points based on different definitions, makes it difficult to synthesize results in pooled analysis, which warrants use of country specific standard tool for assessment of over nutrition.

0307-S/P

USING CURRENT EVIDENCE AND THE PARAMETRIC G-FORMULA TO FORECAST THE MEAN BODY MASS INDEX AND DIABETES PREVALENCE IN 48 LOW- AND MIDDLE-INCOME COUNTRIES Roch Nianogo*, Onyebuchi Arah (Department of Epidemiology, Fielding School of Public Health, University of California, Los Angeles (UCLA))

Observational and randomized controlled trials (RCTs) have documented the protective effects of engaging in physical activity on diabetes, both separate from and through its effect on body mass index (BMI). Globally, estimates of the natural and controlled policy impact of physical activity on diabetes incidence and prevalence are lacking. This study aimed to use existing multi-country individual-level database, best available experimental evidence and modern causal analytical tools to analyze and project the global impact of physical activity on BMI and diabetes. First, we estimated the average treatment effect of moderate-to-vigorous physical activity (MVPA) on BMI and diabetes within the study population. Second, we used published experimental evidence for the effect of physical activity interventions on BMI and the parametric g-formula to forecast the mean BMI and diabetes prevalence. We used data from 118,143 participants in the World Health Survey (WHS), fielded in 70 countries from 2002 to 2004. Overall, individuals engaging in MVPA had lower mean BMI (adjusted mean difference aMD: -0.28 (95%CI -0.34, -0.20)) in the WHS population. The effect of MVPA on BMI was smaller than most reported effect sizes in meta-analyses and RCTs (aMD ranging from -1.5 to -0.47). Finally, using published parameters from experimental evidence, the projected global mean BMI ranged from 22.14 to 23.17 kg/m² and diabetes prevalence from 2.42 to 2.62% if everyone in the population were exposed to a 6- to 12-month MVPA intervention. Although derived from short-term intervention impacts, these projections represent modest but meaningful changes from the observed mean BMI (23.40kg/m²) and diabetes prevalence (2.75%) in a then more active world (83% of people engaging in MVPA). This simulation experiment fore-shadows the potential sizable reduction in mean BMI and diabetes prevalence that would occur from longer-term and life-long interventions in a world that has become more sedentary.

“-S/P” indicates work done while a student/postdoc

0308-S/P

ANTHROPOMETRIC MEASURES AND SERUM ESTROGEN METABOLISM IN POSTMENOPAUSAL WOMEN Hannah Oh*, Garnet Anderson, Sally Behan, Louise Brinton, Chu Chen, Erin LeBlanc, JoAnn Manson, Ruth Pfeiffer, Jean Wactawski-Wende, Nicolas Wentzensen, Oleg Zaslavsky, Britton Trabert (Division of Cancer Epidemiology and Genetics, National Cancer Institute)

Anthropometric measures such as body mass index (BMI), waist-to-hip ratio (WHR), and height have been associated with hormone-related cancers. However, it is unknown whether estrogen metabolism plays an important role in these relations. To evaluate whether measured BMI at baseline, WHR, height, and self-reported BMI at age 18 were associated with serum estrogen metabolites (EMs) we used baseline, cross-sectional data from 1,864 postmenopausal women (mean age=63 years) enrolled in the Women's Health Initiative Observational Study. Fifteen EMs were quantified using liquid chromatography-tandem mass spectrometry. Geometric means (GM) of EMs (pmol/L) by exposure categories were estimated using inverse probability weighted linear regression adjusting for potential confounders. All analyses were stratified on menopausal hormone therapy (MHT) use (n=983 never/former, 881 current). Among never/former MHT users, BMI was positively associated with parent estrogens (GM across BMI <25, 25-29, ≥30 kg/m² = 239, 337, 432 for estrone; 46, 59, 74 for estradiol; p-trend<0.001) and all of the 2-, 4-, and 16-pathway EMs evaluated. WHR was positively associated with parent estrogens and nearly all of the 16-pathway EMs; however, associations did not remain after adjustment for current BMI. Height and BMI at 18 were not associated with EMs. Among current MHT users, BMI was not associated with parent estrogens but was inversely associated with some individual EMs, namely the methylated catechols (e.g., 2-methoxyestrone GM=280, 219, 216; p-trend=0.01). In contrast, WHR, height, and BMI at 18 were not associated with EMs. Our results suggest strong, positive associations between current BMI and EMs in postmenopausal women not using MHT. Heterogeneous relations by MHT usage mirror BMI-cancer associations, further supporting the notion that endogenous estrogens may mediate this effect. Assessment of the potential mediating effects of estrogens requires evaluation using prospective data.

0310

NEIGHBORHOOD STRESS, OBESITY-RELATED MARKERS AND TELOMERE LENGTH IN CHILDREN Katherine Theall*, Kara Denstel, Stephanie Broyles, Stacy Drury (Tulane University)

Exposure to violence continues to be a growing epidemic and has been linked to obesity. Telomere length (TL) is an epigenetic modification, biomarker of cellular aging, and frequently hypothesized biological mechanism underlying the effects of early life adversity. In studies of adult subjects, shorter TL has been associated with obesity. The growing number of studies among children, while still inconsistent, also suggests a link between TL and obesity. The objective of this study was to determine the relation between neighborhood violence, obesity-related markers (i.e., BMI, obesity or overweight status, waist circumference, blood pressure), and TL among 81 community-recruited children, ages 5-16 years, from 52 neighborhoods in New Orleans, LA, U.S. between 2012 and 2013. TL was determined by quantitative real-time PCR from DNA extracted from buccal swabs. Violence data from the local police department was used to examine the number of homicides and assaults and total violent crime within buffers around the child's home. Multivariable logistic and linear GEE models were employed to examine the relation between violence and obesity-related markers, as well as potential moderation or mediation by TL. Overall, 33% of children were overweight or obese, and neighborhood violent crime was significantly and positively associated with BMI ($\beta=0.633$, $p=0.039$) and waist circumference ($\beta=0.186$, $p<0.001$). TL was also strongly and inversely associated with BMI and waist circumference, explaining 14% and 21% of the variance in these outcomes, respectively. We observed significant effect modification by TL, with children having higher TL exhibiting a stronger impact of neighborhood violence on BMI and waist circumference. A significant indirect effect of TL in the violence-BMI relation was also observed (NIE=-0.062, Boot CI=-0.164,-0.007). TL may play a significant role in the relation between neighborhood violence and obesity-related markers.

0309-S/P

COLORECTAL CANCER PROGNOSIS FOLLOWING OBESITY SURGERY IN A POPULATION-BASED COHORT STUDY Wenjing Tao*, Peter Konings, Hans-Olov Adami, Mark Hull, Fredrik Mattsson, Jesper Lagergren (Karolinska Institutet)

Objective: Recent studies have indicated an increased risk of colorectal cancer after obesity surgery. Here, we hypothesised that obesity surgery is also associated with poorer prognosis of patients with these tumours. **Design:** This nationwide Swedish population-based cohort study included all individuals identified with an obesity diagnosis in the Swedish Patient Register between 1980 and 2012 who were subsequently diagnosed with colorectal cancer recorded in the Swedish Cancer Registry. The main outcome was death from colorectal cancer (disease-specific mortality) among obese cohort members who had or had not undergone obesity surgery prior to colorectal cancer diagnosis. The secondary outcome was all-cause mortality. Cox proportional hazards survival models were used to calculate hazard ratios (HR) with 95% confidence intervals (CI), adjusted for sex, age, calendar year, and education level. **Results:** Among 1,463 participating obese colorectal cancer patients, 131 had undergone obesity surgery prior to colorectal cancer (exposed) and 1,332 had not (unexposed). Obesity surgery did not result in any statistically significantly increased mortality of colon and rectal cancer combined (disease-specific HR 1.19, 95% CI 0.82-1.70; all-cause HR 1.14, 95% CI 0.84-1.60). When analysed separately, the mortality was increased in rectal cancer (disease-specific HR 2.90, 95% CI 1.60-5.20; all-cause HR 2.40, 95% CI 1.40-4.00), but not in colon cancer (disease-specific HR 0.91, 85% CI 0.62-1.35; all-cause HR 0.91, 95% CI 0.62-1.35). **Conclusion:** This population-based study among obese individuals revealed a poorer prognosis in rectal cancer but not colon cancer following obesity surgery.

0311-S/P

A MENDELIAN RANDOMIZATION STUDY OF THE EFFECT OF BODY MASS INDEX ON DEPRESSION Hui Wang*, Catherine Mary Schooling (University of Hong Kong)

Depression and obesity have both become major public health issues. An association between obesity and depression has repeatedly been observed, but the direction of causality is difficult to discern from observational studies, because of biases stemming from reverse causality and unmeasured confounding. Intervention studies have not shown that losing weight improves depressive symptoms, but these studies are difficult to conduct and not definitive. In this situation comparing risk of depression by genetically determined body mass index, i.e., Mendelian randomization, may provide an unconfounded estimate of the association of body mass index with the risk of depression, but previous studies have been too small to be definitive. Using separate sample instrumental variable analysis with 61 genetic variants, from genes such as AGL4(N) and CADM1, associated independently and only with body mass index identified from a genome wide association study of 339,224 people and checked for linkage disequilibrium in SNP Annotation and Proxy Search system and for pleiotropy in a genetic cross-reference database (Ensembl), applied to a case (n=32,259)-control (n=76,028) of depression with extensive genotyping, i.e., the Psychiatric GWAS consortium, we estimated the effect of body mass on depression by combining the Wald estimators for each genetic variant using inverse variance weighting. We found body mass index unassociated with depression, odds ratio 0.96, confidence interval 0.73 to 1.27. This finding does not support a causal relation between body mass index and depression, and suggests that other causes of depression and interventions for depression prevention and treatment should be sought.

0312- S/P

THE ASSOCIATION OF PARENTAL OBESITY-RELATED DISEASES AND CHILD BEHAVIORAL RISK FACTORS WITH THE CLUSTERING OF ADOLESCENT CARDIOMETABOLIC RISK FACTORS

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Obesity in children has been associated with an increased cardiometabolic risk. Although poor dietary habit, physical inactivity and familial aggregation of obesity-related disorders are commonly found among obese adolescents, how these factors jointly contribute to cardiometabolic risk clustering in adolescents is unclear in Taiwan. We performed a cross-sectional study with multi-stage, geographically stratified cluster sampling to evaluate the independent and joint effects of obesity, behavioral risk factors (including energy consumption and expenditure, sugar-sweetened beverage intake and screen time) and selected parental obesity-related diseases on adolescent cardiometabolic risk factor clustering. A total of 2727 adolescents from 36 diverse urbanization-level of schools participated in this study and provided blood samples. Using cluster analysis, we grouped adolescents by the biomarkers of waist circumference, triglycerides, HDL and LDL cholesterol, blood pressure and fasting glucose. Survey-data modules were used to adjust for survey design and multivariate binary and multinomial logistic regression models were employed to control for covariates. Adolescents whose parents had a history of type 2 DM and hypertension respectively had a 2.8 and 2.3-fold likelihood with a cardiometabolic risk clustering. Adjusted for BMI and covariates, reduced physical activity, increased intake of calories and elevated consumption of sugar-sweetened beverages were found to be associated with a higher risk of contracting the clustering of cardiometabolic risk factors. Further, a significant additive-scale interaction effect on cardiometabolic risk cluster was identified among obese adolescents whose parents had type 2 DM (synergistic index: 4.2-fold, $P < 0.05$). Our study presents data to emphasize the relationship between the clustering of adolescent cardiometabolic risk factors and parental obesity-related diseases and children behavioral risk factors.

0320

CHILDHOOD IMMUNIZATION: PROFILE AND KNOWLEDGE OF PROFESSIONALS IN THE FAMILY HEALTH STRATEGY Isabela Bastos Jácome de Souza*, Telma Maria Evangelista de Araújo Eliana Campelo, Lago Moisés, Lopes Carvalho, Adelia Dalva da Silva Oliveira, Carolinne Kilcia, Carvalho, Sena Damasceno, Suzana Bastos Jácome de Souza, Camila Aparecida Pinheiro Landim, Lúndia Kalliana da Costa Araújo Alves de Carvalho (Universidade Federal do Maranhão / UF-MA)

The objective was to evaluate the profile and knowledge of nurses and doctors of the Health Strategy of the Family of a micro-region in the Northeast of the timing of vaccination in the first year of life. This was a descriptive and cross-sectional study with 33 doctors and 50 nurses working in the Family Health Strategy of a micro-region located in the south of Piauí. It was found that females were more prevalent, with 65.1%. 68.7% had a specialization, among which Family Health showed up with higher percentage (32.5%). Most professionals (62.5%) claimed to have been trained to work in vaccine room. Knowledge of professionals about the vaccine the first year of life was unsatisfactory, since the age of nine immunization schedule, only zero (75.9%), three (68.1%), five (72.1%) and nine month (83.3%) had satisfactory percentage, with the highest percentage for vaccination of nine months. When crossing the knowledge to the professional category, there was a statistically significant association for nurses in eight of the nine ages immunization schedule the first year of life. This study points to the need for continuing education for professionals responsible for immunization in the ESF, to ensure the benefits and quality of childhood vaccination. Palabras clave: Knowledge. Professional qualification. Family Health. References: 1 - WHO - World Health Organization. Fundo das Nações Unidas para a Infância - UNICEF. World Bank. State of the world's vaccines and immunization. 3. ed. Geneva: WHO; 2009. 2 - OLIVEIRA, V.G. et al. Vacinação: o fazer da enfermagem e o saber das mães e/ou cuidadores. Revista de Rede de Enfermagem do Nordeste. Recife, v. 11, n. suplementar, p. 133-142, 2010

0322

COST AND SEVERITY OF INJURIES TO YOUTH AND ADULT AGRICULTURAL OPERATION HOUSEHOLD MEMBERS: REGIONAL RURAL INJURY STUDY-III Susan Gerberich*, Andrew Ryan, Bruce Alexander, Colleen Renier (Midwest Center for Occupational Health and Safety Education and Research Center, Division of Environmental Health Sciences, University of Minnesota)

Background: Youth living on agricultural operations perform operation work and incur injury rates per hour similar to adults. While previous studies have described types and anatomical locations associated with injuries among youth, little is known about how these affect short- and long-term injury consequences. **Methods:** Data were collected for 1,459 eligible agricultural operation households in Minnesota, Wisconsin, North Dakota, South Dakota, and Nebraska. Two six-month injury data collection periods followed baseline collection; annual follow-up evaluation data were collected for two years. By comparing youth in case and control households, changes between baseline and follow-up were examined. Multivariate logistic regression models were used to calculate odds of increasing health care costs (hospital inpatient, emergency department, therapy, and other health care provider data) from baseline to one-year and two-year post-injury evaluations. **Results:** Agricultural injuries incurred by children, versus adults, were treated more frequently at Emergency Departments (31% and 22%); restricted activity percentages, 7 days-3+months, were 36% and 34%. Injuries among children were associated with increases in: Other Health Care (OR 2.08, 95% CI 1.40-3.09) and Total Health Care costs (2.02, 1.35-3.02) between baseline and one year after each injury reporting period; and an increase in Emergency Department costs between baseline and the two-year follow-up (2.54, 1.23-5.28). **Conclusions:** Injuries incurred by children living on agricultural operations appear to be more severe than those incurred by adults and were more likely to receive care in Emergency Departments. These injuries were associated with increased health care costs as long as two years after the injury reporting period. This may reflect environments at high risk for repeated injuries and associated medical costs.

0321-S/P

BROAD OCCUPATION CATEGORY AND MORTALITY FROM AMYOTROPHIC LATERAL SCLEROSIS OR PARKINSON'S DISEASE, NATIONAL OCCUPATIONAL MORTALITY SURVEILLANCE, 1985-2010 John D. Beard*, Andrea L. Steege, Jun Ju, John Lu, Sara E. Luckhaupt, Mary K. Schubauer-Berigan (Epidemic Intelligence Service and Division of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, U.S. Centers for Disease Control and Prevention)

An estimated 8.5 to 12.5 million Americans are afflicted by neurological diseases. Relative to cancer or respiratory diseases, the role of occupation in neurological diseases is much less studied and understood. We aimed to generate hypotheses regarding relationships between occupational exposures or experiences and two neurological diseases, amyotrophic lateral sclerosis (ALS) and Parkinson's disease (PD). We used data from National Occupational Mortality Surveillance (NOMS), a population-based surveillance system of more than 13 million deaths from up to 32 U.S. states from 1985 to 2010. We identified mortality from ALS and PD via underlying cause of death codes and coded usual occupation with U.S. Census occupation codes. We grouped occupations into 26 categories and calculated proportionate mortality ratios (PMRs) and 95% confidence intervals (CIs) for associations between each occupation category and ALS or PD mortality. We indirectly standardized PMRs by age, sex, race, and calendar year to the population of all NOMS deaths. There were 26,008 ALS and 67,378 PD deaths. For ALS, 13 occupation categories had significantly elevated PMRs with five having PMRs greater than 1.50: legal (PMR = 1.79; 95% CI: 1.52, 2.10); computer and mathematical (PMR=1.73; 95% CI: 1.44, 2.06); education, training, and library (PMR=1.70; 95% CI: 1.60, 1.80); architecture and engineering (PMR=1.62; 95% CI: 1.50, 1.74); and life, physical, and social science (PMR=1.57; 95% CI: 1.35, 1.82). For PD, 13 occupation categories had significantly elevated PMRs (the same 13 as for ALS) with three having PMRs greater than 1.50: community and social services (PMR=1.70; 95% CI: 1.59, 1.82); education, training, and library (PMR=1.62; 95% CI: 1.56, 1.67); and computer and mathematical (PMR=1.54; 95% CI: 1.31, 1.79). As previous investigations have focused primarily on toxicant exposures in the workplace, our results highlight new avenues for targeted studies of occupation and neurological diseases.

0323

WORK-FAMILY CONFLICT, LACK OF TIME FOR PERSONAL CARE AND LEISURE AND MIGRAINE IN THE ELSA-BRASIL - THE INFLUENCE OF JOB STRAIN Rosane Härter Griep*, Susanna Toivanen, Lucia Rotenberg, Itamar S. Santos, Alessandra C. Goulart, Leidjaira L. Juvanhol, Estela M.L. Aquino, Isabela Benseñor (Instituto Oswaldo Cruz, Fundacao Oswaldo Cruz, Brazil)

Background and aim: Work-family conflict and time scarcity prevailing in current societies may affect health; we investigated their association with migraine headaches, considering job stress. **Methods:** Baseline data from ELSA-Brasil (6,183 women; 5,664 men) were analyzed through work-to-family time-based (WFC-TB) and strain-based (WFC-SB), family-to-work conflict (FWC), lack of time for personal care and leisure due to professional and domestic demands (LOT), job stress, and migraine headaches according to International Headache Society criteria. We performed a cross-sectional analysis using multivariable models adjusted by potential confounders. **Results:** Higher chances of definite migraine were observed among women that referred frequent WFC-SB (OR 1.28; 95%CI 1.06-1.55), FWC (OR 1.32; 1.00-1.75) and LOT (OR 1.30 95%CI 1.08-1.58) compared with those who answered never. Probable migraine was associated with WFC-SB (OR 1.17; 1.00-1.36). Among men, probable migraine was associated with LOT (OR 1.34 95%CI 1.09-1.64). Among women, high psychosocial job demands and low social support at work interacted with LOT in association with definite migraine. Among men, there were interactions between job stress and WFC for probable migraine. **Conclusions:** Balancing demands of professional and domestic spheres in the contemporary society could be highly relevant in the management of treatment of headache. Findings on gender differences deserve further investigation.

0324-S/P

ESTIMATING INTERVENTION EFFECTS IN OCCUPATIONAL DATA, THE BAYESIAN G-FORMULA Alexander Keil*, Jessie Edwards, David Richardson (University of North Carolina at Chapel Hill)

Epidemiologic studies of working populations can be useful for deriving estimates of interventions to reduce workplace hazards. Occupational studies often rely on job exposure matrices that assign a mean exposure to individuals based on the dates and locations of working in specific jobs. This Berkson error structure is often justified by the observation that Berkson error in some models does not bias estimates of regression coefficients in conditional models for the outcome. However, the modeling of intervention effects may be subject to healthy worker survivor bias, which often necessitates the use of additional models for exposure and time-varying covariates. The effect of measurement error in such setting is poorly understood. We use a Bayesian approach to the g-formula and correct for exposure measurement error in a cohort of 769 Male, Native American Uranium miners from the Colorado Plateau, USA. We assume a Berkson error structure whereby the true exposure is a product of the measured exposure and a multiplicative error term derived from a log-normal distribution with an expectation of 1.0, with a coefficient of variation selected from previous literature to be 0.5. Before adjusting for measurement error, the posterior median (95% credible interval) of the risk of lung cancer mortality at age 90 in this population was 8.4% (6.2%, 11%). After implementing a hypothetical intervention to reduce the average radon exposure to 0.33 WLM (the current Mine Safety and Health Administration standard), the risk at age 90 was 6.9% (4.5%, 10%), and the risk difference was 1.7% (0.30%, 3.9%). After correcting for Berkson measurement error, the lung cancer mortality risk at age 90 was 6.6% (4.5%, 9.8%). Measurement error slightly attenuated the estimate of the intervention effect, suggesting that Berkson error may not substantially bias estimates of interventions. Our approach is generally useful for estimating intervention effects when exposures are imperfectly measured.

0326-S/P

THE ROLE OF ADIPOSITY ON THE RELATIONSHIP BETWEEN THE YEARS OF EXPOSURE TO NIGHT WORK AND GLYCEMIC LEVELS: BASELINE RESULTS FROM ELSA-BRASIL Aline Silva-Costa*, Lucia Rotenberg, Valéria Baltar, Maria de Jesus Fonseca, Claudia Coeli, Dora Chor, Enirtes Melo, Rosane Härter Griep (National School of Public Health - ENSP/FIOCRUZ)

Introduction: Epidemiologic studies suggest that night shift work is a risk factor for type 2 diabetes (DM2). Different pathways may lead from night work to metabolic diseases. **Aim:** To explore the direct and indirect pathways of years of night work on glycemic levels, considering the role of physical activity, BMI, waist circumference and triglycerides. **Methods:** Data from ELSA-Brasil, a prospective cohort study, which comprises 15,105 civil servants (aged 35 to 74 at baseline, 2008-2010) sampled from six Brazilian universities. A 12-hour fasting blood sample was drawn for the measurement of triacylglycerol and glucose. Weight, height and waist measurement (WC) were collected using standard techniques. A structural equation model (SEM) was used to confirm the pathways from night work to glycemic levels (GLIC). The latent variable (GLIC) included fasting glucose, glycated hemoglobin and 2-hour plasma glucose. Physical activity, BMI, WC, triglycerides and the years of night work were included in the SEM. The robust maximum likelihood method was used for parameter estimation (standardized coefficient). Analyses were conducted in Mplus and stratified by gender. **Results:** A total of 10,396 participants were included in the analyses. The mean age was 49 years, 7.9% were night workers and they had worked 18 years on night shift. The best-fit model according to the fit indexes showed that among women, the increase of 1 standard deviation (SD) in years of night work was associated with an increase of 0.038 SD in GLIC. A significant indirect association of night work with GLIC mediated by WC was observed among women and men (0.008 SD and 0.006 SD, respectively). **Conclusions:** The association of night work with the increase of GLIC contributes to the discussion of this exposure as a risk factor for DM2. Besides, these results can be interpreted as a first step toward understanding the pathways that could explain such association. **Acknowledge:** FAPERJ (E26100448/2014); CNPq-Brasil(150551/2015-0)

0325

CERVICAL HEALTH IN FEMALE FIREFIGHTERS: A QUALITATIVE APPROACH TO UNDERSTAND CERVICAL CANCER RISK IN THE FIRE SERVICE Natasha Schaefer Solle*, Nikhita Allam, Lauren Harte, Erin Kobetz, David Lee, Alberto Caban-Martinez (University of Miami)

Purpose: Cancer risk in U.S. firefighters has been a growing concern for years, however few studies up to date have examined the cancer prevention strategies pertinent to female firefighters. Recent exposure assessment and epidemiologic studies have documented differences in cancer rates between female and male U.S. firefighters, specifically cervical cancer. In the present pilot study, we aim to understand the perceptions of cervical cancer risk and screening behaviors of female firefighters. **Methods:** Qualitative methods were used to examine the health practices of female firefighters related to cervical health and cancer. Focus group scripts were designed to better understand the perception of cervical cancer incidence and screening behaviors in the fire service, and cancer risk behaviors related to occupational exposures. The interview guide utilized semi-structured questions with prompts to encourage elaboration and elicit themes. A 20-item demographic survey was also administered. **Results:** A total of 20 active female firefighters of mean age 38.7 ± 7.3 standard deviation, participated in three focus groups. Groups were divided based on the respective county fire departments. The main theme that emerged from the data was that female firefighters tend to forego routine cervical cancer screenings. Female firefighters identified three subthemes or reasons for lack of routine screening practices: 1) nontraditional work schedules in the fire service or alternative shift work, 2) family responsibilities and needs are a higher priority, and 3) only seek care for injury or pain. **Conclusion:** Our results indicate that most female firefighters are non compliant to routine cervical screening due to scheduling and time constraints. Balancing home and work life was discussed extensively in each focus group, with emphasis on lack of time for themselves. There is a critical need to determine optimal approaches to increase cervical cancer screening in female firefighters.

0327-S/P

PREVALENCE AND RISK FACTORS OF ZOONOSES IN COMPANION ANIMAL CARETAKERS Angela Toepp*, Kelsey Willardson, Mandy Larson, Benjamin Scott, Ashlee Johannes, Reid Senesac, Lucy, Desjardin, Matthew Nonnenmann, Christine Petersen (University of Iowa, College of Public Health, Center for Emerging Infectious Diseases, Department of Epidemiology)

Zoonotic diseases account for more than 75% of emerging human pathogens with companion animals playing a significant role in the transmission of these diseases from animals to humans. The risk of the spread of zoonotic diseases increases as the interaction between animals and humans increases. Certain occupations have dramatically more exposure to animals and therefore this risk is increased. Hunting dog caretakers can commonly be exposed to canine blood and other secretions from over 50 dogs while performing job related activities. Little is known about the risk of zoonotic infections in hunting dog caretakers within the United States. A risk assessment survey and a blood spot were obtained from hunting dog caretakers and bird watchers to determine the risk of exposure and prevalence of zoonotic infections in these two populations both with outdoor exposure, but only one with significant canine exposure. Quantitative polymerase chain reaction (qPCR) and serology were used to assess prevalence of zoonotic infection(s). Preliminary results indicate that hunting dog caretakers have an increased risk of Lyme disease with a prevalence of 13%; 1500x increase from the prevalence of 0.0086% in the overall US population. This population performs many high-risk activities without much knowledge of these risks for zoonotic infection. The increased risk and prevalence of zoonotic diseases among hunting dog caretakers emphasizes the need to develop prevention efforts to reduce exposure among the animal caretaker population.

0328

LONG-TERM EXPOSURE TO STRESS AND DEPRESSIVE SYMPTOMS AMONG POLICE OFFICERS John Violanti*, Anna Mnatsakanova, Michael Andrew, Tara Hartley, Cecil Burchfiel (Univ at Buffalo, SUNY, Buffalo, NY)

Purpose: Police work is regarded as an occupation replete with stress. The aim of this study was to assess the effect of long-term exposure to work stress on levels of depressive symptoms among police officers. **Methods:** The Spielberger Police Stress Survey, and the Center for Epidemiologic Studies Depression Scale (CES-D) were utilized in this prospective study of 203 Buffalo, NY police officers. Four stress categories were created across two time periods (Time 1:2004-2009; Time 2:2010-2015) by identifying participants as having high (median) or low (<median) stress: 'High-High stress' 'High-Low stress,' 'Low-High stress' and 'Low-Low stress.' Similar groups were developed for each stress component (administrative, danger and lack of support). Linear regression and analysis of covariance were used to examine mean levels of CES-D at Time 2 across these groups. Associations were adjusted for age, sex, race, and alcohol use. **Results:** Mean age of officers was 40.0 years and 30% were females. Unadjusted and adjusted mean CES-D scores differed significantly among categories of stress for total, administrative, danger, and lack of support stress components ($p<0.0003$, $p<0.0003$, $p<0.021$ and $p<0.002$, respectively). Mean CES-D scores for the 'High-High' stress group was 11.9 ± 0.9 vs. 6.3 ± 0.9 for the 'Low-Low' stress group for total police stress. Similar patterns were observed for the three stress components. **Conclusions:** Mean depressive scores were highest for those officers who experienced elevated occupational stress at the two time points approximately seven years apart. This indicates that sustained higher exposure to stressors over time may lead to higher depressive symptoms than low or varying levels of stress exposure.

0329-S/P

IMPACT OF EMPLOYMENT AND OCCUPATIONAL CLASS ON SYSTEMIC LUPUS ERYTHEMATOSUS SYMPTOMS: EVIDENCE FROM THE NATIONAL DATA BANK FOR RHEUMATIC DISEASES BreAnne Young*, Tulay Koru-Sengul, Tainya Clarke, Kaleb Michaud, Sophia Pedro, Alberto Caban-Martinez (University of Miami Miller School of Medicine)

Objective: Systemic Lupus Erythematosus (SLE) is a chronic disabling condition disproportionately affecting young female adults often during a critical transition phase into the workforce. Characterized by bouts of fatigue, lupus flares, and pain, SLE has been documented to impact work productivity and musculoskeletal health. Despite the known effects of SLE on worker productivity, few studies have identified specific worker groups with high levels of symptoms that would merit work exposure assessments. In this study, we 1) describe and compare SLE symptoms by occupational class and sociodemographic characteristics; and 2) examine the association between employment status and disease symptom severity among a sample of SLE patients. **Methods:** Data from the 2001 to 2015 National Data Bank for Rheumatic Diseases (NDB) were used to identify patients with doctor-diagnosed SLE. Participants completed a baseline survey developed by the NDB assessing employment and autoimmune disease development and progression. Descriptive analyses of socio-demographic status, employment status, and disease symptom count were conducted. **Results:** Among 1,023 adults with SLE, 117 (11.4%) were unemployed and 906 (88.6%) were employed. There was no statistical difference in age, gender, or marital status between employed and unemployed SLE patients (p -value=0.38, 0.46, 0.87, respectively), however, body mass index ($p=0.04$) and educational attainment ($p=0.02$) differed. Adults employed in transportation (mean symptoms=20.5, Standard Deviation [SD]=36.5), entertainment/media (16.5, SD=16.9), and ground cleaning/maintenance (15.5, SD=8.9) reported the highest overall symptoms. Employment status was significantly associated with symptoms scores, ($\beta=-3.67$, $p<0.001$). **Conclusion:** Despite the healthy worker effect, we identified specific occupational groups with SLE symptoms higher than those reported by unemployed adults with similar age and gender.

0340

URBAN ROAD FEATURES ASSOCIATED WITH MOTORCYCLE TRAFFIC ACCIDENTS Eugênio Diniz*, Letícia Pinheiro, Amanda Andrade, Fernando Proietti (Fundacentro)

Introduction: In Brazil, 34% of traffic deaths involve motorcycles – the majority of accidents in the country –, representing 26% of all motor vehicles in the country. In 2013, the number of deaths reached 30% (n=157) in the city of Belo Horizonte (Minas Gerais state, Brazil), where 13% of the drivers are motorcyclists. **Objectives:** to analyze the trend of traffic fatalities and to identify the most dangerous cluster sites for five years and the urban road features that can increase motorcycle accidents. **Methods:** access to the Military Police's (13,209 accidents) and the Emergency Service's (22,334 accidents) databases from the city of Belo Horizonte. The accident cluster sites were analyzed using the Kernel method and the scan statistic (Continuous Poisson distribution). A case-control study was conducted to identify and characterize road features by comparing segments (n=100) and intersections (n=72) with and without motorcycle accident occurrences. This study was associated with the Systematic Observation. **Results:** Death rates presented a growing trend between 2007 and 2008 and a decreasing trend in 2009-2011. The majority of deaths happened at night. Ten of the most dangerous cluster sites are located in the downtown and around the main thoroughfares. The final model of the multivariate analysis showed the following accident variables for segments: return path coming from the opposite direction of motorcyclists (OR: 4.38; IC 95% 1.40-13.74), speed cameras (OR: 4.32; IC 95% 0.81-23.11), and the presence of stores (OR: 3.03; IC 95% 0.88-10.39), and residences (OR: 2.51; IC 95% 0.88-7.21). Regarding intersections, accidents were associated with traffic flow (OR: 0.95; IC 95% 0.92-0.99), split median strip (OR: 6.92; IC 95% 1.13-42.32), and absence of traffic lights or roundabout/bump (OR: 0.21; IC 95% 0.04-1.06). **Conclusions:** The results indicated the epidemiologic importance of the urban context and new possibilities of action.

0342

NEWBORN HEARING SCREENING AND ROUTE OF BIRTH : ANALYSIS BY TYPE OF BIRTH Bárbara Niegia Garcia de Goulart*, Katia Maria Weiss, Nágila S. X. Oenning, Eva Neri Rubim Pedro (Universidade Federal do Rio Grande do Sul)

BACKGROUND: The presence of otoacoustic emissions provides certainty of the auditory system integrity, from the middle ear to the region of the outer hair cells of the inner ear and its absence, this generates uncertainties integrity. The hypothesis of the study refers to the interference that the route of birth may have on the results of newborn hearing screening. **OBJECTIVE:** To assess the relationship between mode of birth and the outcome of the hearing screening by otoacoustic emissions and also assess the effectiveness of the facilitator maneuver to detect false positives. **METHOD:** Cross-sectional study conducted in a university hospital of high complexity in southern Brazil. The study included 543 newborns of both sexes, to mothers with gestational age less than 37 weeks. The study excluded all newborns who presented a risk indicator for hearing loss. The sample size considered a significance level of 5%, with 90% power. Of the 543, 382 (70.3%) were born by vaginal delivery and 161 (29.7%) were born by c-section. The study was approved by the Hospital Ethics Committee Board. Analyses were performed using SPSS and consisted of descriptive and analytical measures, culminating in a multivariate Poisson regression. **RESULTS:** In the first trial hearing screening there was no statistically significant difference between the groups according to the type of delivery (p = 0.250). For newborns conducted at a second attempt, the left ear was the most operated in both groups. However, when comparing the ratios between the groups, the group from cesarean delivery required more bilateral maneuvers, while the group born vaginally required unilateral maneuvers (p = 0.027). **CONCLUSION:** Even without evidence of significant statistical differences related to mode of delivery and the results of the newborn hearing screening, we found that babies born by cesarean are more likely to perform the facilitator maneuver to avoid the occurrence of false positives resulting from vernix deposit in canal external ear.

“S/P” indicates work done while a student/postdoc

0341

WEEKEND X WEEKDAYS ADMISSIONS IN EMERGENCY DEPARTMENT: IS THERE DIFFERENCE IN OUTCOMES? Fernando Ganem*, Antonio Lira, Fernanda Bastos, Luis Penna, Fernanda Ungaretti, Alex Vieira, Fernando Machado, Marcia Martiniano e Sa (Syrian Lebanese Hospital - Sao Paulo - Brazil)

BACKGROUND: The purpose of this study is to analyse Emergency Department (ED) visits considering the day of week, between 2008 and 2014 and the profile after hospitalization. **METHODS:** We evaluated visits to emergency department and admissions to Syrian Lebanese Hospital, a tertiary Brazilian private hospital, according the day of week. ED visits, hospitalization, diagnoses, intensive care unit admission and mortality were calculated. **RESULTS:** In this period, 505.899 patients visited the ED, 143.261 on weekends (28,3 %) and 363.638 on weekdays (71,7%). The visits registered, according the day of week, were: 83.691 (16,5%) on Monday, 73.123 (14,4%) on Tuesday, 70.797 (13,9%) on Wednesday, 69.139 (13,66%) on Thursday, 65.888 (13,02%) on Friday, 70.340 (13,9%) on Saturday and 72.921 (14,4%) on Sunday. Among patients that visited ED on weekends, 10.584 (7,3%) were admitted, and in this population, 4205 (39%) required intensive care unit (ICU) stay and 487 (4,6%) died. Considering patients that visited ED on weekdays, 30.726 (8,4%) were admitted, 11.883 (38%) required intensive care unit (ICU) stay and 1.124 (3,6%) died. Among patients admitted on weekends the most prevalent diagnoses according to ICD-10 were diseases of respiratory system (15%); circulatory system (14,5%) and digestive (14%) while in the group admitted on weekdays these diagnoses were circulatory system (16,4%), digestive (15,1%) and respiratory (14,9%). **CONCLUSIONS:** In this sample, the most crowded day in ED is Monday. Compared with patients visits to ED on weekdays, patients admitted on weekends had similar admission rates, mortality rates, indication of ICU, differently from other studies. These findings suggest that staffing model should be the same, to ensure the same consistency of care in this set of patients.

0343

EFFECTIVENESS OF ULTRAVIOLET DISINFECTION ON REDUCTION OF HOSPITAL ACQUIRED INFECTION RATES Audrey Herring*, Liana Merz (BJC HealthCare, Center for Clinical Excellence)

Objective: With recent changes to Medicare reimbursement and an increased focus on hospital acquired condition reduction, many are finding innovative ways to reduce infection risk. Ultraviolet (UV) light devices are being used more frequently for routine hospital environment disinfection, but overall effectiveness in reducing hospital acquired infection (HAI) rates is unclear. This project objective was to determine effectiveness of UV devices hospital disinfection of hospital environments and reduction of HAI. **Methods:** A systematic search for relevant literature pertaining to disinfection of hospital environments with UV devices was conducted using electronic databases Medline (via PubMed), Cochrane, Cumulative Index to Nursing and Allied Health Literature, and Google Scholar. Each included study was assessed for adequate validity, reliability of methods, as well as potential bias utilizing Cincinnati Children's Evidence Appraisal Form for Bench Studies, and the Quality Evaluation Tool for Observational Studies. **Results:** Most of the relevant literature focused on effectiveness of UV device disinfection of inpatient rooms and high-touch hospital surfaces. Little evidence was found specific to use of UV devices in the operating room, and only one study addressed the impact on postsurgical wound infection. Overall, use of UV devices for disinfection appears to have moderate effectiveness in reducing bio-burden of certain pathogens [i.e. C. difficile, vancomycin-resistant Enterococcus (VRE), Acinetobacter, methicillin-resistant Staph aureus (MRSA)], as well as decrease HAI rates of MRSA, C. difficile, and VRE. However, current evidence is of lower quality, and generally lacks methodological rigor. **Conclusion:** Though the included studies are lower quality, results indicate that use of UV devices for hospital environment disinfection may provide added benefit to routine room disinfection by further reducing both bio-burden of certain pathogens and HAI rates.

0344

EXPLORING AN ASSOCIATION BETWEEN GUT MICROBIOME INDICES AND IGE-MEDIATED FOOD ALLERGY IN THE WHEELS BIRTH COHORT Christine LM Joseph*, Alexandra Sitarik, Albert Levin, Suzanne Havstad, Susan Lynch, Dennis Ownby, Edward Zoratti (Henry Ford Health System)

Introduction. The risk of Immunoglobulin E-mediated food allergy has been linked to the events occurring during the development and maturation of gut immunity in the infant. Recent studies point to the importance of the gut microbiome in this process using food sensitization. We use data from the Wayne County Health Environment Allergy and Asthma Longitudinal Study birth cohort to explore differences in the gut microbial communities between infants with and without food allergy to egg, milk, or peanut by age 3 years, as determined by a physician panel. **Methods.** Three primary microbiome measures were used to test for association with food allergy including: microbiome gross community indices (richness, evenness, and diversity), composition differences (PERMANOVA), and gut community microbiotypes estimated using a Dirichlet Multinomial Mixture model. **Results:** The records of 298 infants had data necessary for this analysis, 130 and 168 with data from the 1-month and 6-month study visits respectively. No significant differences in microbiome indices were observed for 1 month samples. However, at 6 months, infants meeting criteria for milk allergy had marginal differences in evenness and diversity ($p=0.091$ for both). With the exception of milk allergy, Relative Risks (95% Confidence Intervals) describing the association between food allergy and microbiome community type in 1-month stool samples suggested a protective effect when the community was dominated by the family Bifidobacteriaceae versus a community dominated by Enterobacteriaceae or a co-dominant community; RR (95%CI) = 1.74 (0.15-19.63), 0.85 (0.23-3.08), 0.49 (0.11-2.15), and 0.61 (0.20-1.87) for milk, egg, peanut, and any food, respectively. **Conclusion:** Composition of the gut microbiome could be a major determinant of food allergy risk. Exploration of the role of the gut microbiota in development of food allergy could provide information useful in its prevention and treatment.

0345

CHRONIC KIDNEY DISEASE (CKD) PROGRESSION IN A CHINESE COHORT—A RETROSPECTIVE LONGITUDINAL STUDY Jiemin Wang*, Jia Wei, Claudia Cabrera, Fan Liu, Li Zuo (R & D information China, AstraZeneca)

Objective: This study aimed to investigate how CKD progressed and the clinical factors in association with CKD progression in a Chinese cohort. **Methods:** A retrospective cohort study was performed using data obtained from the electronic medical records (EMRs) of patients who were diagnosed with CKD stages 1 to 4 at Peking University People's Hospital, one of the largest tertiary hospitals in Beijing, between March, 2010 and April, 2015. We define progression as entry to ESRD, CKD 5 stage ($eGFR < 15 \text{ ml/min/1.73m}^2$), and/or 40% reduction in $eGFR$ from baseline. Patients with at least 3 separate creatinine values that were measured 90 days apart were included. Associations between CKD progression and baseline clinical and laboratory characteristics were estimated by COX proportional hazards regression. **Results:** The cohort included 1,109 CKD patients, with 528 (47.7%) females and a mean age of 58 (± 18) years. The mean follow-up duration was 29 (± 15) months. A total of 142 (12.8%) patients progressed during the study period. The associated baseline clinical characteristics with CKD progression in the final model were: sex (male vs. female HR=1.70, 95%CI [1.11, 2.61]), baseline stage (reference stage 1, stage 2 HR: 0.90 [0.51, 1.60]; stage 3a: 0.90 [0.47, 1.71]; stage 3b: 1.30 [0.71, 2.38]; stage 4: 2.28 [1.25, 4.14]), albuminuria (reference group A1:albumin excretion rate (AER) $< 30 \text{ mg/24hr}$ or albumin-to-creatinine ratio (ACR) $< 30 \text{ mg/g}$; A2 (AER 30-300mg/24hr or ACR 30-300mg/g) : HR 2.71 [1.10, 6.68]; A3 (AER $> 300 \text{ mg/24hr}$ or ACR $> 300 \text{ mg/g}$): HR 5.05 [2.17, 11.76]), hemoglobin level (continuous, HR 0.98 [0.97, 0.99]), high-density lipoprotein (HDL, continuous, HR 0.42 [0.24, 0.71]), and bicarbonate (continuous, HR 0.93, [0.88, 0.99]). **Conclusion:** Our study indicated that male, CKD stage 4 at referral/baseline, severe albuminuria (A3 category), lower Hb, lower HDL, or lower bicarbonate levels at baseline were associated with earlier CKD progression in a Chinese cohort.

0350

GROUP A STREPTOCOCCAL CARRIAGE IN CHILDREN RESIDING IN AFRICAN COUNTRIES Mark Engel*, Annesinah Moloi, Leila Abdullahi, Dylan D Barth (University of Cape Town)

Background: Asymptomatic children can be a major reservoir of pharyngeal Group A Streptococcus (GAS) with reported figures ranging from <10% to >20% in developing countries. Knowledge of GAS prevalence and the molecular characterisation (M-typing) of strains harboured in the pharynx of carriers, could assist in diagnosing symptomatic GAS pharyngitis and potentially contribute to the development of a vaccine. Currently, data on GAS carriage prevalence and M-type distribution in African countries are largely scant. We performed a systematic review to determine prevalence and M-type distribution of asymptomatic GAS carriage in children aged 5-15 years, residing in African countries. **Methods:** We conducted a comprehensive literature search using an African search filter to identify studies. Two evaluators independently reviewed, rated, and abstracted data. Estimates were pooled in a meta-analysis and stratified according to region and study design using Stata®. We applied the random-effects 'metaprop' routine to aggregate prevalence estimates and account for between study variability. **Results:** The pooled prevalence of GAS carriage was 8% (n=16 studies; 95% CI, 5-10%). Pooled prevalences for cross-sectional studies was 8% (95% CI, 5-11%) and longitudinal studies, 9% (95% CI, 1-24%). Regional pooled rates were similar of between 7% and 8%, except for Northern Africa where the pooled prevalence was 14% (95% CI, 3-30%). Western Africa had the lowest pooled estimate of 2% (95% CI, 1-2%). A single study reported on molecular characterisation: 11/13 (85%) emm-types were included in the putative 30-valent vaccine currently under development. **Conclusion:** Pooled GAS carriage estimate is 8% among African school children with some regional differences being apparent. There is a dearth of data on molecular strain information, thus emphasizing the need for further studies.

0353- S/P

THE USE OF ORTHODONTIC AND CONVENTIONAL PACIFIER IN A BRAZILIAN BIRTH COHORT. Rafiza Martins*, Erika Thomaz, Cecilia Ribeiro, Claudia Alves, Antonio Augusto da Silva (Federal University of Maranhão)

Purpose: To estimate the prevalence and to identify factors associated with predominant use of conventional and orthodontic pacifiers by children aged 1 to 2 years. **Methods:** We conducted a prospective population-based cohort study in 3,302 children born in a northeastern Brazilian capital. The sample was stratified by maternity hospital with systematic random selection of one out of three births. Children were assessed at birth and at the age of 1-3 years. Comparison of frequencies was performed by the chi-square test. To evaluate associations with independent variables, prevalence ratios were estimated by Poisson regression analysis. **Results:** Orthodontic pacifiers were used by 14.1% and conventional ones by 16.4%. When compared to control group (no pacifier), children of adolescent women, with lower family income and who were breastfed for shorter time used conventional pacifier more often; the ones from better economic status, whose mothers were employed, were born very low birth weight and breastfed for shorter time used the conventional type more often. **Conclusion:** Children in less favorable socioeconomic conditions used conventional pacifiers more frequently whereas those better off used orthodontic pacifiers more often. Children with higher maternal breastfeeding duration used less pacifier of both types, reinforcing the need to encourage breastfeeding policies.

0351-S/P

EXAMINING HOMOGENEITY IN MATERNAL BELIEFS AND HUMAN PAPILLOMAVIRUS VACCINE UPTAKE IN MALE AND FEMALE CHILDREN IN LOW-INCOME FAMILIES Erika Fuchs*, Mahbubur Rahman, Abbey Berenson (University of Texas Medical Branch)

Background: Human papillomavirus (HPV) vaccination is recommended for boys and girls aged 11-12, yet uptake remains low, especially among boys. Few studies have examined homogeneity in HPV vaccine uptake and maternal beliefs about HPV for male and female children within the same family. Heterogeneity in beliefs and uptake by children's sex may have important practice implications. **Methods:** An analysis of a subset of existing data from a 2011-2013 survey of mothers of children aged 9-17 years was conducted using Stata SE Version 14. Among those mothers with both male and female children (n=350), maternal beliefs about their children's susceptibility to and possible consequences of HPV infection and HPV vaccination uptake were examined using McNemar's chi-squared test for paired samples. **Results:** Mothers were significantly more likely to report having initiated (26.0% vs. 10.3%, p-value <0.001) and completed (14.3% vs. 4.0%, p-value <0.001) HPV vaccination for their daughters than sons, respectively. Mothers did not express differences by children's sex in belief about HPV harming future health, belief about HPV harming future relationships, whether the mother would feel devastated if her child got HPV, perceived risk of contracting HPV, or perceived risk of developing genital warts. Among those who had not yet vaccinated either child (n=283), mothers were more likely to report that they wanted their daughters compared to sons vaccinated in the next year (53.4% vs. 48.1%, p-value 0.019) and were more likely to report feeling confident that they could get their daughters vaccinated than their sons (56.0% vs. 49.6%, p-value 0.007). **Conclusions:** While a higher proportion of girls receive the HPV vaccine than boys, maternal beliefs about HPV did not differ by children's sex. Mothers who have not yet vaccinated their children may be more motivated to get their daughters vaccinated than sons.

0354

ASSESSMENT OF CUTOFFS POINTS FOR HOMA-IR (HOMEOSTASIS MODEL ASSESSMENT FOR INSULIN RESISTANCE) TO DETECT METABOLIC DISORDERS IN OBESE CHILDREN Luciana B Nucci*, Bruna Barraviera Masselli, Raquel Pereira Rios, Teresa Simionato Ribeiro Silvia Diez Castilho (Pontifical Catholic University of Campinas)

Background: Metabolic syndrome (MS) is a cluster of risk factors for type 2 diabetes and cardiovascular disease. Diagnostic criteria for adults and children over 10 years of age are well established. However, early detection of risk factors can reduce morbidity and mortality of children in adulthood. The HOMA-IR (homeostasis model assessment for insulin resistance) is an index obtained by fasting glucose and insulin, and can help this detection, since it is widely used in adults to measure insulin resistance. **Objective:** The objective of this study was to detect cutoff points for HOMA-IR as a screening method for MS in children. **Methods:** Cross-sectional study involving 81 obese children, 5-10 years old attended in 2014 in the pediatric clinic of a public hospital in Campinas-SP, Brazil. Sensitivity (Sens) and Specificity (Spec) calculations, with their respective 95% confidence intervals (95%CI) were calculated, as well as the ROC curve for the detection of best cutoff point. **Results:** We identified 43 (53.0%) children with at least one risk factor for MS. Waist circumference (WC) greater than the 90th percentile (P90) was seen in 77 (92.8%) children, fasting blood glucose 100 mg/dl in 4 (4.8%), HDL-cholesterol 45 mg/dl in 33 (40.7%), triglycerides 130 mg/dl in 7 (8.6%) and hypertension in 14 (16.9%) children. Eleven (13.6%) children presented obesity (WC> p90) and at least two of the above risk factors. The best cutoff point for HOMA-IR was found to be 1.95 (Sens=81.8%, 95%CI: 52.3-94.9%; Spec=73.5%, 95%CI: 67.1-79.0%), with an area under the ROC curve of 86.6%. **Conclusion:** The HOMA-IR> 2 appears to be a good predictor to identify metabolic changes in obese children under 10 years old. Early identification of these risk factors, monitoring and interventions in this group of children can contribute to improved health and quality of life, while minimizing the overall socioeconomic burden of the MS in most countries today.

0355

INCREASED VISITATION REDUCES LENGTH OF STAY IN THE NEONATAL INTENSIVE CARE UNIT Jamie Robertson*, Sage Saxton, BreAnna Kennedy, Tara Sharifan, Ilene Schechter (Brigham and Women's Hospital)

PURPOSE: Wide variation exists in the length of stay in the neonatal intensive care unit (NICU), even for relatively homogenous groups of infants. Identification of predictors of length of stay can better inform interventions and unit planning. This study examined the association between visitation by parents and other family members as a potential predictor of a neonate's length of stay in the NICU. **METHODS:** Data was collected on all 279 infants admitted to a Level III NICU between June-November 2013. Visitation data, including frequency and duration, were captured through sign-in/sign-out logs in the NICU and were linked to socioeconomic and medical data obtained from the infant's electronic medical record. Cox proportional hazard regression models were used to evaluate the association between visitation and length of stay, adjusting for infant characteristics. **RESULTS:** Overall, the mean length of stay for infants in our study was 22.70+37.11 days. Increased visitation was found to be significant associated with a shorter length of stay (HRadj 0.64, 95% CI 0.48-0.72; p=0.034), adjusting for gestational age, 1-minute APGAR score, 5-minute APGAR score and birthweight. **CONCLUSIONS:** Visitation by parents, family and friends plays a significant role in determining the length of time a neonate spends in the NICU. Policies and programs in NICUs should support increased visitation practices, especially for high-risk infants.

0356

OUTBREAK OF ENTEROVIRUS-D68 INFECTION IN CHILDREN - IOWA, 2014 Hayden Smith*, Rima El-Herte, Michael Nieto, Amaran Moodley (UnityPoint Health)

BACKGROUND: Childhood Enterovirus-D68 (EV-D68) infections are uncommon and have not been well described. A nationwide outbreak occurred in the US during August 2014 to January 2015. The clinical presentation and complications associated with EV-D68 infection are reported and compared with patients without EV-D68. **METHODS:** A retrospective chart review was conducted at a tertiary medical center in Iowa, USA, on children with respiratory samples submitted in mid-August and September 2014 to the CDC for EV-D68 identification. Submitted samples had tested positive for rhino/enterovirus by multiplex polymerase chain reaction assay. Data are presented as medians and interquartile ranges or counts and percentages. Fisher's exact and Wilcoxon rank sum (exact) tests were used to compare patients based on EV-D68 status. **RESULTS:** Forty-eight children tested positive for rhino/enterovirus during the study period. Forty percent were female. There were 27 (56%) confirmed EV-D68 cases. Patients without EV-D68 had various strains of human rhinovirus, Coxsackie virus, and Enterovirus isolated. EV-D68 patients were older (53 months [23-80] versus 12 months [5-22]) and more likely to have asthma (48% versus 14%); wheezing (89% versus 48%); respiratory distress (78% versus 38%); and neutrophilia (81% versus 54%) compared to patients without EV-D68 (p<0.05). There were no significant differences in sex, asthma control, cough, fever, other organ involvement, viral or bacterial co-infection, hospital acquired infection, inpatient/outpatient setting, length of stay, or chest radiograph findings (p>0.05). Only 1 child in each group required invasive ventilation and no cases of acute flaccid paralysis or death were observed in the sample. **CONCLUSION:** Children in Iowa infected with EV-D68 were more likely to have a history of asthma and present with wheezing and respiratory distress than those without EV-D68 infection. Unlike other reports, there was no statistical increase in disease severity or mortality.

0357-S/P

NOT TRYING TO "GET DRUNK": CHILDREN EXPOSED TO ALCOHOL-BASED HAND SANITIZERS IN FLORIDA Wendy Stephan* (University of Miami)

Background: Recent media reports have described a marked increase in calls to poison control centers about children drinking alcohol-based hand sanitizers. The ubiquity of these products in homes and schools and the attractive packaging of these products raise concerns about child safety. Alcohol-based hand sanitizers potentially present a poison hazard due to their high concentration of ethanol (65%+) which, when ingested by a child, can lead to pronounced hypoglycemia, coma and even death. **Methods:** Data on calls to the Florida Poison Information Center Network were accessed via the ToxSentry® database. Included were calls from January 1, 2011 to October 30, 2015 for products coded "Ethanol-Based Hand Sanitizer" regarding children aged 1 month to 12 years. Excluded were calls coded as ocular or dermal. All cases involving school age children were opened manually and the case notes reviewed. **Results:** Approximately 90% of calls to FL poison centers about hand sanitizer related to accidental ingestion in toddlers. Cases in school age children were overwhelmingly described in the case notes as being the result of pranks or dares at school. The characterization of these cases by the media as attempts to "get drunk" is not borne out by our study. Only 9 out of 2747 cases, or 0.33%, were described as suffering serious physical effects. The volume of calls for hand sanitizer exposure in children was fairly stable over the time period examined. **Conclusion:** It appears that in addition to curious toddlers, school-age children have easy access to hand sanitizers and are abusing the products as a means to harass or entertain each other. This indicates a need to secure sanitizers in schools and to limit children's unsupervised access to the products. Because these products continue to grow in popularity, and are marketed in increasingly appealing ways, parents and school staff need education about the potential for harm from these products.

0360

CHARACTERISTICS OF NEW USERS OF OSTEOPOROSIS DRUGS CHANGED OVER TIME, YET HIGH COMPLIANCE WITH THERAPY REMAINED STABLE

Suzanne Cadarette*, Joann Ban, Marina Simeonova, Boyd Hao, Giulia Consiglio, Andrea Burden (University of Toronto)

Purpose: To examine the characteristics of new initiators of oral bisphosphonate therapy, and estimate one-year compliance with therapy by sex, and over time. **Methods:** We identified community-dwelling older adults initiating (new users) oral bisphosphonate therapy in Ontario from April 2002 to March 2011. Compliance with therapy was estimated using the proportion of days covered (PDC) in the year following treatment initiation. Patient characteristics (1-year lookback period) and compliance with therapy were summarized by fiscal year of treatment initiation, and stratified by sex. **Results:** We identified 62,990 men and 257,767 women initiating oral bisphosphonate therapy (mean age=75.2 years, SD=6.8). Characteristics of patients changed over time, reflecting changes in osteoporosis management and healthcare delivery. A larger proportion of men initiated therapy (13% in 2002/03 to 25% in 2011/12) while use of etidronate (88% to 5%) declined over time. Use of some medications decreased (e.g., benzodiazepines: 25% to 18%, NSAIDs: 35% to 22%), while use of other medications increased (e.g., ARBs: 4% to 17%, statins: 24% to 44%) over time. Proportions differed between sexes, yet trends (e.g., decline, increase) in medication dispensing over time were similar. Compliance with therapy was also similar in men and women. The proportion with compliance 20% declined over time reflecting measurement error induced by a change in the typical days supply at index (from 90 days in 2002/03 to 30 days in 2011/12). The proportion with compliance 80% remained relatively stable over time at around 55%. **Conclusions:** The characteristics of patients starting oral bisphosphonate therapy have changed over time, yet estimates of high compliance have remained relatively stable. Understanding practice changes and measurement error in calculation of measures of adherence are important to inform and interpret results of pharmacoepidemiologic analyses.

0361-S/P

ARE STATIN PRESCRIPTIONS DETERMINED BY SOCIAL CLASS?

Anna-Therese Lehnich*, Bernd Kowall, Nico Dragano Raimund, Erbel, Susanne Moebus, Karl-Heinz Jöckel, Andreas Stang (University Duisburg Essen)

Purpose: During the last 15 years, several statins were made available as generic drugs and therapy became more cost-efficient. The aim was to analyze whether statin prescriptions are associated with social class in a public health care system. **Methods:** The data derive from the baseline (2000-2003) and first follow-up examination (2006-2008, n=4157, 49.4% male, 50-80 years old) of the Heinz Nixdorf Recall Study in the Ruhr area in Germany. Participants with an indication for statins were identified according to NCEP ATPIII (ten year risk for cardiovascular disease or coronary heart disease of at least 20% according to the Framingham risk scores, LDL 190mg/dl, participants with coronary heart disease or stroke). Moreover, we categorized statin prescriptions as generic or brand name. We used the International Standard Classification of Education by the UNESCO to assess social class and set up the three categories low, medium and high. We applied log regression models to estimate prevalence ratios (PR) with 95% confidence intervals (95% CI). According to a directed acyclic graph, we adjusted for age and sex. **Results:** Among men with an indication for statins, the adjusted PR for receiving a statin was 0.71 (95% CI: 0.43-1.17) for men with low social class compared to men with high social class. For women we found an opposite association with a PR of 1.54 (95% CI: 0.80-2.93) for participants with low social class. In the group of participants receiving a statin, the adjusted PRs for men receiving a generic drug was 1.38 (95% CI: 1.17-1.63) and 1.25 (1.13-1.39) for low and medium social class, respectively, compared to participants with high social class. For women, the association was only weak, the adjusted PRs were 1.05 (95% CI: 0.89-1.23) and 1.09 (95% CI: 0.94-1.26) for low and medium social class, respectively. **Conclusion:** The prescription of statins is associated with social class but the direction of the association differs by sex.

0362-S/P

THE EFFECT OF SPIRONOLACTONE ON GLUCOSE METABOLISM IN MEN AND WOMEN, A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

ie Zhao * (The University of Hong Kong)

Background: Diabetes predicts cardiovascular disease (CVD); however, some drugs, such as statins and some diuretics, are effective for CVD prevention but increase the risk of diabetes. Similarly, spironolactone, a type of diuretic, might worsen glycemic control, but the evidence is unclear and inconsistent. **Methods:** A systematic review and meta-analysis of placebo-controlled trials was conducted. We searched PubMed using ("spironolactone" or "aldactone") and trial and ("glucose" or "diabetes" or "insulin" or "insulin resistance") until September 15, 2015, supplemented by a bibliographic search of the selected studies and relevant reviews. Mean differences in indicators of glucose metabolism between spironolactone and placebo were summarized in a meta-analysis using a random effects model with inverse variance weighting. Heterogeneity and publication bias were also assessed. **Results:** In total, 18 eligible studies were identified; 10 on fasting glucose, 8 on hemoglobin A1c (HbA1c), 7 on homeostatic model assessment (HOMA)-insulin resistance (IR) and 8 on insulin. Spironolactone increased HbA1c (0.16%, 95% confidence interval 0.02 to 0.30) with low heterogeneity, but had no clear effect on fasting glucose, HOMA-IR and insulin. **Conclusions:** Spironolactone increasing HbA1c adds to the concern about adverse glycemic effects. Spironolactone might need to be monitored carefully in patients with diabetes or at high risk of diabetes. Given, the number of drugs in common use that have different effects on diabetes and CVD, a mechanistic RCT is needed to identify a unifying explanation for the pleiotropic effects on diabetes and CVD, with corresponding implications for intervention and treatment for both diseases.

0370

BIRTH WEIGHT PREDICTS FEEDING BEHAVIOR IN SIBLINGS Marilyn Agranonik*, Hélène Gaudreau, Michael Meaney, Robert Levitan, Patricia Silveira (Fundação de Economia e Estatística, Porto Alegre, RS, Brazil)

Background/ Aim: Low Birth Weight (LBW) is implicated in the risk for adulthood diseases such as overweight, preceded by altered feeding behavior during childhood. Our objective was to investigate if a lower birth weight predicts different feeding behavior and food consumption between siblings. **Methods:** 30 sibling pairs from the cities of Montreal, Canada, were recruited from an established prospective birth cohort (the Maternal Adversity, Vulnerability and Neurodevelopment – MAVAN - project). At 48-months of age, mothers completed the Children Eating Behavior Questionnaire (CEBQ) and a Food Frequency Questionnaire. Analyses were performed considering each child of a sibling's pair in one group, so that environmental influences could be controlled. Generalized Estimating Equations were used to evaluate the effect of birth weight (smaller X higher) on the CEBQ scores described at 4 years of age, adjusted by birth order, gender and BMI. **Results:** Lower birth weight was related to increased satiety ($p=0.006$), slowness ($p=0.030$) and desire to drink ($p=0.033$). This group also presented less responsiveness ($p=0.001$), enjoyment ($p=0.029$) and undereating emotion ($p=0.048$). **Conclusions:** Those effects were observed within the same family which reinforces that the effect of lower birth weight in feeding behavior is more biological driven than due to environmental variation.

0372

SELF-EVALUATION OF SLEEP QUALITY: PREVALENCE AND ASSOCIATED FACTORS IN AN ADULT BRAZILIAN POPULATION.

Marilisa Barros*, Margareth Guimarães, Lima Tania Aparecida Oliveira Cardoso, Maria Filomena Ceolim, Edilson Zancanella, Luis Menna-Barreto (State University of Campinas, São Paulo, Brazil)

Objectives: Considering the essentiality of good sleeping to guarantee a good health, the objective of this study was to estimate the prevalence of self-evaluated bad sleep quality according to sleeping problems, demographic variables, health status and morbidities. **Method:** It is a population-based, cross-sectional study, developed with data from the Campinas Health Survey carried out in 2014/2015. In this study we analyzed data from the sample of 1987 individuals 20 years old or more. The dependent variable was the self-evaluated sleep quality. Independent variables were age, gender, health related variables (such as chronic diseases and health complaints), and variables related to sleep (such as complaints about initiating and maintaining sleep and to be quite full of energy at wake up). Prevalence ratios, crude and adjusted for age and gender, were estimated using Poisson regression and the analyses considered the sample design. **Results:** The prevalence of bad sleep quality (BSQ) was 30.1% and it was significantly associated to age, gender ($PR=0.78$ for males) and birth place. Most of the diseases and health problems increase the prevalence of BSQ. Others associations with BSQ include: having 2 or + chronic diseases ($PR=1.79$), 4 or more health problems ($RP=4.9$), common mental disorders ($PR=2.71$), poor self-evaluated health ($PR=2.50$), difficult in starting ($PR=4.03$), or maintaining sleep ($PR=4.19$), difficult in staying awake during the day ($PR=2.30$), and almost never feeling well after a sleeping night ($PR=4.74$). **Conclusions:** Bad sleep quality were associated to sleep complaints, age, gender, migration, health status and several morbidities and health problems. The results suggest that the evaluation of quality of sleep should be included in the assessment of individuals' health especially in some demographic groups.

0371-S/P

A SYSTEMATIC REVIEW OF SMOKING PATTERNS AND NICOTINE DEPENDENCE AMONG RURAL TO URBAN MIGRANTS

 Raed Bahelah*, (Florida International University)

INTRODUCTION Urbanization is a growing phenomenon worldwide with millions of people migrate from rural to urban (RTU) areas. Migrants face economic hardships and increased stress which put them at higher risk of substance use including tobacco smoking. This review systematically analyzed the changes in smoking status and dependence among RTU migrants worldwide. **METHODS** A comprehensive database search for published studies that evaluated smoking patterns and/or dependence among RTU migrants was undertaken. Studies that compared pre- and post-migration smoking and others that compared smoking of RTU migrants to the general population were included. Cross-border migration studies were excluded. **RESULTS** Nineteen studies were included in this review, 14 from China and 5 from Indonesia, Mongolia, Vietnam, Thailand, and Peru. In general, prevalence of ever and current smoking was higher among male than female migrants, and smoking prevalence was higher among migrants than non-migrants. Poor mental health, long working hours, perceived discrimination, and lower income were all associated with smoking among migrants. Among migrant females, exposure to "female brand" cigarettes was associated with ever smoking ($p<0.05$) while working in hair salons or night clubs was associated with current smoking ($p<0.05$). Length of migration and younger age at migration were associated with nicotine dependence. Although migrant males smoked heavier post-migration than pre-migration, there was no evidence of smoking initiation post-migration among those who did not smoke pre-migration. **CONCLUSIONS** RTU migrants represent a vulnerable group with high smoking prevalence. There is a need for specific tobacco control policies focusing on RTU migrants.

0373

PATTERNS OF USE AND CHARACTERISTICS OF U.S. ADULT SMOKELESS TOBACCO USERS: PRELIMINARY FINDINGS FROM WAVE1 OF THE POPULATION ASSESSMENT OF TOBACCO AND HEALTH (PATH) STUDY

 Yu-Ching Cheng*, Brian Rostron, Hannah Day, Cassandra Stanton, Lynn Hull, Alexander Persoskie, Mark Travers, Kristie Taylor, Kevin Conway, Bridget Ambrose, Nicolette Borek (Center for Tobacco Products, US Food and Drug Administration, Silver Spring, Maryland)

BACKGROUND. The impact of smokeless tobacco (SLT) use (e.g., moist snuff, dip, chewing tobacco, and pouched or loose snus) on U.S. population health is a topic of considerable public health interest. In particular, there are limited data on the use of novel SLT products, such as snus. Nationally representative data on SLT users and use patterns, particularly by product type, may provide a deeper understanding of U.S. adult tobacco use. **METHODS.** We analyzed data from 32,320 adults (aged 18+ years) in Wave 1 of the Population Assessment of Tobacco and Health (PATH) Study, a national, longitudinal study of tobacco use and health in the U.S., to assess the use of SLT products, including pouched snus. We estimated the frequencies (daily vs. non-daily use in the past 30 days) and patterns of use of SLT, by product type (pouched snus vs. other SLT). We defined current users of SLT as those who reported ever using the product fairly regularly and now using it every day or some days. **RESULTS.** Overall, 2.9% (2.7-3.1%) of adults were current users of any type of SLT product. The frequencies of current use for pouched snus and other SLT were 0.4% (0.4-0.5%) and 2.7% (2.5-2.9%), respectively. Among current users, the median age of first use was lower for other SLT, 15.3 (15.0-15.5) years, than pouched snus, 20.7 (19.1-22.3) years. About 28% (22.2-33.8%) of the current pouched snus users were daily users and 85.5% (80.7-90.2%) were poly-tobacco users. In contrast, 64.4% (61.8-67.0%) of the current other SLT users were daily users and 51.3% (48.6-54.0%) were poly-tobacco users. Cigarettes were the most common tobacco product used with SLT. **CONCLUSIONS.** Pouched snus users had a lower percentage of daily use and were more likely to use other types of tobacco products than other SLT users in the PATH study. These findings, along with data from future waves of the PATH study, will help to better understand the trajectories of SLT use in adults over time.

MODE OF PHYSICAL ACTIVITY PARTICIPATION BY BODY MASS INDEX IN U.S. ADULTS: 2013 BRFSS

James Churilla*, Tam-mie Johnson, M. Ryan Richardson University of North Florida)

Background: Body mass index (BMI) continues to be used as a marker of health due its strong correlation with adiposity and many chronic health conditions (e.g., metabolic syndrome). Meeting current federal physical activity (PA) guidelines has been consistently shown to be favorably associated with desirable BMI values and overall health status. Understanding the relationship between various modes of PA and BMI may elucidate potential patterns and help guide specific recommendations for those in undesirable BMI categories. The purpose of this study was to examine the relationship between specific modes of PA and BMI. **Methods:** Sample (n=447,905) included adult (≥ 18 years of age) participants in the 2013 Behavioral Risk Factor Surveillance System. Regional participants answered questions specific to meeting the current Department of Health and Human Services PA Guidelines by mode of PA. Participants reported meeting both aerobic and strength guidelines, aerobic only, strength only, or neither. **Results:** Compared to the referent group (BMI = 18.5 - < 25.0 kg/m²), underweight (UW) BMI values of 12.0 - 18.5 kg/m², overweight (OW) BMI values of 25.0 - < 30.0 kg/m², and obese (OB) BMI values of 30.0 kg/m² were associated with 20, 12, and 32% lower odds (p<0.001 for all) of meeting both aerobic and strength recommendations respectively. The OW BMI group was found to have slightly greater odds (p=0.01) of meeting the aerobic only recommendation. The UW and OB groups were found to have 18% lower odds (p<0.05 for both) of meeting the strength only recommendation, while the OW group had only 6% lower odds (p=0.01). The UW, OW, and OB groups were found to have 29, 12, and 49% greater odds (p<0.001 for all) of meeting neither recommendation respectively. **Conclusion:** The UW and OB BMI groups share similar PA and inactivity patterns. More research needs to be done to investigate why these two extremes on the BMI indices report similar PA patterns.

IDEAL CARDIOVASCULAR HEALTH PREVALENCE IN THE BRAZILIAN POPULATION: NATIONAL HEALTH SURVEY (2013)

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Background: Primordial prevention is conceived as the initial prevention of risk factors, through the adoption of healthier behaviors. Within this concept, the American Heart Association (AHA) has defined seven metrics, based on evidence, to achieve ideal cardiovascular health. **Objective:** The aim of this study was to evaluate the prevalence of cardiovascular health in the Brazilian population, according to gender, age and region of household. **Methods:** Cross-sectional study that used data from National Health Survey (PNS), 2013. The ideal CVH was evaluated according to that proposed by AHA, combined (number of factors) and individually: four behaviors factors (smoking, physical activity, body mass index and diet) and three biological (blood pressure, blood glucose and cholesterol levels). The score 1 was attributed to each condition at ideal levels and 0 for the opposite. At the end, the indicator of CVH ranged from zero (poor) to seven (ideal). An ideal CVH was considered when the individual pre-sented ideal levels for the seven metrics. We also assessed the behavioral index (0 – 4 behavioral metrics). All of the analyses were conducted by considering the complex sampling design of PNS 2013, by the Survey module of the application Stata 12.1. **Results:** This study included 34,362 individuals, being 51.3% women, and mean age (±EP) of 43.8 years old (±0.2). The Brazilian population has reached very low prevalence (1%) for the sum of 7 factors in ideal level. Individually, 3.2% of the population had ideal diet, followed by physical activity (23.6%) and body mass index (43.7%). It was observed that younger individuals (18 – 35 years) and the Northern Region presented higher prevalence rates of ideal metrics. **Conclusion:** These results indicate that greater efforts are urgent by public policies at the level of primordial prevention in order to achieve appropriate targets of cardiovascular health in the Brazilian populations and the reach of satisfactory primordial prevention levels.

IMPACT OF SMOKELESS TOBACCO AND WATERPIPE ON MORTALITY

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Background: Smokeless tobacco and waterpipe are gaining popularity in many parts of the world, particularly among the youth. Against myths regarding their “relative safety” compared to cigarette, studies have shown many potential hazards, but their long-term impact on mortality is largely understudied. Regular use of many such products in the Middle East provides a good opportunity to study this. **Methods:** The prospective Golestan Cohort Study includes 50,045 adults (40-75 years), from Northeast Iran. The baseline questionnaire (2004-2008) assessed information about lifetime use of cigarettes, waterpipe, and chewing smokeless tobacco (Nass). Analyses were done by Cox regression stratified by sex, ethnicity and opium use and adjusted for age, socioeconomic status, ethnicity, area of residence, education. **Results:** 3,878 cohort participants (7.5%) had a history of chewing Nass and 572 (1.1%) smoked waterpipe, and both were also more likely to be former cigarette smokers. During 391,208 person-years of follow-up (median: 8 years), 4,524 participants died (1,941 from cardiovascular disease and 897 from cancer). There was a significant association between current Nass use and overall mortality (HR=1.16; 95%CI: 1.02–1.32), and the highest risk in this group was a 56% increased risk of cancer death in people chewing Nass more than 5 times a day. This risk peaked among people starting Nass at the ages of 25-35, and former smokers. Waterpipe smoking was associated with increased overall (HR=1.24; 95%CI: 0.98, 1.57) and cancer (HR=1.74; 95%CI: 1.02–2.96) mortality. We observed an association between the cumulative lifetime waterpipe use (waterpipe-years>30) and both overall (HR=1.50; 95%CI: 1.07–2.09), and cancer mortality (HR=2.62; 95%CI: 1.31–5.21). **Conclusions:** Our study provides evidence for increased overall and cancer mortality among users of smokeless tobacco and waterpipe. Smokers who quit, but use smokeless tobacco are at a particularly higher risk of cancer mortality.

PHYSICAL INACTIVITY AND HEALTH-RELATED QUALITY OF LIFE AS PREDICTORS OF SURVIVAL IN U.S. ADULTS: A NOVEL USE OF ITEM-RESPONSE THEORY.

Peter Hart* (Montana State University - Northern)

Background: Item-response theory (IRT) is a modern psychometric technique capable of developing a true score measure of health-related quality of life (HRQOL) from survey data. The purpose of this study was to investigate both PIA and HRQOL as predictors of survival, with the aid of IRT. **Methods:** Data for this research came from the 2001-02 NHANES and its corresponding linked mortality file. PIA status was determined by the reporting of no moderate or vigorous leisure-time physical activity. HRQOL was assessed by entering five perceived health variables into a single parameter IRT model. Cox proportional hazards regression was used to model the effects of PIA and HRQOL on survival time while controlling for confounding variables (age, sex, race, and income). **Results:** A total of 5,985 adults were included in this analysis with a mean person-year follow-up of 9.24 years and 965 deaths. Results from the adjusted model showed a significant (p=.006) three-way (HRQOL×PIA×SEX) interaction, requiring a stratified analysis. Among females, those with poor HRQOL had shorter survival time (Hazard Ratio (HR)=3.08, 95% CI: 1.24, 7.65) than those with good HRQOL. Physically inactive females also had shorter survival time (HR=1.88, 95% CI: 1.24, 2.85) as compared to those who were not physically inactive. Since the two-way (HRQOL×PIA) interaction was significant (p=.004), the analysis for males was further stratified by PIA status. Among males who were physically inactive, those with poor HRQOL had shorter survival time (HR=2.39, 95% CI: 1.46, 3.90) than their counterparts with good HRQOL. Among males with poor HRQOL, those who were physically inactive had shorter survival time (HR = 4.25, 95% CI: 2.30, 7.83) than their counterparts who were not physically inactive. **Conclusion:** Results from this study support both HRQOL and PIA as predictors of survival time. Health promotion programs should include physical activity in adults with poor HRQOL.

0378-S/P

SCHOOLCHILDREN'S SMOKING BEHAVIOR AND COMBINED EFFECTS OF PARENTAL DISCIPLINING STYLE AND FAMILY-LEVEL SMOKING INFLUENCE Chia-Hsien Hsu*, Chun-Ji Lin, Heng Lee, Hsiao-Ling Huang (Kaohsiung Medical University)

Few studies explored the combined effects of parental disciplining styles and family smoking influence on schoolchildren's smoking behavior. Data on smoking and related variables was obtained from Control of School-aged Children Smoking Study surveys of 2008-2009. Stratified cluster sampling was used to obtain a representative sample (n=5,309) among 3rd to 6th graders from 65 elementary schools in southern Taiwan. We used a multiple logistic regression analysis under adjusting demography, knowledge and attitude about pupils for smoking to assess the association among family smoking behavior, parental disciplining styles and smoking status of elementary schools students. Authoritarian (adjusted odds ratio (aOR) = 2.66, 95%CI=1.91, 3.71) and neglectful (aOR = 1.44, 95%CI=1.03, 2.01) disciplining styles were of strong correlation with pupil's smoking behavior. The effects of combined risk factors including disciplining style and family smoking behavior on pupil's smoking were evidently higher than that of only a single risk factor. The highest aOR of combined risk factors for pupil's smoking behavior was found on children who have family smokers with authoritarian disciplining style (aOR=4.44, 95% CI=2.57, 7.66), following with neglectful disciplining style (aOR= 2.64, 95%CI=1.53, 4.57). A strategy aimed to prevent children's smoking behavior should consider the combined effects of family smoking status and parental disciplining style.

0380-S/P

PREDICTORS OF CIGARETTE SMOKING PROGRESSION AMONG A SCHOOL-BASED SAMPLE OF ADOLESCENTS IN IRBID, JORDAN: A LONGITUDINAL STUDY (2008-2011) Rana Jaber* (Florida International University)

Introduction Little evidence regarding longitudinal predictors of cigarette smoking progression is available from developing countries. This study aimed to identify gender-specific individual and social predictors of cigarette smoking progression among a school-based sample of adolescents in Irbid, Jordan. **Methods** A total of 1,781 seventh graders (participation rate 95%) were enrolled and completed an annual self-administered questionnaire from 2008 through 2011. Students who reported 'ever-smoking a cigarette' at baseline or in the subsequent follow-up but not being 'heavy daily smokers' (>10 cigarettes per day) were eligible for this analysis (N=669). Grouped-time survival analyses were used to identify predictors of cigarette smoking progression in boys and girls. **Results** Among the study sample, 38.3% of students increased the frequency and/or amount of cigarette smoking during the three years of follow-up. Among individual factors, the urge to smoke in the morning predicted smoking progression for boys and girls. The independent predictors of cigarette smoking progression were friends' smoking and attending public schools in boys, and siblings' smoking in girls. Discussing the dangers of smoking with family members was protective for girls. **Conclusion** Boys and girls progressed similarly in cigarette smoking once they initiated the habit. Progression among girls was solely family-related, while it was peer-related for boys.

0379

A PROSPECTIVE EVALUATION OF THE IMPACT OF SCREENING ON RISK FACTORS FOR COLORECTAL CANCER IN THE PROSTATE, LUNG, COLORECTAL, AND OVARIAN (PLCO) CANCER SCREENING TRIAL Wen-Yi Huang*, Sonja Berndt (Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health)

Regular screening has been shown to be effective in preventing colorectal cancer by removal of adenomas, but the effect of screening on the risk factor profile of colorectal cancer is unknown. We prospectively evaluated a range of demographic and lifestyle risk factors in the context of a large randomized colorectal cancer screening trial, the PLCO Cancer Screening Trial, where 154,897 men and women aged 55 to 74 were enrolled between 1993 and 2001 and followed for the median of 11.9 years for colorectal cancer incidence. Participants randomized to the screening arm (SA) underwent flexible sigmoidoscopy screening at baseline and again 3 or 5 years subsequently, while control arm (CA) participants received their usual care. We calculated hazard ratios (HRs) and 95% CIs using multivariable-adjusted Cox proportional hazards models. Heterogeneity (Ph) between the trial arms was tested using the Wald test. Colorectal cancer risk associations were similar between the two arms for the vast majority of risk factors, except race [black vs. white HR=1.64 (1.29-2.08) in SA and HR=1.03 (0.79-1.34) in CA, Ph=0.01], history of diverticulitis/diverticulosis [HR=0.58 (0.43-0.78) in SA and HR=0.89 (0.71-1.13) in CA, Ph=0.02], and borderline-significantly gender [female vs. male HR=0.79 (0.69-0.90) in SA and HR=0.67 (0.60-0.76) in CA, Ph=0.07]. HRs for the two arms combined were 1.54 (1.34-1.77) for current smoking, 1.39 (1.21-1.60) for history of diabetes, 1.35 (1.20-1.51) for BMI >30, 1.33 (1.19-1.49) for family history of colorectal cancer, 0.78 (0.68-0.89) for college graduation or higher, 0.83 (0.76-0.90) for regular use of aspirin or ibuprofen, and 0.83 (0.76-0.90) for female postmenopausal hormone use. Overall, screening was found to have very little impact on the associations between non-dietary risk factors and colorectal cancer risk; the few differences observed for demographic and disease history factors may be explained by differences in healthcare utilization.

0381-S/P

THE ASSOCIATION BETWEEN COMPUTED TOMOGRAPHY AND CANCER INCIDENCE OR DEATH IN KOREAN GENERAL POPULATION Heewon Kim*, Yunji Hwang, Choonghyun Ahn, Jieun Jang, Hokyung Sung, Juyeon Lee, Kwang-Pil Ko, Aesun Shin Keun Young Yoo, Sue K. Park (Department of Preventive Medicine, College of Medicine, Seoul National University; Cancer Research Center, Seoul National University, Seoul, Republic of Korea; Department of Biomedical Science, Seoul National University College of Medicine, Seoul, Republic of Korea;)

The study aim was to investigate the association between medical radiation exposures related to diagnostic computed tomography (CT) scans and cancer incidence or death. We analyzed the data of 4,701 subjects from the data of the Korean Multi-center Cancer Cohort (KMCC). The KMCC study is a community-based prospective cohort and constructed in urban and rural such as Haman, Choongju, Uljin, and Youngil in Korea (1994-2003). In our study, subjects with exposed to CT were 1,896, and subjects with unexposed were 2,805. For descriptive analyses, we compared the two groups using Student's t test and ² test. We estimated hazard ratios (HRs) and their 95% confidential intervals (95% CIs) using Cox proportional hazard models for the risk of cancer incidence and death by cancer according to CT exposure. The regression models were adjusted for age, gender cigarette smoking, alcohol consumption and body mass index (BMI). The follow-up for cancer diagnoses were up to December 31, 2011. The mean of follow-up duration was 7.78 years for cancer incidence and 9.78 years for death. This study identified 320 subjects of cancer cases and 131 subjects of cancer related deaths. The history of CT (ever vs. never) significantly attributed to the cancer incidence but not the cancer related death (adjusted HR=1.47 95% CI=1.18-1.84; adjusted HR=1.32 95% CI=0.93-1.89; respectively). In conclusion, irradiation of diagnostic CT scans are possibly related to increase cancer risk, which suggest the lowest possible exposure of CT scan needs to be considered.

0382- S/P

VITAMIN D INSUFFICIENCY AND DEFICIENCY WITH STAGES OF CHRONIC KIDNEY DISEASE IN KOREAN Juyeon Lee*, Kwang-Pil Ko, Young Hwan Hwangm KookHwan Oh, Curie Ahn, Sue K. Park (Department of Preventive Medicine, Seoul National University College of Medicine, Seoul, Korea, Department of biomed Science, Seoul National University College of Medicine, Seoul, Korea, Cancer Research Institute, Seoul National University, Seoul, Korea.

Chronic kidney disease (CKD) is an epidemic and public health problem. Vitamin D insufficiency and deficiency may increase exacerbate osteopenia and osteoporosis, cause muscle weakness, and increase the risk of fracture. Little is known about the relationship vitamin D status with chronic kidney disease in Korean. This study was examined the association between Serum 25-hydroxyvitamin D levels with chronic kidney disease in Korean. A total of 33,889 subjects from the Korean National Health and Nutrition Examination Survey data and 1,319 patients from the KNOW-CKD data. Serum 25-hydroxyvitamin D levels (ng/mL) were evaluated in normal (>30), relative insufficiency (20-29), Insufficiency (10-19), deficiency (<10). Polytomous logistic regression model adjusted for age, sex, and other confounding factors. Subjects with serum 25-hydroxyvitamin D levels in insufficiency status had 27% increased risk of CKD stages compared to subjects in normal vitamin D status (OR: 2.71, 95% CI: 1.05-6.99). Subjects with serum 25-hydroxyvitamin D levels in deficiency status had 43% increased risk of chronic kidney disease stages compared to subjects in normal vitamin D status (OR: 4.33, 95% CI: 1.48-12.67) (KNHANES data) Patients with serum 25-hydroxyvitamin D levels in deficiency status had 19% increased risk of chronic kidney disease stages compared to patients in normal vitamin D status. (OR: 1.98, 95% CI: 1.05-3.73) (KNOW-CKD data) This study demonstrates that serum 25-hydroxyvitamin D insufficiency and deficiency status are associated with level of kidney function in the Korean especially advanced stage of chronic kidney disease. Our results raise critical public issue and needs to be performed by large scale case-control or cohort studies in other population.

0384-S/P

TRENDS IN LEISURE-TIME PHYSICAL ACTIVITY AMONG MIDDLE-AGED KOREAN POPULATION IN HEXA: 2004-2012 JooYong Park*, Ji-Yeob Choi, Aesun Shin, Juhwan Oh, Sang-Ah Lee, Minkyong Song, JaeJung Yang, Jaesung Choi, Jong-koo Lee, Daehee Kang (Department of Biomedical Sciences, Seoul National University Graduate School, Seoul, Korea)

This study aimed to estimate the prevalence of leisure-time physical activity and assess whether there was a secular trend during the 9-year period, 2004-2012 among Korean population. A total of 52,794 men and 102,828 women aged 40-69 years enrolled in the Health Examinees (HEXA) study during 2004-2012 were used for analysis. Information on leisure-time physical activity including frequency per week and duration was collected by interviewer-administered questionnaire. Age-standardization was performed using Korean population in 2005 as standard population. The proportion of participants who did leisure-time physical activity according to the amount of minutes per week were estimated in overall population and for each year. Trends of leisure-time physical activity levels from 2004 to 2012 were assessed by joinpoint regression analyses. Overall, 39.7% men and 35.8% women met the recommendation on physical activity by WHO (>150 min/week), and 22.8% men and 19.9% women were highly active (>300 min/week). Participants being men, having higher education level, higher income, and normal BMI were likely to be more active. During the study period, there were no significant trends in the prevalence of engaging in leisure-time physical activity. However, the proportion of highly active groups showed slightly increasing trend in both sexes ($p<0.05$). Our finding showed the prevalence of participating in leisure-time physical activity have not been changed among HEXA participants at baseline during the enrollment period.

0383

PREVALENCE OF PERCEIVED STRESS AND ASSOCIATION WITH SOCIODEMOGRAPHIC AND LIFESTYLE CHARACTERISTICS OF COLLEGE STUDENTS IN THE MIDWEST OF BRAZIL Ana Paula Muraro*, Patrícia Simone Nogueira, Paulo Rogério Melo Rodrigues, Lídia Pitaluga Pereira, Márcia Gonçalves Ferreira (Universidade Federal de Mato Grosso)

Introduction: Several changes are observed in lifestyle at the university, such as increased levels of stress, unhealthy eating habits, altered sleep patterns and reduced physical activity. **Objective:** This study aimed to identify factors associated with the level of stress among freshmen full-time courses of a federal university in the Midwest of Brazil. **Methods:** This is a cross-sectional study with 508 students, 16-25 years of age, entering the full-time graduate courses in 2015 at a public university at Cuiabá, the capital city of the Brazilian state of Mato Grosso. Perceived stress was assessed using the Perceived Stress Scale short version (PSS-10), which ranks the stress into five levels: no stress, mild, moderate and high. For the bivariate analysis stress levels were categorized as 'no stress or mild', 'moderate or high'. Chi-square test was performed to verify the differences between the perceived stress level and the independent variables (age, sex, economic class, physical activity practice before start the course, think in or just changing the practice of physical activity, self-assessment of body weight and regular frequency of consumption of alcoholic drinks and tobacco). **Results:** High prevalence of high and moderate stress was observed in the study population (7.3% and 32.7%, respectively). The prevalence of moderate or high stress was higher for women, for students from lower economic classes and those who believe that their body weight is above of the adequate (for all: $p<0.01$). On the other hand, lower prevalence high and moderate stress was observed among those who initiated a physical activity. **Conclusion:** Among Brazilian college students, women and those of low economic class students and who consider their weight above the normal, show a higher prevalence of perceived stress. Furthermore, the findings points out that a healthy lifestyle with physical activity, in addition to other benefits, can be a way to control stress in this phase of life."

0385-S/P

SELF-RATED HEALTH IS ASSOCIATED WITH REGULAR INTAKE OF FRUITS AND VEGETABLES AND CRONIC DISEASE IN MIDWEST REGION OF BRAZIL IN 2012 Lidia Pitaluga Pereira*, Ana Paula Muraro, Marcia Goncalves Ferreira (UNIVERSIDADE FEDERAL DE MATO GROSSO)

Background: The world health organization recommends regular consumption of fruits and vegetables because of the importance to health and disease prevention. The self-rated health is a good marker for population health as well as being inexpensive and easy to apply. **Objective:** To verify the association of poor self-rated health with the recommended and regular intake of fruits and vegetables, and self-reported chronic diseases. **Methods:** Cross-sectional study with data from 6.695 individuals aged 18 years, both sex, collected by the Vigilância de Fatores de Risco e Proteção para Doenças Crônicas por Inquérito Telefônico (VIGITEL – Telephone-based Surveillance of Risk and Protective Factors for Chronic Diseases), at Midwest Region of Brazil in 2012. One resident of each household, with at least one fixed telephone line, was randomly selected from probability samples, subsequently answering the questionnaire. Independent variables analyzed were regular intake of fruits and vegetables (>5 days/week) and self-reported morbidity nature (Hypertension, Diabetics and Obesity). Prevalences of poor self-rated health were estimated using Poisson regression, stratified by sex and adjusted for age and education level. Analyses were made with the svy command from Stata 11.0 software. **Results:** The prevalence of self-rated health as poor was 3.4% among men and 5.7% among women. It increased with age ($p<0.01$) for women and decreased with the rise of education level in both sexes ($p<0.01$). After adjusting for age and education level, regular consumption of fruits and vegetables and regular consumption of vegetables was associated with poor self-rated health only among women ($p=0.01$). Obesity, hypertension and diabetes remained associated with self-rated health in both sexes. **Conclusions:** Poor self-rated health showed association with self-reported chronic diseases and with consumption of healthy food markers mainly among women. **Key words:** Self-Assessment; Prevalence; Information Systems; Risk fact

0386-S/P

DETERMINANTS OF SOLAR SUPPLEMENT USE IN FRENCH WOMEN Isabelle Savoye*, Claire Cadeau, Marie-Christine Boutron-Ruault, Marina Kvaskoff (IInserm U1018, Centre for Research in Epidemiology and Population Health (CESP), \Lifestyle, genes and health: integrative trans-generational epidemiology\ Team; 2Gustave Roussy, Villejuif, France; 3Univ. Paris Sud 11, Villejuif, France")

Background: Solar supplements are largely used to prepare the skin for tanning. While factors associated with the general use of dietary supplements have already been described, little is known about the specific profile of solar supplement users. **Methods:** E3N is a prospective cohort initiated in 1990 that included 98,995 French women born in 1925-1950. In 2008, a nested case-control study included 1558 cases and 3647 matched controls to collect detailed data on lifetime sun exposure and sun protection behaviors. On this occasion, women reported their use of solar supplements before, during or after a sun exposure period over the previous 10 years. Analyses were performed through logistic regression models adjusted for pigmentary traits. **Results:** Solar supplement use was reported in 13% (n=441/3401) of controls. Users were more likely to have a sun-sensitive phenotype (fair skin, hair or eye color, high numbers of moles and freckles, high sensitivity to sunlight) than non-users. While they were more likely to use tanning beds (OR=4.28) or to report high numbers of sunburns (ptrend<0.0001), they were also more likely to use sunscreen, especially with a lower sun protection factor (<8: OR=6.28; >30: OR=3.36), and to reapply sunscreen during exposure (ptrend<0.0001). Users also had a lower body mass index (BMI) (ptrend=0.009) and higher physical activity levels (ptrend=0.02) but were more likely to be current (OR=1.39) or former smokers (OR=1.56) and had higher alcohol intakes (ptrend=0.007) than non-users. Solar supplement use was also positively associated with use of oral contraceptives (OR=2.25) and menopausal hormone therapy (OR=1.85). **Conclusion:** The profile of solar supplement users is associated both with risky (sun exposure, smoking, alcohol) and healthy behaviors (sun protection, lower BMI, physical activity). Given this particular profile, our findings call for new research on the relations between solar supplement use and cancer risk.

0387

ASSOCIATIONS OF NEIGHBORHOOD SOCIAL COHESION AND ACTIVITY BEHAVIORS IN CHINESE AMERICAN IMMIGRANTS IN NEW YORK CITY Stella Yi*, Simona Kwon, Jeannette Beasley, Carmen Isasi, Chau, Trinh-Shevrin, Judith Wylie-Rosett (New York University School of Medicine, Department of Population Health)

Neighborhood social cohesion has been shown to be associated with physical activity (PA), but studies have presented results in aggregate across racial/ethnic groups and have not examined PA domains (work-, transportation-, recreation-related) or sedentary behaviors. The objective of this analysis was to assess the association between neighborhood cohesion with activity behaviors (i.e., meeting 2008 PA guidelines, activity minutes by PA domain, sitting time) in a cross-sectional sample of Chinese American immigrants residing in an urban area. Data were from the Chinese American Cardiovascular Health Assessment (CHA CHA) Study 2010-11 among participants with valid reports of PA minutes, assessed by the World Health Organization Global Physical Activity Questionnaire (n=1,772). Neighborhood cohesion was assessed using a 5-item scale (Sampson, 1997). Participants rated agreement/disagreement with statements about their neighborhoods (neighborhood is close-knit, and people are willing to help, get along with each other, can be trusted or share the same values). Multivariable regression modeling for activity behavior outcomes were conducted, adjusting for age, sex, education, income, age at immigration and acculturation level. Mean PA time across all domains was 375.5 min/week; 10.0, 69.6 and 20.4% were attributable to work-, transportation-, and recreation-related PA, respectively. On average, sitting time was 329.1 min/day. After adjustment, higher (> median) neighborhood cohesion was associated with meeting PA guidelines (n=88.5% met PA guidelines, OR: 1.55, 95% CI: 1.15, 2.10) and with less sitting time (-24.1 min/day, 95% CI: -40.3, -8.0). Social cohesion was not associated with activity minutes by PA domain. Neighborhood social cohesion was associated with meeting PA guidelines and less sitting time in Chinese American immigrants in New York City. Results underline the importance of social environment in interventions designed to improve PA behaviors in specific domains.

0390

A POPULATION-WIDE ASSESSMENT OF THE FAMILIAL RISK OF SUICIDE IN UTAH, USA Amanda Bakian*, Jim VanDerslice, Yue Zhang, Brian Robison, William Callor, Todd Grey, Douglas Gray, Justin Berger, Hilary Cooon (Department of Psychiatry, University of Utah)

Suicide is the tenth leading cause of death in the U.S. and the eighth in Utah. Gene-environment interactions are strongly implicated in suicide. While suicide is expected to aggregate in families, there are few data resources available to assess familial clustering on a population basis. Our study's objective was to quantify the familial risk of suicide in a total population-wide sample of Utah suicide decedents. Information on all completed suicides in Utah from 2000-2014 (N=5862) was provided by the Utah Department of Health's Office of the Medical Examiner and linked to the Utah Population Database (UPDB), a unique database containing genealogical, demographic and health data on 7.3 million current or previous Utah residents. The familial standardized incidence ratio (FSIR) was used to estimate each decedent's familial relative risk of suicide by comparing the incidence of suicide within a decedent's pedigree with a population-based sample. FSIR estimates were restricted to decedents belonging to pedigrees with at least 500 members, and an alpha of 0.01 was used to identify high-risk pedigrees. 4285 decedents (73%) were successfully linked to genealogical records in UPDB, and 3,184 decedents (54%) belonged to pedigrees with at least 500 members. FSIR ranged from 0.20-13.1. 2,630 decedents (45%) belonged to high-risk suicide pedigrees ($p < 0.01$) and 524 decedents (9%) belonged to pedigrees with no evidence of familial aggregation of suicide ($p > 0.01$). Our study demonstrates a high degree of significant familial clustering of suicide, which is consistent with Scandinavian-based assessments. As this is the first US-based population-wide assessment of suicide's aggregation in families, our study provides further evidence of the importance of incorporating family history into US-based suicide prevention interventions. Further work will focus on disentangling the contribution of genetic and environmental factors to familial suicide risk patterns.

0392

THE RELATIONSHIP BETWEEN SELF-REPORTED SEXUAL PREFERENCE AND DEPRESSION/SUICIDE OUTCOMES AMONG PUBLIC HIGH SCHOOL STUDENTS Tammie Johnson*, Roslyn Whitley, Laurie Kirkland (University of North Florida)

Background: Depression and suicidal thoughts/behaviors among youth is an emerging public health concern. The purpose of this study was to examine the relationship between self-reported sexual preference and depression/suicide outcomes among Duval County, Florida public high school students. **Methods:** Data from the 2013 Florida Youth Risk Behavior Survey (YRBS) were used ($n=3649$). The YRBS is a self-administered survey of high school students to monitor health-risk behaviors. Duval County administered the survey in 21 public high schools and had an overall response rate of 77%. Students were categorized as heterosexual, lesbian/gay/bisexual (LGB) or Unsure. Four depression/suicide outcomes were examined. **Results:** Among the students, 9.4% self-identified as LGB and 3.8% were Unsure. Logistic regression analyses were conducted controlling for gender, age, and race/ethnicity. The regression analyses reveal that, compared to heterosexual students, LGB students had significantly higher odds of being depressed ($OR=3.1$), thinking about suicide ($OR=3.7$), planning suicide ($OR=2.9$), or attempting suicide ($OR=3.7$). Unsure students had similar odds ratios for these outcomes. Further multi-variable logistic regression analyses revealed that personal safety factors, such as being threatened and/or bullied, were important modifiable risk factors that attenuated the odds of student depression and suicidal thoughts/behaviors. **Conclusion:** LGB and Unsure public high school students in Duval County, Florida are at increased risk for depression and suicide compared to their heterosexual counterparts. The potential exists to attenuate this increased risk by addressing safety and bullying issues in schools and communities.

0391-S/P

CHILDHOOD HOUSEHOLD DYSFUNCTION AND ADULT PSYCHIATRIC DISORDER: AN ANALYSIS OF 107,704 SWEDES. Emma Björkenstam*, Bo Burström, Bo Vinnerljung, Kyriaki Kosidou (Karolinska Institutet, Stockholm Sweden)

Background: Childhood household dysfunction (CHD) has been associated with an increased risk of psychiatric disorder in adulthood, but details in this association are less known. We aimed to explore the association of a range of CHD indicators with the risk of psychiatric disorder in adulthood, and the impact of age at exposure, disorder type and accumulation of indicators. **Methods:** We analyzed a cohort of all Swedes ($N=107,704$) born in Stockholm County between 1987-1991. Register-based CHD indicators included familial death, parental substance misuse and psychiatric disorder, parental criminality, parental separation, household public assistance reciprocity and residential instability. Age at exposure was categorized as: 0-6.9 years (infancy and early childhood), 7-11.9 years (middle childhood), and 12-14 years (early adolescence). Psychiatric disorders after age 15 were defined from ICD codes through registers. Risks were calculated as Hazard Ratios (HR) with 95% confidence intervals (CI). **Results:** Exposure to at least one CHD indicator was associated with an increased risk of psychiatric disorder (HR 1.4, 95% CI: 1.3-1.4). Risks were increased for mood, anxiety, and psychotic disorders and ADHD but not for eating disorders. The risk varied with type of disorder but was similar for all exposure periods. Individuals with multiple (3+) CHD indicators had a two-fold risk of psychiatric disorder (HR 2.0, 95% CI: 1.9-2.1). **Conclusion:** Our findings support the long-term negative impact of CHD on mental health, regardless of developmental period of exposure. The risk is particularly increased with accumulating CHD indicators. Unlike other psychiatric disorders, eating disorders appear not to be related to CHD.

0393

ASSOCIATION OF RESPONDENT PSYCHIATRIC COMORBIDITY WITH FAMILY HISTORY OF COMORBIDITY: RESULTS OF THE NATIONAL EPIDEMIOLOGIC SURVEY ON ALCOHOL AND RELATED CONDITIONS-III Jeesun Jung*, Rise Goldstein, Bridget Grant (NIH/NIAAA)

Personality disorders, are common, highly comorbid with each other, and familial. However, the extent to which comorbidity between specific disorders is itself familial remains unclear. **Methods:** We analyzed data from the National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III) to study associations of family history (FH) of comorbidity among alcoholism (ALC), drug problems (DP), depression (DEP), antisocial behavior (ASB), and anxiety disorders (ANX) in respondents' parents and maternal and paternal grandparents with the corresponding DSM-5 diagnostic comorbidity among respondents. We utilized multivariable multinomial logistic regression models controlling for age, sex, race, education, family income, marital status. **Results:** All comorbid associations of any two disorders with FH were statistically significant and almost all adjusted odds ratio (ORs) for respondent comorbidity in the presence of FH of the parallel comorbidity exceeded 10. After further adjustment for adverse childhood experiences (ACE), most patterns of association were similar except that the ORs were reduced two- to threefold. Those for comorbidity involving ASB in relatives and antisocial personality disorder (ASPD) in respondents were consistently larger than any other pairs of disorders with or without control for ACE. **Conclusion:** Familial comorbidity involving ALC, DP, DEP, ASB, and ANX was strongly associated with comorbidity of parallel pairs of DSM-5 psychiatric disorders. Childhood adversity may play a mediating role in relationships between familial and respondent comorbidities. Further investigations of relationships among familial comorbidity, adverse childhood experiences, and respondents' diagnostic status are indicated to improve understanding of mechanisms underlying comorbidity.

0394-S/P

BODY MASS INDEX, WEIGHT CHANGE AND DEPRESSION: RESULTS FROM HEALTH EXAMINEES STUDY (HEXA) Sun Jae Jung*, Aesun Shin, Dahee Kang (Seoul National University College of Medicine)

Objective: This study aimed to investigate the association between body mass index (BMI), weight change and their potential interaction on the risk of depression. **Methods:** Among 170,087 participants who participated in the Health Examinees (HEXA) Study, a total of 168,123 participants were included for the final analysis. Weight and height were measured and past weight at various time points were recalled. Weight change was estimated in 2 ways: 1) from age 18-20 to present, and 2) the differences between the lowest to the highest weight. Outcome was measured by: 1) depression diagnosis by physician after the weight recall and 2) Center for Epidemiological Studies-Depression Scale (CES-D). Multivariate logistic regression was used. **Results:** A total of 2.0% (3,421/168,123) participants were diagnosed with depression. Underweight (BMI<18.5kg/m²) group showed an increased odds ratio (OR) for depression (Men: OR 2.72, 95% CI 1.07-6.93 at age 50/ Women OR 1.26, 95% CI 1.06-1.48 at age 35). There was significantly decreased OR in men with BMI 25-29.9kg/m² (OR 0.53, 95% CI 0.36-0.76 at 2 years before survey), women with BMI 23-24.9kg/m² (OR 0.87, 95% CI 0.75-0.99 at age 18-20) and BMI 25-29.9kg/m² (OR 0.79, 95% CI 0.70-0.90 at age 35). Participants who gained more than 20kg since age 18-20 or women who lose weight more than 7kg showed significantly increased OR. In assessing joint association, there were significantly increased OR among 1) underweight at age 18-20 + relatively stable weight, and 2) normal BMI women at age 18-20 + consequent weight loss. **Conclusion:** Being underweight were consistently associated with increased OR of later depression in both men and women. People with weight gain more than 20kg and women with weight lose more than 7kg had increased OR for depression.

0396

ONSET OF SCHIZOPHRENIA IN CHINA DURING SPECIAL HISTORICAL PERIOD Tianli Liu*, Xiaoying Zheng (Institute of Population Research, Peking University)

Background: Available evidence tentatively implicated that clustering of intrusive life events may increase the risk of development of schizophrenia. During the Cultural Revolution (1966 -1976), a violent mass movement launched by Chinese leader in order to purge the remnants of capitalist in Chinese society, intrusive life events had been frequently affecting a large number of senior officials and intellectuals who were considered as 'capitalists'. **Objectives:** We examine whether onset rate of schizophrenia had increased during the Cultural Revolution period. **Methods:** No scientific data were collected during the Cultural Revolution. We integrated data from several sources to estimate 5 year onset rates of schizophrenia before, during and after the Culture Revolution. The Population Division of the United Nations provided estimated data on Chinese population in 5 year intervals. Data collected by the First China National Sample Survey on disabilities were used to estimate crude onset number of schizophrenia. Persons living with schizophrenia as well as other mental disorders were diagnosed by experienced clinical psychiatrists according to the ICD-9 criteria. The onset data was further adjusted for mortality rate reported by a prospective cohort study in China. **Results:** We found that the onset rates of schizophrenia was higher during the Cultural Revolution period in comparison to the periods before and after the Cultural Revolution. The rate was highest (45.54/100,000, 95% Confidence Interval: 45.06, 46.02) in 1966-1970, which is the most violent and disordered period. The second highest onset rate was observed in 1971-1975 (39.94/100,000, 95%CI: 39.52, 40.36), following with the rate in 1976-1980 (39.89/100,000, 95%CI: 39.49, 40.28). **Conclusions:** Our findings are consistent with the postulated hypothesis that intrusive life events increase the risk of development of schizophrenia.

0395

THE COST OF DEPRESSION AND SUBCLINICAL DEPRESSION: A POPULATION-BASED COHORT STUDY Michael Lehenbaum*, Atif Kukaswadia, Maria Chiu, Joyce Cheng, Claire DeOliveira, Paul Kurdjak (Institute for Clinical Evaluative Sciences)

Background Major depression is a mental health problem associated with physical and mental health outcomes, as well as concomitant costs to the healthcare system. An important area of study is subclinical depression, where individuals have depressive symptoms but do not meet the criteria for depressive disorder. This study estimated the direct healthcare costs associated with individuals with major, subclinical and no depression. **Methods** Participants were from the Ontario component of the 2002 Canadian Community Health Survey on Mental Health and Well-Being. Major depression was identified using the World Mental Health Composite International Diagnostic Interview, while subclinical depression was defined as a score of 8 on the Kessler-6 scale. Costs in 2013 USD were estimated by linking individuals to health administrative databases and following them until March 31, 2013. All estimates were weighted using survey sample weights and adjusted for important covariates. **Results** Our sample consisted of 10,155 individuals, of whom 657 and 420 had subclinical and major depression, respectively. Those with subclinical depression incurred higher average per-capita costs (\$3327, 95% CI: \$2787-\$3868) than those with major depression (\$3145: \$2441-\$3848) or nodepression (\$2762: \$2467-\$3057). Costs associated with visits to physicians and emergency departments were higher for those with subclinical and major depression than non-depressed counterparts. The population-level cost of subclinical depression was almost double that of major depression due to its greater prevalence (\$1.9 billion vs \$970 million). **Discussion** To our knowledge, this is the first longitudinal study estimating the cost of depression and subclinical depression in a population-based sample. Understanding drivers of healthcare costs incurred by individuals with varying levels of depression provides insight into how to allocate limited healthcare resources while maintaining quality mental health care.

0397-S/P

DOES OBESITY ALONG WITH MAJOR DEPRESSION OR ANXIETY LEAD TO HIGHER USE OF HEALTH CARE AND COSTS? A 6-YEAR FOLLOW-UP STUDY Yeshambel Nigatu* (University of Calgary)

Background: Little is not known whether obesity along with depression/anxiety leads to higher health care use (HCU) and costs compared to either condition alone. **Aim:** To examine the longitudinal associations of obesity, MD/anxiety, and their combination with HCU and costs. **Methods:** Longitudinal data (2004-2013) among N=2706 persons at baseline and 2-, 4-, and 6-year follow-up were collected on obesity, MD/anxiety and HCU. **Results:** The combination of obesity and MD/anxiety was associated with an increased risk of primary and specialty care visits, and of hospitalizations, odds ratios (95%-confidence intervals): 1.83 (1.44; 2.34), 1.31 (1.06; 1.61) and 1.79 (1.40; 2.29). The primary and specialty care costs were higher in persons with obesity and MD/anxiety than in persons without these conditions. **Conclusions:** Obesity along with MD/anxiety leads to higher use of care and costs over time. Health care providers should be aware of this intertwined challenge of obesity and depression/anxiety on health care.

0398-S/P

STABILITY AND CHANGE IN REPORTED AGE OF ONSET OF DEPRESSION AND BACK PAIN OVER 29 YEARS IN A PROSPECTIVE COHORT STUDY Diana Paksarian*, Kathleen Merikangas, Jules Angst, Vladeta Ajdacic-Gross, Wulf Rössler (National Institute of Mental Health)

Background: Psychiatric disorder age of onset (AO), which is often estimated via respondent report, informs research on etiology, lifetime risk, and prevention. However, few population-based studies have examined the stability of AO reports over more than a decade, and whether stability differs from that of physical disorders is unknown. We investigated the reliability and change over time of AO reports of depression and back/neck pain in a population-based prospective cohort of young adults followed for 29 years. **Methods:** Participants were 591 20-21 year-olds from Zurich, Switzerland who completed a psychiatric and physical health interview 7 times between 1979 and 2008. AO was asked with respect to core symptoms, or illness, if it was present. We used mixed models to estimate AO reliability and change over time among those whose first reports were in 1979 ('79 group) or 1986 ('86 group). We assessed whether estimates differed by presence of past-year disorder (Major Depressive Episode or moderate/severe back pain) at a current or previous interview. **Results:** Intraclass correlations were 0% -7% for symptoms only and 54%-78% when illness was present. In the '79 group, depression (n=351) AO reports increased by .93 years (95%CI=.81-1.06) per year on average when disorder was absent and .61 years (95%CI=.41-.81) when it was present. Back pain (n=284) AO increased by .76 years (95%CI=.67-.85) per year and did not differ by disorder presence. In the '86 group, depression (n=95) AO increased .56 years (95%CI=.32-.80) per year on average and back pain (n=121) AO increased .40 years (95%CI=.26-.54) per year. These did not differ by disorder presence. **Conclusion:** AO reports of both mental and physical symptoms may be subject to "telescoping," or increase with age. Stability may be greater for disorder vs. symptom AO and for symptoms first endorsed in young adulthood vs. earlier in life. Results have implications for disease burden estimates and etiologic and preventive research.

0399

PERSON-CENTERED APPROACHES TO IDENTIFYING SUB-TYPES OF PSYCHIATRIC DISORDERS: A SYSTEMATIC REVIEW Christine Ulbricht*, Len Levin, Kate Lapane (University of Massachusetts Medical School)

Major depressive disorder is one of the most prevalent and disabling illnesses worldwide. Successfully treating depression has long been plagued by heterogeneity, as the disorder is characterized by non-specific symptoms and varies in severity and course. Latent class analysis (LCA) and latent transition analysis (LTA), person-centered finite mixture models, have been used for decades to identify depression subtypes but results are often conflicting and have limited clinical utility. We performed a systematic review to examine proposed latent subtypes and to see if differences in results could be explained by analytic methods and interpretation of results. We conducted a systematic literature search to find studies that performed LCA or LTA to identify subtypes of major depressive disorder in adults. Our search originally identified 962 articles, of which 29 (3%) were included. DSM diagnostic criterion symptoms were most commonly used as the indicator items comprising the subtypes. LCA results were frequently interpreted as either confirming the existence of the DSM melancholic and atypical depression specifiers or as representing a gradient of depression severity. Twenty-six studies examined subtypes at only one time point, despite limited information about the stability of depression subtypes. There was substantial variation in how studies conducted, reported, and interpreted the analyses. These differences appear to be heavily dependent on the software used to perform the analyses. The studies also varied in the statistical approaches used to classify individuals into latent classes and treat class membership as known in order to examine correlates of subtype membership. Our results suggest the need to incorporate dimensions such as functioning and neurobiological measures when determining subtypes. Standards for using and reporting latent variable analyses are also needed.

0410-S/P

MATERNAL HEALTHY LIFESTYLE DURING EARLY PREGNANCY AND OFFSPRING BIRTHWEIGHT – OFFSPRING SEX-SPECIFIC ASSOCIATIONS

Sylvia E Badon*, Raymond S Miller, Michelle A Williams, Daniel A Enquobahrie (University of Washington)

Background: Individual maternal lifestyle components during pregnancy have been associated with offspring birthweight (BW); however, associations of combined lifestyle components with offspring BW and potential differences by offspring sex have not been examined. **Methods:** Participants (N=2,924) were identified from the Omega study, a pregnancy cohort study in Washington State. Reported lifestyle components, diet, smoking, stress, and physical activity, during early pregnancy (5-25 weeks gestation) were dichotomized into healthy/unhealthy using Alternate Healthy Eating Index-2010 (score 62), current smoking, perceived stress scale (score 3), and leisure time physical activity (LTPA) duration (150 minutes/week), respectively. Diet, smoking, and stress were combined into a lifestyle score (0-3). Because of an expected inverse association with BW, LTPA was not included in the score. Offspring BW was abstracted from medical records. Regression models were used to determine mean differences in BW related to lifestyle score and LTPA overall and stratified by offspring sex. **Results:** Overall, 20% of participants had healthy diet, 95% were non-smokers, 55% had low stress levels, and 66% were physically active. Lifestyle score and LTPA were not associated with BW overall ($\beta = -9$; 95% CI: -13, 31 and $\beta = -8$; 95% CI: -41, 24, respectively) but associations differed by offspring sex (interaction $P=0.10$ and 0.05 , respectively). Among males, maternal lifestyle score was marginally associated with 22g greater BW (95% CI: -9, 53). This association was not observed among females ($\beta = -6$; 95% CI: -38, 25). LTPA was marginally associated with lower BW among females ($\beta = -36$; 95% CI: -81, 10) but not males ($\beta = 18$; 95% CI: -27, 64). **Conclusion:** Maternal healthy lifestyle consisting of healthy diet, non-smoking, and low stress during early pregnancy is associated with greater BW among male, but not female, offspring. Future studies to replicate findings and assess potential mechanisms are warranted.

0412-S/P

USING MACHINE LEARNING METHODS TO PREDICT ADVERSE BIRTHS IN ILLINOIS TO IMPROVE RESOURCE ALLOCATION FOR THE BETTER BIRTH OUTCOMES PROGRAM

Rashida Brown*, Laura Nolan, Ian Pan, Romana Khan, Paul van der Boor, Rayid Ghani (UC Berkeley)

Adverse birth outcomes can have devastating personal, financial, and even developmental consequences for both mother and child. In 2013, the Illinois Department of Human Services (IDHS) designed an intensive case management program called Better Birth Outcomes (BBO) to help high-risk pregnant women receive specialized care. IDHS provides BBO services in 30 clinics and has funding to support approximately 2,000 women at any given time. We used machine learning approaches to improve their resource allocation strategy by (1) identifying optimal geographic locations and caseloads for clinics, and (2) reweighting the eligibility assessment questionnaire (707G) to provide a precise screening tool to identify high-risk women. Our analyses used administrative data from IDHS for women who received government services (e.g., WIC), variables from the 5-Year American Community Survey, and 2013 Vital Records birth data. Our analytic sample included geocoded data from 421,286 births from January 2009 to May 2015 (20.8% adverse births) and 6,646 births (16.2% adverse births) that had a corresponding record for the most recent version of the 707G assessment between July 2014 and May 2015. Using clustering methods, we identified areas in need of BBO services and recommended caseloads for existing and future clinics as a function of geographical distribution of adverse births. To refine the assessment scoring system, we iterated through regularized logistic regression models and selected the best model based on 10-fold cross-validation using precision at the top 10% as our scoring metric. The coefficients in the selected assessment model had precision of 31.9%. We designed a prototype web application for BBO administrators based on these analyses that will allow them to put the findings into practice. This project illustrates how administrative public health data and machine learning techniques can support evidence-based policy.

0411-S/P

NEONATAL OUTCOMES OF INFANTS BORN TO WOMEN WITH INTELLECTUAL AND DEVELOPMENTAL DISABILITIES: A POPULATION-BASED STUDY

Hilary Brown*, Virginie Cobigo, Yona Lunskey, Simone Vigod (Women's College Research Institute and University of Toronto)

Children born to women with intellectual and developmental disabilities (IDD) are at increased risk for developmental delay and poor physical health. However, minimal attention has been paid to indicators of neonatal health; intervening during this period may be even more important for prevention of negative outcomes. Our objective was to determine whether infants born to women with IDD are at increased risk, compared to infants born to women without IDD, for adverse neonatal outcomes. We conducted a population-based cohort study using linked Ontario (Canada) health and social services administrative data. We identified singleton obstetrical deliveries to women with (N=3,932) and without (N=382,774) IDD (2002-2011 fiscal years). Primary outcomes were complications for which infants born to women with IDD were hypothesized to be at increased risk: preterm birth, small for gestational age, and large for gestational age. We also examined several secondary outcomes. We used multivariable modified Poisson regression to assess risk, adjusted for confounders (maternal age, parity, baseline maternal social and health characteristics, infant sex). Compared to infants born to women without IDD, infants born to women with IDD were at increased risk for preterm birth (10.9% vs. 6.3%; adjusted relative risk [aRR] 1.63, 95% confidence interval [CI] 1.47-1.80) and small for gestational age (17.5% vs. 12.1%; aRR 1.35, 95% CI 1.25-1.45) but not large for gestational age (8.2% vs. 8.4%; aRR 0.99, 95% CI 0.88-1.11). They were at increased risk for all secondary outcomes: stillbirth, neonatal mortality, and neonatal morbidity. This is the largest study to date to examine neonatal outcomes of infants born to women with IDD; our findings suggest the need to mobilize accessible supports to optimize the health of these infants.

0413

THE ASSOCIATION BETWEEN BODY SIZE AND ADHERENCE TO AN ORAL CONTRACEPTIVE REGIMEN

Larissa Brunner Huber*, Katie Farley, Lauren Graham, Joanna Ball, Jacek Dmochowski, Tara Vick, Delia Scholes (UNC Charlotte)

Background: Adherence to an oral contraceptive (OC) regimen is multifaceted. Recent studies have suggested that increased body weight or body mass index (BMI) can increase a woman's risk for OC failure. Although adherence to an OC regimen may be an important confounder of the obesity-OC failure association, few studies have been able to control for this potential confounder. In addition, only one study to our knowledge has examined how obesity is related to adherence to an OC regimen. The purpose of this study was to assess how obesity, measured as BMI and waist-to-hip ratio (WHR), is related to OC adherence among a diverse sample of adult women. **Methods:** This longitudinal, prospective cohort study recruited participants (n=185) from clinics in Charlotte, NC. Trained interviewers obtained anthropometric measurements using standardized methods and participants self-reported adherence information in daily diaries. Generalized estimating equations were used to calculate odds ratios (ORs) and 95% confidence intervals (CIs). **Results:** Overweight or obese women, based on BMI, had decreased odds of adherence to an OC regimen (OR=0.60, 95% CI: 0.27, 1.34 and OR=0.78, 95% CI: 0.40, 1.50, respectively). Women with a WHR ≥ 0.85 had slight increased odds of being adherent (OR=1.23, 95% CI: 0.65, 2.34). Results for the BMI-adherence association increased in magnitude (overweight: OR=0.53, 95% CI: 0.24, 1.17 and obese: OR=0.62, 95% CI: 0.31, 1.26), while findings for the WHR-adherence association were attenuated after adjustment for confounders (OR=1.07, 95% CI: 0.56, 2.05); however, none of the findings was statistically significant. **Conclusions:** Research on this topic is limited. More studies are needed to determine if clinicians need to take extra care when counseling overweight and obese women on how to adhere to an OC regimen to minimize the risk unintended pregnancy.

0414

SEROLOGY TESTING FOR SYPHILIS DURING PRENATAL CARE: TRENDS AND DIFFERENCES OF THE NON-PERFORMANCE OF THE TEST. Juraci Cesar*, Camerini Adriana Paulitsch Renata, Terlan Rodrigo (Univeridade Feral Do RioGrande (Furg))

Objective: to measure the prevalence, trends and differences of the absence of serology testing for syphilis during prenatal care in Rio Grande, Southern Brazil. **Methodology:** this cross-sectional survey included all women living in this municipality who gave birth in the two local maternities between 01/01 and 31/12 in 2007, 2010 and 2013, and that performed at least one antenatal consultation. All mother were interviewed within 48 hours after delivery. Chi-square test was used for proportions while multivariate analysis applied Poisson regression with robust adjustment of variance. The effect measured was prevalence ratios (PR). **Results:** 7.351 pregnant women (96% of the total) completed at least one prenatal consultation. Between 2007 and 2013, 2.9% (CI95:2.56-3.33) of mothers did not performed the screening test. This prevalence decreased to 3.3% in 2007, to 2.8% in 2010, and to 2.7% in 2013 (ptend=0.285). In an adjusted analysis, the factors statistically associated with the absence of the test were skin color, maternal schooling, family income, number of prenatal consultations, and the presence of iron supplementation. Black mothers had PR=1.57 (1.10 to 2.25) compared to white mothers. For mothers with family income below 1 minimum wage (MW), the PR was 2.40 (1.34 to 4.29) compared with income 4 MW. The PR for mothers with up to 8 years of schooling was 2.57 (1.21 to 5.44) compared to 12 years or more. The PR for mothers who underwent 1-3 prenatal consultations was 13.23 (11.98 to 62.22) compared to those with 12 or more visits. For mothers who did not receive iron supplement the PR was 1.82 (1.39 to 2.37) over the others. **Conclusions:** The absence of serology testing for syphilis, although declining, shows evident need for new strategies to improve availability of this test in the first prenatal consultations mainly among mothers with the lowest socio-economic status.

0416

LOW CARB DIETS: ARE THEY COUNTER TO THE SUCCESS OF FOLIC ACID FORTIFICATION? Tania Desrosiers*, Anna Maria Siega-Riz, Bridget Mosley, Charlotte Hobbs, Robert Meyer (University of North Carolina at Chapel Hill, Department of Epidemiology)

Folic acid (FA) fortification has significantly reduced the prevalence of neural tube defects (NTDs) in the US. The popularity of “low carb” diets raises concern that women who intentionally avoid carbohydrates (CHO) –thereby consuming fewer fortified foods – may not have adequate FA intake and thus be at higher risk of an NTD-affected pregnancy. To assess the impact of CHO intake on dietary FA and NTDs, we analyzed data from the National Birth Defects Prevention Study from 1,740 mothers of infants, stillbirths and terminations with NTDs, and 9,545 mothers of live born infants without a birth defect conceived between 1998 and 2011. Usual diet in the year before conception was ascertained using a modified Willet Food Frequency Questionnaire. FA and CHO from food and beverages were estimated using the USDA National Nutrient Database. We defined restricted CHO intake as 5th percentile among control mothers (96.5g). Maternal characteristics of interest included age, race/ethnicity, education, nativity, smoking, alcohol use, and pregnancy intent. We estimated the association between restricted CHO intake and NTDs using logistic regression, and assessed effect measure modification by FA supplement use, BMI, and pre-pregnancy diabetes. Women with restricted intake were more likely to be older, non-Hispanic white, born in the US, completed high school, and used alcohol during pregnancy. Estimated mean intake of dietary FA among women with restricted CHO was less than half that of other women ($p<0.01$), and women with restricted CHO had modestly increased odds of delivering an infant with any NTD (adjusted OR = 1.38; 95% CI = [1.10-1.74]; 102 exposed cases), anencephaly (1.50 [1.02-2.23]; 32), or spina bifida (1.32 [1.02-1.80]; 61). This is the first study to specifically examine the effect of restricted CHO intake on NTD risk among pregnancies conceived post-fortification, and suggests that low carb diets may be counter to the success of folic acid fortification in the US.

0415-S/P

LEISURE-TIME PHYSICAL ACTIVITY DURING PREGNANCY AND NEONATAL OUTCOMES: PRELIMINARY RESULTS FROM THE 2015 PELOTAS (BRAZIL) BIRTH COHORT STUDY Shana da Silva*, Bruna da Silva, Marlos Domingues, Andréa Bertoldi Kelly Evenson, Pedro Hallal (Postgraduate Program in Epidemiology, Federal University of Pelotas, Brazil.)

Birth weight and gestational age at birth play an important role in infant mortality and morbidity. The effect of leisure-time physical activity (LTPA) during pregnancy on newborn outcomes remains unclear. The aim of this study was to investigate the association between LTPA during pregnancy and neonatal outcomes (low birthweight and preterm birth) in the 2015 Pelotas (Brazil) Birth Cohort Study. Population-based prospective study was conducted with all live births in Pelotas from January 1 to October 19, 2015. These are preliminary results since the cohort study will continue monitoring all births until December 31, 2015. Interviews were conducted in hospitals by trained interviewers until 48 hours following delivery. LTPA during pregnancy was self-reported by trimester. Birth weight was collected from medical records and categorized as low birth weight <2,500g and normal birthweight 2,500g. Gestational age was calculated based on the last menstrual period and categorized as <37 weeks and 37 weeks for evaluation of preterm birth. Analyses were performed using logistic regression with adjustment for potential confounders including maternal age, family income, skin color, smoking and pregnancy-related morbidities. To date, 3,451 women enrolled in the 2015 Pelotas (Brazil) Birth Cohort Study. A total of 9.8% of all newborns had low birthweight. The prevalence of preterm birth was 20%. Women who reported any LTPA during pregnancy had a reduced adjusted odds (odds ratio (OR): 0.65; 95% confidence interval (CI): 0.45-0.95) of low birthweight compared with those with no LTPA. A protective association on the risk of preterm birth was also observed, and was attenuated after adjustment for confounding factors (OR: 0.77; 95% CI: 0.59-1.01). LTPA during pregnancy was associated with a reduced odds of low birthweight and preterm birth. Clinical research approaches are recommended to better understand the relationship between physical activity and neonatal outcomes.

0417

MATERNAL COFFEE CONSUMPTION DURING PREGNANCY AND THE RISK OF LOW BIRTH WEIGHT: A SYSTEMATIC REVIEW AND META-ANALYSIS Una Grewal*, Diana Burnett, Cuilin Zhang, Wei Bao (NICHD)

Background: Coffee consumption is popular among women during reproductive years, raising concerns about the potential effects of coffee on birth outcomes, specifically low birth weight (LBW), a measurement of fetal growth which has both short- and long-term health implications across the lifespan. Existing research on this topic reports conflicting findings and systematic reviews and meta-analyses focusing primarily on coffee consumption and LBW are lacking. **Methods:** We conducted a search in the PubMed, MEDLINE, Embase, and Cochrane Library online databases to identify articles focusing on the relationship between LBW and maternal coffee consumption published up to August 2015. Seven studies—three case-control, three cohort, and one population-based—met the inclusion criteria. Next, a dose-response meta-analysis was done using two-stage generalized least-squares for trend estimation. Pooled odds ratios (ORs) and 95% confidence intervals (95% CI) were estimated using the DerSimonian-Laird random-effects model. **Results:** Overall, based on data from seven studies, we observed a linear relationship between coffee consumption during pregnancy and LBW: the OR (95% CI) of 1.04 (0.97-1.12) suggests that each cup of coffee consumed per day is associated with a 4% higher risk of a LBW delivery. The risk was significant for women who consumed over six cups of coffee per day, relative to no consumption. For example, the ORs (95% CIs) associated with seven, nine, and 13 cups were 1.19 (1.05-1.36), 1.28 (1.08-1.51), and 1.47 (1.07-2.02), respectively. Heterogeneity of results across the included studies was detected ($I^2=68\%$). No evidence of publication bias was found, based on funnel plot analysis and the Egger's test ($P=0.7$). **Conclusions:** The meta-analysis shows that high levels (> 6 cups) of daily coffee consumption during pregnancy are associated with a significant increase in the risk of LBW. This finding cautions against excessive coffee consumption during pregnancy.

0418-S/P

EXTREME AMBIENT TEMPERATURE AND STILLBIRTH

Sandie Ha *, Danping Liu, Yeyi Zhu, Sung Soo Kim, Seth Sherman, Katherine Grantz, Pauline Mendola (Epidemiology Branch, Division of Intramural Population Health Research, NICHD, Rockville, MD, USA)

Extreme ambient temperatures have been linked to adverse health outcomes including mortality, cardiovascular events, and preterm delivery. Few studies have investigated extreme temperature in relation to stillbirth. Using data from the Consortium on Safe Labor (2002-2008), we linked 223,375 singleton deliveries 23 gestational weeks from 12 US sites to local temperature from the Weather Research and Forecasting model. Chronic exposure to heat (>90th percentile) or cold (<10th percentile) was defined using the site-specific distribution of temperature across 3 months preconception, trimester 1, and the whole pregnancy. For acute exposure, we determined average temperature for the week preceding delivery and compared it to two alternative control weeks (two weeks before and after) in a case-crossover analysis. Classic or conditional logistic regression with generalized estimating equations calculated the odds ratio (OR) and 95% confidence interval (CI) for stillbirth associated with chronic or acute exposures, respectively. Analyses accounted for season of conception, humidity, site, infant sex, maternal age, race, marital status, parity, insurance status, and hypertensive disorders of pregnancy. There were 992 (0.4%) stillbirths during the study period. Compared to the middle temperature range (10-90th percentile), exposures to extremes of both cold (OR=5.13; 95% CI: 4.10-6.43) and hot (OR=3.67; 95%CI: 2.97-4.53) temperature for the whole pregnancy were associated with increased stillbirth risk. Preconception and trimester 1 exposures were unrelated to risk. In the case-crossover analysis, we observed a positive association between temperature and stillbirth during the week preceding delivery (OR=1.06; 95%CI: 1.03-1.09 for 1C° increase in May-Sept). Our analyses suggest temperature may have both chronic and acute effects on stillbirth, and the effects of chronic exposure to extreme heat/cold relative to usual environment may be more important than previously thought.

0420-S/P

ASSOCIATION BETWEEN PROGESTERONE LEVEL ON THE DAY OF HCG ADMINISTRATION AND LIVE BIRTH WEIGHT

Miriam Haviland*, Yetunde Ibrahim, Michele Hacker, Alan Penzias, Kim Thornton, Denny Sakkas (Beth Israel Deaconess Medical Center)

Objective: Elevated progesterone (P4) levels on the day of hCG administration have been associated with premature luteinization and a lower live birth rate. The objective of this study was to ascertain if elevated P4 levels on the day of hCG administration are also associated with lower birth weights among women who had fresh transfers. **Study Design:** This was a retrospective study of all fresh IVF cycles from 2004 through 2012 that resulted in singleton live births and for which progesterone was measured on the day of hCG administration. Cycles with missing data on birth weight and gestational age at delivery were excluded. We included only the first eligible cycle from each woman. Patients were stratified into four groups based on P4 level: 0.5 ng/mL (group 1), >0.5–0.8 ng/mL (group 2), >0.8–1.2 ng/mL (group 3) and >1.2 ng/mL (group 4). Small for gestational age (SGA) was defined as birth weight for gestational age (z-score) below the 10th percentile. Generalized linear models were used to calculate mean birth weight and z-score. **Results:** We included 692 cycles; 45.5% were cycle 1, 20.5% were cycle 2, 14.7% were cycle 3, 9.0% were cycle 4, 6.9% were cycle 5, and 3.3% were cycle 6. The median (interquartile range) age for the cohort was 35.0 (32.0-38.0) and BMI was 24.0 (21.4-27.1). Mean birth weights were 3353g for group 1, 3273g for group 2, 3304g for group 3, and 3204g for group 4. Mean z-scores were 0.47 for group 1, 0.30 for group 2, 0.33 for group 3, and 0.27 for group 4. There was no statistically significant effect of p4 on z-score among the four groups (p=0.21). Six (3.9%) infants in group 1, 7 (3.7%) in group 2, 8 (4.3%) in group 3, and 6 (3.7%) in group 4 were SGA. **Conclusions:** Our data suggests birth weight may decrease as the P4 level on day of hCG administration increases, though the association was not statistically significant.

0419-S/P

A CALCULATOR TO PREDICT PREGNANCY SUCCESS

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Objective: To create a statistical model for women with no known fertility problem that provides individual predictions of the probability of conception based on the women's characteristics and habits. **Design:** Prospective cohort study of women trying to conceive from the U.S., Canada, and Denmark. **Materials and Methods:** We pooled participants from two prospective Internet-based cohort studies of pregnancy planners, 959 women from the Pregnancy Study Online (PRESTO) and 3813 women from Smart Gravid and Smart Forældre (SG/SF) who had been trying to conceive for less than 3 months and had no known fertility problem. To keep the model simple, we included only those terms in a logistic regression model that made a substantial difference to goodness of fit as tested by the c-statistic and the likelihood ratio (p<0.2). We tested quadratic and cubic terms for continuous variables and interaction terms with age were also considered. **Results:** The resulting model provides estimates of the probability of conception in a given cycle, ranging from about 57% to 6% depending on a woman's individual characteristics. The C-statistic for the model was 0.64. **Conclusion:** Data from two large cohort studies of fecundability were used to create a simple and useful prediction model for conception based on a woman's characteristics. The most important predictors of fertility in the prediction model were age, gravidity, and timing intercourse. We propose to refine the model and offer it on our study website as a calculator of pregnancy probability.

0421-S/P

RISK COMPARISON FOR PRENATAL USE OF DIFFERENT ANALGESICS AND SELECTED BIRTH DEFECTS

Julia Interante*, Elizabeth Ailes, Jennifer Lind, Marlene Anderka, Marcia Feldkamp, Martha Werler, Suzanne Gilboa, Margaret Honein, Cheryl Broussard (CDC)

Background: Previous research suggests that the use of opioid analgesics during early pregnancy increases the risk for certain birth defects while the use of acetaminophen is not associated with an increase in risk. However, use of analgesic medications have not been compared to each other with respect to risk for birth defects. **Methods:** We analyzed cases and controls (birth years 1997–2011) who participated in the National Birth Defects Prevention Study, a population-based, multi-site study, to examine associations between self-reported maternal analgesic use from 1 month before to 3 months after conception (periconceptional period) and 15 selected birth defects. We compared periconceptional use of nonsteroidal anti-inflammatory drugs (NSAIDs) and/or opioids to use of acetaminophen alone. **Results:** Among 40,091 mothers, 81% reported use of analgesic medications at any time in pregnancy, with 56% reporting use in the periconceptional period. Of the 16,478 case and 5,951 control mothers reporting periconceptional analgesic use, 48% of case (54% of control) mothers reported using acetaminophen as the only analgesic, 48% (42%) NSAIDs, 2% (2%) opioids, and 2% (1%) NSAIDs and opioids. After adjusting for maternal age, race/ethnicity, obesity, parity, smoking, alcohol consumption, periconceptional antibiotic use, study location, and time-to-interview, NSAIDs were statistically significantly associated with 3 of 8 heart defects (range of adjusted odds ratios (aORs): 1.3-1.4) and 6 of 7 non-heart defects (aORs: 1.3-1.6); opioids were associated with 3 of 8 heart defects (aORs: 1.7-2.2); NSAIDs and opioids were associated with 2 of 8 heart defects (aORs: 2.6-2.9) and 3 of 7 non-heart defects (aORs: 1.5-2.8) evaluated. **Conclusions:** Compared to periconceptional use of acetaminophen, use of NSAIDs and/or opioids appears to pose a greater risk of selected birth defects. Additional studies comparing the relative fetal safety of individual analgesics within these classes are needed.

0422

PRENATAL EXPOSURE TO POLYFLUOROALKYL COMPOUNDS AND BONE HEALTH IN BRITISH GIRLS Zuha Jeddy*, Terry Hartman, Jon Tobias, Ethel Taylor, Adrienne Holmes, Antonia Calafat, Kate Northstone, Kayoko Kato, W. Dana Flanders (Centers for Disease Control and Prevention)

Polyfluoroalkyl compounds (PFCs) are used to make protective coatings on common household products. PFCs can cross the placenta, and prenatal exposure has been associated with developmental outcomes in offspring. Using data from the Avon Longitudinal Study of Parents and Children, we investigated the association between prenatal concentrations of PFCs and bone health in girls at age 9 years. Concentrations of four common PFCs, perfluorooctane sulfonate (PFOS), perfluorooctanoate (PFOA), perfluorohexane sulfonate (PFHxS), and perfluorononanoate (PFNA), were measured in maternal serum samples collected during pregnancy. Bone health was measured using the following bone outcomes obtained or derived from whole body dual-energy x-ray absorptiometry (DXA) scans: total body less head bone mineral density, bone mineral content (BMC), bone area (BA), and area-adjusted bone mineral content (ABMC). Multivariable linear regression was used to explore associations between each PFC and bone health outcome with adjustment for maternal education, gestational age at sample collection, and age at DXA scan. Among 357 mother-daughter dyads, mean (standard deviation (SD)) concentrations (ng/mL) were 21.64 (10.6) for PFOS, 4.05 (1.8) for PFOA, 2.59 (5.5) for PFHxS, and 0.56 (0.3) for PFNA. Preliminary results indicated a one SD change in PFOS was associated with a 0.09 SD (95% CI: -0.18, 0.00) decrease in BMC and 0.10 SD (95% CI: -0.20, -0.01) decrease in BA. BA also decreased by 0.09 SD (95% CI: -0.17, 0.00) for every one SD change in PFOA. Conversely, results indicated a marginal positive association between PFNA and ABMC. No other significant associations were found. Our findings suggest that prenatal PFC exposure is associated with bone health in girls; however, potential biological significance of this effect may be modest. Future analyses will characterize the potential role of covariates thought to be causally related, including body size, preterm birth, and birthweight.

0424-S/P

EVALUATION OF GESTATIONAL WEIGHT GAIN GUIDELINES AMONG WOMEN OF NON-AVERAGE HEIGHT, WASHINGTON STATE 2003-2013 Vivian Lyons*, Kerry Hancuch, Babette Saltzman (University of Washington)

OBJECTIVE: To conduct a population-based study evaluating whether maternal height modifies the impact of gestational weight gain on maternal and infant outcomes. **METHODS:** We used a retrospective cohort study of gestational weight gain based on Washington State linked birth certificate and hospital discharge data from 2003-2013. We grouped women by pre-pregnancy BMI levels (under, normal, overweight and obese) and gestational weight gain categories based on the Institute of Medicine 2009 Gestational Weight Gain Guidelines: less than recommended, recommended and greater than recommended. Outcomes of interest included primary C-section, 3rd/4th degree laceration, a maternal morbidity composite, and an infant morbidity composite. We then grouped maternal height into tertiles (short, average and tall) to examine possible effect modification between gestational weight gain and adverse birth outcomes, using logistic regression to estimate odds ratios. **RESULTS:** We identified 164,882 maternal and infant pairs from the Washington State database. For each outcome, the risk for each subgroup within pre-pregnancy BMI strata was compared to risk among average height women, 5'2"-5'8", with recommended gestational weight gain. Short women had higher risk of C-section [ranging from OR=1.35 (95% CI: 1.13-1.56) to OR=2.22 (95% CI: 2.03-2.40)], regardless of GWG, BMI or race. Tall women with greater than recommended gestational weight gain were at lower risk for C-section, 3rd/4th degree lacerations, maternal or infant morbidity than women of average height. We observed an overall pattern of increasing risk of adverse outcomes among shorter women, women with excess weight gain and overweight pre-pregnancy BMI. **CONCLUSIONS:** Tall women had overall lower risks of C-section and infant morbidity. Short women had an overall higher risk of C-section. This suggests that in the future, recommendations for optimal gestational weight gain need to incorporate maternal stature.

0423-S/P

ASSOCIATIONS BETWEEN REPEATED MEASURES OF THYROID HORMONE PARAMETERS IN PREGNANCY AND PRETERM BIRTH Lauren E. Johns*, Lauren E. Johns, Kelly K. Ferguson, Thomas F. McElrath, Bhramar, Mukherjee, John D. Meeker (Department of Environmental Health Sciences, University of Michigan School of Public Health, Ann Arbor, Michigan, United States)

BACKGROUND: Clinically diagnosed thyroid disease in pregnancy is associated with various adverse birth outcomes such as preterm birth. Less is known about the contribution of trimester-specific subclinical alterations in individual thyroid hormone parameters, especially in late gestation, on the risk of preterm birth. Herein, we investigated the associations between various metrics of thyroid function (thyroid-stimulating hormone [TSH], total triiodothyronine [T3], and free and total thyroxine [T4]), measured at multiple time points in pregnancy, and the odds of preterm birth. **METHODS:** Data were obtained from pregnant women participating in a nested case-control study of preterm birth within an ongoing pregnancy cohort study at Brigham and Women's Hospital in Boston, MA (N=439; 116 cases and 323 controls). We measured a panel of thyroid function markers in plasma collected at up to four time points in pregnancy (median= 10, 18, 26, and 35 weeks). We created GAMM models to examine the patterns in the levels across pregnancy and to test for differences in these variations between cases and controls. We stratified multivariate logistic regression models by either study visit of sample collection or intervals of gestational age to examine potential periods of vulnerability in pregnancy to deviations in thyroid parameters. **RESULTS:** The patterns of all four thyroid hormone levels across pregnancy significantly differed between cases and controls. These differences were most marked in early pregnancy. Common to all multivariate analyses, we found significant positive associations between T3 and an increased odds of PTB, which were strongest in late pregnancy. **CONCLUSIONS:** These results suggest that subclinical alterations in individual maternal thyroid parameters influence the risk of preterm birth. Furthermore, the strength of these associations vary by gestational age.

0425

INCREASED METABOLIC SYNDROME AND COMPONENTS AMONG ADOLESCENTS OF MOTHERS WHO SMOKED DURING PREGNANCY Angela Malek*, Caroline West, Carolina Vrana, Kelly Hunt (Medical University of South Carolina)

Background: Maternal smoking during pregnancy increases the risk of adverse pregnancy outcomes. However, little is known regarding the relationship between in utero smoking exposure and cardiometabolic risk factor levels. Therefore, we investigated the association between metabolic syndrome traits in adolescents and in utero smoke exposure. **Methods:** Participants included 6,727 adolescents aged 12-15 years in the 1999-2012 National Health and Nutrition Examination Survey (NHANES) which included maternally reported information on in utero exposures. Multivariate logistic regression was conducted to estimate ORs and 95% CIs for the association of smoking during pregnancy, metabolic syndrome and its component traits, and linear regression assessed the relation with age at menarche. Metabolic traits examined were high waist circumference (>90th percentile), low HDL (<40 mg/dL), high triglycerides (>110 mg/dl), high systolic blood pressure (>90th percentile) and high fasting glucose (>100 mg/dl). Interaction terms were used to obtain gender specific estimates. **Results:** Of adolescents exposed to smoke in utero (17%), the prevalence of metabolic syndrome was 9.78% compared to 5.83% in unexposed (p=0.049). After adjusting for child age, maternal age at birth and race-ethnicity, in utero smoke exposure was associated with metabolic syndrome among male adolescents (OR=2.74, 95% CI: 1.28, 5.85) and high waist circumference in male (OR=1.60, 95% CI: 1.10, 2.31) and female (OR=1.54, 95% CI: 1.07, 2.24) adolescents. High fasting glucose (OR=2.02, 95% CI: 1.05, 3.87) and lower mean age at menarche were associated with in utero smoke exposure among females (11.6 vs. 11.8 years, p=0.0320). **Conclusion:** In adolescence, male offspring of mothers who smoked during pregnancy were at increased risk of metabolic syndrome and having high waist circumference, whereas female offspring were at increased risk of having high waist circumference, high fasting glucose, and earlier menarche.

0426

EVALUATION OF THE APPLICATION OF FQPA SAFETY FACTORS IN CROP PROTECTION CHEMICALS Mary Manibusan*, Rick Tinsworth, Stephanie Sarraïno (Exponent)

The Food Quality Protection Act (FQPA) mandates that EPA utilize an additional 10X safety factor (FQPA SF) in food-use pesticide assessments to ensure the safety of infants and children. Agency decisions to reduce or retain this 10X factor have been relatively consistent in its application in years since FQPA's passage in 1996, but the 2014 chlorpyrifos assessment marks a significant departure, reflecting the first time EPA retained the 10X FQPA SF based on human epidemiology studies, despite a multitude of animal and mechanistic data and an informative PBPK model, which provide the basis for a data-rich assessment protective of sensitive life stages. Discussion of the future use of FQPA SFs has been ignited by this decision, prompting this analysis of FQPA SF decisions and associated rationale from a representative set of 121 crop protection chemicals, for which retained FQPA SFs for acute and chronic dietary assessments were analyzed for trends. In the majority of cases, FQPA SFs were retained as additional Uncertainty Factors (UFs), compared with those retained for a "hazard-based" rationale such as evidence of susceptibility in the young. The FQPA SFs retained as UFs were primarily associated with database deficiencies; the most common data gap cited being developmental neurotoxicity. Overall, the analysis demonstrates that the retention of an FQPA SF has largely related to uncertainty, rather than evidence of quantitative susceptibility from animal or epidemiological datasets. The chlorpyrifos decision, however, sets the precedent of relying on human epidemiology data to retain the full 10X FQPA SF, despite a robust animal database and PBPK model, which disincentivizes the furtherance of novel alternative animal research to elucidate chemical mode(s) of action. This decision also raises questions regarding the impact of future Agency assessments on the viability of useful pesticides that do not provide the revenue needed for the development of additional animal studies and refined models.

0428- S/P

SERUM FOLATE AND MENSTRUAL FUNCTION IN THE BIOCYCLE STUDY Kara Michels*, Torie C. Plowden, Keewan Kim, Ellen N. Chaljub, Jean Wactawski-Wende, Edwina Yeung, Sunni L. Mumford (Division of Intramural Population Health Research, Eunice Kennedy Shriver National Institute of Child Health and Human Development, Rockville, MD)

Background: The impact of folate on menstrual function is unclear, but previous research indicates that higher dietary folate intake is associated with higher luteal progesterone levels and decreased risk of anovulation. We aimed to examine aspects of menstrual function as they relate to serum folate levels. **Methods:** The BioCycle Study prospectively followed 259 reproductive aged women for up to 2 menstrual cycles. Serum folate and reproductive hormone concentrations were measured up to 8 times across each cycle; 24 hour dietary intakes were recalled up to 4 times per cycle. We estimated associations between serum folate and hormones using weighted linear mixed models that adjusted for age, race, body mass index, cigarette use, alcohol use, lagged hormones, and cycle-averaged intakes of total energy and fiber. Modified Poisson regression was used to identify associations between tertiles of cycle-averaged folate and anovulation. **Results:** Increasing serum folate was associated with decreasing follicle stimulating hormone (FSH) at the time of expected ovulation (adjusted percent change=-0.3%; 95% confidence interval (CI) -0.6, 0.0%), as well as increasing luteal-phase progesterone (1.0%; 95% CI 0.4, 1.6%). Folate was not associated with changes in estrogen (0.0%; 95% CI -0.3, 0.2%) or luteinizing hormone. It also was not associated with anovulation (adjusted risk ratio aRR 1.45; 95% CI 0.72, 2.94 for the lowest tertile; aRR 0.96; 95% CI 0.47, 1.97 for the highest tertile, when compared to the middle tertile); nor was there a linear trend across tertiles ($p=0.34$). However, an increasing ratio of serum folate to serum homocysteine at the time of expected ovulation was protective against anovulation (aRR 0.90; 95% CI 0.82, 1.00). **Conclusions:** We found that folate is associated with FSH and progesterone levels, but not with anovulation. Further research is needed to understand if changes in diet or dietary supplements can improve ovulation and subsequently, fertility.

0427-S/P

CUMULATIVE PHYSIOLOGIC DYSFUNCTION, DEPRESSION, AND PREGNANCY Kimberly McKee*, Christopher Seplaki, Susan Fisher, Susan Groth, I. Diana Fernandez (University of Michigan)

Background: The association between psychosocial stress and adverse birth outcomes is well established but poorly understood. We sought to examine if cumulative physiologic dysfunction (CPD) associated with depression during pregnancy was predictive of birth weight. **Methods:** Women <28 weeks gestation were enrolled from OB clinics in Rochester, NY (N=111). Physiologic dysfunction parameters included total cholesterol, IL-6, hs-CRP, systolic and diastolic blood pressure, BMI <14 weeks gestation, glucose tolerance, and urinary albumin. Depression was assessed using the Center for Epidemiologic Studies Depression Scale (CES-D). Multiple linear regression was used to estimate the association between depression, physiologic dysfunction and birth weight, and mediation was assessed by changes in the β -coefficients. **Results:** Women screening positive for depression had, on average, a CPD score 1.74 points higher than women screening negative ($p=0.0007$). Women with depression (9%), had on average, a non-significant 245.64 gram reduction in birth weight, compared to women who did not screen positive for depression ($p=0.2695$). The β -coefficient for depression was slightly attenuated when CPD was added to the multivariable model, suggesting it may partially mediate the association between depression and birth weight. The coefficient for depression was further attenuated when race and income were added to the model. **Conclusion:** Cumulative physiologic dysfunction may partially biologically mediate the association between maternal depression and adverse birth outcomes, although the effects of socio-economic factors and psychosocial indicators in pregnancy need further study.

0429-S/P

THE ASSOCIATION BETWEEN PREGNANCY LOSS AND POST-MENOPAUSAL DEPRESSION: RESULTS FROM THE STUDY OF OSTEOPOROTIC FRACTURES Anna Modest*, Lisa Fredman (Boston University School of Public Health)

Background: Depression following pregnancy loss is well-established, however little is known on whether pregnancy loss increases the risk of depression in older women. **Methods:** We examined the association between pregnancy loss (miscarriage prior to six months of gestation or stillbirth after six months of gestation) and postmenopausal depression in 8,878 Caucasian women from the Study of Osteoporotic Fractures, a longitudinal cohort study which enrolled women aged 65 or older in 1986 (mean age 71.6 years, standard deviation 5.2) from four geographic areas in the United States. All data were self-reported from biennial interviews conducted between 1986-96. Pregnancy history was defined by four mutually exclusive categories: at least one pregnancy loss and no live births, never pregnant, at least one pregnancy loss and at least one live birth, and no pregnancy loss and at least one live birth (reference group). Depression was based on self-reported diagnosis or treatment for depression in the past two years. Risk ratios were adjusted for marital status at baseline and social support during the follow up period. **Results:** Approximately one-third of women (2,575; 29.0%) had a pregnancy loss, 7,220 (81.3%) women had a live birth and 1,258 (14.2%) reported depression. Women with a pregnancy loss and live birth were more likely to report depression than those with a live birth and without a pregnancy loss (16.6% vs. 13.6%; adjusted risk ratio (aRR) 1.23, 95% CI 1.09-1.38). When stratified by type of menopause, the relationship held among women who underwent natural menopause (aRR 1.28, 95% CI 1.12-1.46) but not those who had surgical menopause (aRR 1.01, 95% CI 0.73-1.39). Analyses excluding all stillbirths showed similar results. **Conclusion:** Older women who have had a pregnancy loss and live birth were at higher risk of postmenopausal depression, though health conditions and unmeasured mediating factors, may have influenced this association.

0430

PARENTAL CHARACTERISTICS CAN EXPLAIN WHY JAPANESE INFANTS ARE THE SMALLEST IN THE UNITED STATES Naho Morisaki*, Naho Morisaki, Emily Oken, Ichiro Kawachi, Takeo Fujiwara (Department of Social Medicine, National Center for Child Health and Development)

BACKGROUND: In the United States, Asian infants are generally born smaller in size compared to white infants, and Japanese infants are the smallest among all distinctively reported races in national natality files. **OBJECTIVE:** To elucidate whether the apparent large birthweight differences between non-Hispanic white and Japanese infants can be explained by known parental characteristics. **STUDY DESIGN:** Using US natality data, we evaluated 4,147,535 singleton term live births of infants born to parents of non-Hispanic white or Japanese race in the United States from 2009–2012. Couples were categorized by parental race (white parents, n=4,131,822; Japanese father/white mother, n=2,380; white father/Japanese mother, n=7,501; Japanese parents n=5,832). We used multivariate regression to sequentially adjust for parental characteristics to determine differences in birthweight between races. **RESULTS:** Infants born to two Japanese parents were 315 (95% confidence interval [CI]: 303, 326) grams smaller than infants born to two white parents. Social risk factors for lower birthweight (maternal education, marital status, smoking status, initiation of antenatal care) and differences in maternal age and parity only minimally explained any difference. After additionally adjusting for paternal race, maternal height, body mass index and gestational weight gain, the average birthweight difference was substantially attenuated to 29 (95% CI: 10, 49) grams. **CONCLUSION:** Birthweight differences between Japanese and non-Hispanic white infants could be explained by differences in parental characteristics. In addition to Japanese women being shorter and thinner than white women, lower gestational weight gain, primarily from self-restriction, is a contributing factor to lower birth weight among Japanese infants. Fetal growth potential may be very similar across different racial groups when parent sizes are similar and societal and medical needs are met.

0432-S/P

RACIAL DISPARITIES IN THE TRANSGENERATIONAL TRANSMISSION OF LOW BIRTHWEIGHT RISK Collette Ncube*, Daniel Enquobahrie, Jessica Burke, Steven Albert (Department of Epidemiology, School of Public Health, University of Washington, Seattle, WA)

Background: Low birthweight (LBW) is associated with life course health and disease. Recent evidence supports familial aggregation of LBW risk; however, significant gaps remain in understanding of potential intergenerational transmission of LBW risk. We examined the association of mothers' LBW status with infant LBW risk, and whether the association differed by mothers' race. **Methods:** Participants were 6,633 non-Hispanic (NH) white and NH black infants (born 2009-2011) and their mothers (born 1979-1998) in Allegheny County, Pennsylvania. Birth records were used to determine birth weight and race. We created categorical variables of LBW status (< 2500 grams), and LBW subgroups - moderate LBW (1,500-2,499 grams) and very LBW (<1,500 grams). Hierarchical Generalized Linear Modeling for binomial and multinomial logistic regression were used to calculate Odds Ratios (OR) and 95% confidence intervals (CI). Stratified analyses, and an interaction between maternal LBW and race, were conducted to assess effect modification by mothers' race. **Results:** Maternal LBW was associated with 1.53 (95% CI: 1.15 – 2.02) and 1.75 (95% CI: 1.29 – 2.37) fold increases in risk of infant LBW and moderate LBW, respectively, but not very LBW (OR = .86; 95% CI: 0.44 – 1.70). The interaction between maternal LBW and mothers' race was marginally significant (P = 0.07). In stratified analyses, associations were observed among NH blacks, and not among NH whites. **Conclusion:** Maternal LBW is associated with increased risk of infant LBW, particularly MLBW, and the association is stronger for NH black mothers.

0431

VITAMIN D AND OVARIAN RESERVE AMONG WOMEN WITH PROVEN FECUNDITY Sunni Mumford*, Robert Silver, Lindsey Sjaarda, Noya Galai, Anne Lynch, Neil Perkins, Jean Wactawski-Wende, Keewan Kim, Kara Michels, Joseph Stanford, Enriqué Schisterman (DIPHR, NICHD)

Objective: Vitamin D is associated with markers of ovarian reserve in women of advanced reproductive age and in vitro studies suggest that vitamin D may influence anti-mullerian hormone (AMH). However, less is understood regarding associations among younger women or women without a history of infertility. Our purpose was to assess the relationship between vitamin D and AMH among women with proven fecundity. **Design:** Secondary analysis of the EAGeR Trial, a multicenter, block-randomized, double-blind, placebo-controlled clinical trial to evaluate the effect of preconception-initiated daily low dose aspirin on reproductive outcomes in women with a history of pregnancy loss. **Methods:** Participants were attempting pregnancy, aged 18–40 years, with 1-2 prior pregnancy losses and no history of infertility. We assessed 25-OH vitamin D and AMH in serum at baseline among 1185 women. AMH levels were log-transformed for normality. Linear regression was used to estimate associations between vitamin D and AMH concentrations adjusting for age, body mass index, race, season, physical activity, and number of prior losses. **Results:** A total of 163 women (13.8%) had deficient vitamin D levels (<20 ng/mL). Overall, vitamin D levels were not associated with AMH (percent change -1.6, 95% confidence interval [CI] -5.3%, 2.3% per 10 ng/mL). Vitamin D deficiency was also not associated with AMH (deficient: adjusted geometric mean AMH 2.51, 95% CI 2.20, 2.85 vs. inadequate/sufficient: 2.74, 95% CI 2.60, 2.89). **Conclusions:** Vitamin D was not associated with AMH among women with proven fecundity. These results suggest that vitamin D is not likely associated with ovarian reserve and AMH levels and that there may be little clinical benefit of vitamin D supplementation on markers of ovarian reserve.

0433

THE ROLE OF THE GESTATIONAL VAGINAL MICROBIOME ON PRETERM DELIVERY AMONG NULLIPAROUS AFRICAN AMERICAN WOMEN Deborah Nelson*, Hakdong Shin Jingwei Wu, Maria Dominguez-Bello (Associate Professor)

Spontaneous preterm birth (SPTB) is a substantial health burden for both pregnant mothers and their neonates. Early markers to identify pregnant women at high risk for SPTB have been limited. Recent attention has focused on examining the role and importance of characterizing the vaginal microbiota during pregnancy to predict risk of SPTB. Given racial differences in vaginal ecology and the important role of prior SPTB in the risk of subsequent SPTB, it is important to examine these relations among a select group of nulliparous, African American pregnant women. **Results:** We examined the diversity and structure of the bacterial vaginal microbiota during early pregnancy and compared 27 African American nulliparous women who delivered at term (38 weeks gestation or later) and 13 African American nulliparous women who delivered preterm (<37 weeks gestation). Samples were taken at one of two points in gestation, either prior to 16 weeks or between 20-24 weeks. All samples were self-collected and stored in a -80 degree freezer until DNA extraction. The V4 region of 16S rRNA gene were amplified and sequenced with Illumina MiSeq platform. Among women who delivered preterm compared to women who delivered at term, we found lower bacterial diversity at 20-24 weeks of gestation (p-value<0.1), with lower abundance of family Coriobacteriaceae, Sneathia, Prevotella, and Aerococcus among women delivering preterm. The mean Shannon Diversity Index was also lower among the group of women delivering preterm compared to term (2.06 + 1.72 and 2.63 + 1.25). Stratifying the samples by gestational age of sample collection, the difference in vaginal diversity between the groups was greatest among women delivering preterm versus term in the samples collected prior to 16 weeks although this difference was not statistically significant (p-value=0.24). **Conclusions:** This study suggests that different vaginal gestational microbiota in pregnancy may be related to preterm delivery.

0434-S/P

MATERNAL EXPOSURE TO SMOKING AND LOW BIRTH WEIGHT: A SYSTEMATIC REVIEW AND META-ANALYSIS IN THE AMERICAS Priscilla Pereira*, Fabiana Da-Mata, Keitty Regina Andrade, Ana Cláudia Figueiredo, Roberta Silva, Maurício Pereira (University of Brasília)

Introduction: The birth weight depicts maternal life's condition and fetal growth. Primary studies describe smoking as an important risk factor for low birth weight. **Objective:** To perform a systematic review and meta-analysis about the association of maternal exposition to smoking and the low birth weight in countries of the Americas. **Method:** The literature sources were Medline, Embase, Web of Science, Scopus, Lilacs, Scielo, and the grey literature. The inclusion criteria were: studies carried out in the Americas, with case-control or cohort designs, published in any language and date. Two authors independently selected and extracted data from the studies. A meta-analysis of random effects was performed and the heterogeneity was assessed through meta-regression, subgroup, and sensitivity analysis. Publication bias was assessed by Begg's funnel plot and Egger's test. **Results:** Out of 848 articles retrieved in the literature search, 34 were selected for the systematic review and 30 for the meta-analysis. The sample size in the meta-analysis was 60,048 women. Maternal active smoking was associated to low birth weight with OR=2.00 (95% CI 1.77-2.26) and I-squared (I²) of 66.3%. Both the funnel plot's inspection and the Egger's test results ($p=0.14$) indicated no publication bias. Meta-regression pointed out that studies' sample size, quality, and the number of confounders barely influenced the heterogeneity. Subgroup and sensitivity analysis did not present significant changes in the effect measure when the studies were compared by research design, sample size, and regions in America ($p<0.05$). **Conclusion:** This study confirms that low birth weight is associated with maternal exposure to smoking and justifies the importance of preventing pregnant women to smoking habits.

0437

RELIABILITY AND VALIDITY OF A SHORT DIETARY INTAKE QUESTIONNAIRE FOR RETROSPECTIVE COLLECTION OF NUTRIENTS DURING GESTATION Rebecca Schmidt*, Yunru Huang, Adrienne Widaman, J. Erin Dienes, Cheryl Walker, Daniel Tancredi (Public Health Sciences and the MIND Institute, University of California Davis)

Gestational nutrition protects against adverse neurodevelopmental outcomes. We developed a short tool for collecting maternal nutritional intake during pregnancy to facilitate research in this area. Maternal nutritional intake was retrospectively assessed using 3 versions of the Early Life Exposure Assessment Tool (ELEAT) among participants of the MARBLES pregnancy cohort study of high-risk siblings of autistic children. Retrospective responses were compared with responses to supplement questions and the validated 2005 Block food frequency questionnaire (FFQ) prospectively collected in MARBLES during pregnancies at least 2 years previous. ELEAT nutrient values were calculated using reported food intake frequencies and nutrient values from the USDA nutrient database obtained through NDSR. Agreement between retrospectively and prospectively reported intake was evaluated using Kappa coefficients, Spearman Rank Correlation Coefficients (rs) and Concordance Correlation Coefficients (ccc). Supplement questions in both MARBLES and the ELEAT were completed by 114 women. Kappas were moderate for whether or not supplements were taken, but modest for timing. MARBLES FFQ dietary intakes were compared among 54 women who completed the ELEAT long form including 12 online, and among 23 who completed the ELEAT short form. Correlations across most foods were fair to moderate. Most ELEAT quantified nutrient values were moderately correlated ($rs=0.3-0.5$) with those on the Block FFQ. Correlations varied by version and diagnosis and were much higher when mothers completed the ELEAT when their child was 4 years old or younger. With recall up to several years, ELEAT dietary and supplement module responses were moderately reliable and produced nutrient values moderately correlated with prospectively collected measures. The ELEAT dietary module can be used to rank participants in terms of food group, calcium, iron, folate, potassium, fiber, choline, vitamin K and vitamin C intake.

“-S/P” indicates work done while a student/postdoc

0435-S/P

CAN GESTATIONAL WEIGHT GAIN BE USED IN COMBINATION WITH ESTIMATED FETAL WEIGHT TO OBTAIN A MORE ACCURATE PREDICTION OF SMALL OR LARGE FOR GESTATIONAL AGE BIRTHWEIGHT? Sarah Pugh*, Sungduk Kim, Paul Albert, Stefanie Hinkle, William Grobman, Deborah Wing, Roger Newman (Division of Intramural Population Health Research, Eunice Kennedy Shriver National Institute of Health and Human Development)

Inadequate and excessive maternal weight gain (GWG) is associated with small (SGA) or large-for-gestational age (LGA) birthweight, respectively. Less is known about how GWG interacts with ultrasound estimated fetal weight (EFW) to predict the risk of SGA or LGA birthweight. Using a prospective US cohort of 2455 singleton, non-anomalous pregnancies, we assessed longitudinal measures of GWG and estimated fetal weight (EFW) in relation to SGA and LGA birthweight, defined using race-specific fetal growth standards. We calculated race- and trimester-specific EFW and GWG z-scores using log-transformed values. Poisson regression with a robust error variance was used to calculate trimester-specific relative risks (RR) for the association of GWG and EFW with SGA and LGA. A GWG and EFW interaction term was included to test the combined effect of GWG and EFW on the risk of SGA and LGA and assess whether a discrepancy in growth (e.g., an inadequate GWG but a normal EFW) enhanced the prediction of birthweight aberrations. The risk of SGA and LGA, respectively, did not differ by the combined effect of GWG and EFW in the 1st (interaction term $p=0.71$, $p=0.25$), 2nd ($p=0.65$, $p=0.77$) or 3rd trimester ($p=0.48$, $p=0.77$). Fetal growth as measured by EFW was a stronger predictor of both SGA and LGA than GWG. In the 3rd trimester, a 1SD increase in EFW was associated with a 52% decrease in SGA risk (RR: 0.48, 95% CI: 0.42, 0.55) and a 2-fold increase in LGA risk (RR: 2.08, 95% CI: 1.76, 2.47). In contrast, a 1 SD increase GWG was associated with only a 6% decrease in SGA risk (RR: 0.94, 95% CI: 0.89, 1.0) and only a 21% increase in LGA risk (RR: 1.22, 95% CI: 1.07, 1.37) in the 3rd trimester. In sum, both GWG and EFW are independently associated with the chance of SGA or LGA birthweight, although the association of EFW with SGA and LGA is stronger. Discrepant growth patterns in GWG and EFW do not modify the association with birthweight aberrations.

0438

NEIGHBORHOOD DISADVANTAGE AND PRETERM DELIVERY AMONG URBAN AFRICAN AMERICAN WOMEN. Shawnita Sealy-Jefferson*, Jaime Slaughter-Acey, Dawn P. Misra (Virginia Commonwealth University, Department of Family Medicine and Population Health, Division of Epidemiology)

The literature on whether neighborhood disadvantage impacts preterm delivery (PTD) is mixed. Using data collected from the Life-course Influences on Fetal Environments Study (2009-2011; $n=1,387$) comprised of postpartum African American women residing in the Detroit-metropolitan area, we examined the aforementioned relationship. Preterm delivery was defined as birth before 37 completed weeks of gestation. Study participant addresses were geocoded and spatially linked to 5-year block-group summary estimates (2007-2011) from the American Community Survey. An index of neighborhood disadvantage (which was rescaled by its interquartile range, to aid in interpretation) was derived from a principal components analysis of the following variables: % below poverty, % unemployed, % receiving public assistance income, % with college education, % African American, % female headed households, median income, and median value of owned homes. Given the absence of significant neighborhood-level variation in PTD rates in this cohort, we estimated prevalence ratios (PR) and 95% confidence intervals (CI) with log binomial regression models. In bivariate and adjusted models (controlling for age, education, income and marital status), we found no significant associations between administratively defined neighborhood disadvantage and PTD rates among African American women (adjusted PR: 1.03, 95% CI: 0.87, 1.23). Given the persistent racial disparity in PTD rates, more research seeking to identify novel risk and preventive factors for this adverse birth outcome is warranted, especially among African American women.

0439

SEVERE DEPRESSIVE SYMPTOMS DURING PREGNANCY AND SMALL-FOR-GESTATIONAL AGE INFANTS: DOES DENIAL COPING STYLE MODERATE THE RELATIONSHIP?

Jaime Slaughter-Acey*, Purni Abeysekara, Cleopatra Caldwell, Rhonda Daily-Okezie, Dawn Misra (College of Nursing & Health Professions, Drexel University)

Background: Ways of coping (WOC) may moderate the relationship between antenatal depression and small-for-gestational age (SGA). We examined how the use of denial as a coping style affects the relationship between severe DS during pregnancy and SGA. **Methods:** Data were obtained from a cohort of 1410 Black women in Metropolitan Detroit, Michigan (14.5% SGA) using maternal interviews and medical record abstraction. The Center for Epidemiologic Studies Depression Scale was used to measure severe DS (score > 23). Denial coping was assessed using the WOC questionnaire. Analyses were stratified by denial coping; modified-Poisson regression models were used to calculate unadjusted and adjusted prevalence ratios (PR) with 95% confidence interval (CI). **Results:** Approximately 20% of women had severe DS. Unadjusted results showed that among women who used a denial coping style, women with severe DS were 1.4 times (95% CI: 0.92-2.12; $p=0.12$) as likely as women with non-severe DS to have a SGA infant. Among women with non-denial coping, women with severe DS were 1.45 times (95% CI: 0.93-2.26; $p=0.10$) as likely to have a SGA infant. Stratified-analyses adjusted for demographics, parity, physical health and smoking showed that among women who employed denial coping the rate of SGA was 60% higher for women with severe DS than those with non-severe DS (OR=1.6, 95% CI: 0.96-2.50, $p=0.07$). Severe DS was not significantly associated with SGA among women who did not use denial as a coping style (aPR=1.2, 95% CI: 0.8-2.0, $p=0.63$). **Conclusion:** Our findings suggest that there is a marginally significant relationship between severe DS and SGA and that this relationship is modified by women's coping style. In addition to screening for DS during pregnancy clinicians should consider assessing coping styles since they drive women's appraisal and response to stress.

0441

EFFECT OF MATERNAL SMOKING DURING PREGNANCY ON CHILDHOOD GROWTH BY QUARTILE OF BIRTH WEIGHT USING MULTILEVEL ANALYSIS Kohta Suzuki*, MiriSato Sonoko, Mizorogi Ryoji, Shinohara Zentaro Yamagata (University of Yamagata)

Maternal smoking during pregnancy is associated with childhood obesity; however, whether maternal smoking affects childhood growth according to birth weight has not been examined. Thus, this study aimed to examine the effect of maternal smoking on childhood growth stratified by quartile of birth weight using multilevel analysis. The study participants were 1,956 women and their single-born babies, born between April 1, 1991, and March 31, 2003, who had complete data for birth weight, maternal body mass index (BMI) before pregnancy, and smoking status during pregnancy. Maternal smoking status during pregnancy was collected using a questionnaire at their pregnancy registration. Childhood growth was estimated by BMI z-score, established by the World Health Organization. Birth weight and anthropometric data were collected from 1,950 (at birth, 99.7%), 1,643 (at age 3 years, 84.0%), 1,517 (at age 5 years, 77.6%), 1,487 (at age 7-8 years, 76.0%), and 1,491 (at age 9-10 years, 76.2%) children. Quartile of birth weight was determined by sex and parity (first vs. second or higher). Multilevel analysis, including both individual and age as different level variables, by each quartile of birth weight was used to describe the trajectories of BMI z-scores for statistical analyses. In every quartile group, although children born to smoking mothers were leaner at birth, their BMI z-score increased rapidly by age 3; after age 3, these children were larger than children born to non-smoking mothers. Significant interactions between maternal smoking during pregnancy and each age of children were seen in children in the third- and fourth-quartiles of birth weight. Particularly in the children in the third-quartile, the difference of trajectories between children of smoking and non-smoking mothers was larger than the other groups. In conclusion, the effect of maternal smoking during pregnancy on childhood growth seemed more apparent among children in the third quartile of birth weight.

0440-S/P

ADOLESCENT CONFIDENTIALITY CONCERNS AND USE OF SENSITIVE HEALTH SERVICES: A RETROSPECTIVE COHORT STUDY OF ADD HEALTH PARTICIPANTS Kenesha Smith*, Larissa Brunner Huber (University of North Carolina at Charlotte)

Introduction: Family planning and sexually transmitted disease (STD) testing are fundamental services to prevent unintended pregnancies and the spread of STDs; however, when adolescents have confidentiality concerns about healthcare providers, they may be deterred from accessing such services. The purpose of this study was to evaluate if there is an association between confidentiality concerns and the use of sensitive health care services among young adults. **Methods:** This study included 923 adolescents who participated in Wave II (1996) of the National Longitudinal Study of Adolescent to Adult Health (Add Health), a project initiated to collect data on factors that may influence adolescents' health and risk behaviors. Information on reasons for not seeing a health care provider in the past year and the use of specific health services was self-reported. Multivariate logistic regression was used to calculate odds ratios (ORs) and 95% confidence intervals (CIs). **Results:** Participants who chose to forgo healthcare due to confidentiality issues had increased odds of receiving family planning services compared to participants who omitted healthcare for other reasons (OR=2.72; 95% CI: 0.81, 9.07). There was no strong association between forgoing healthcare due to confidentiality issues and STD testing (OR=0.99; 95% CI: 0.13, 7.54). Neither of these findings were significant, even after adjustment for possible confounders (family planning: OR=2.06; 95% CI: 0.51, 8.27; STD testing: OR=0.87; 95% CI: 0.09, 8.77). **Discussion:** While the current study did not find any association between confidentiality concerns and use of sensitive health services, more rigorous studies with larger sample sizes are warranted. Understanding the relationship between confidentiality and sensitive health service use may aid health care providers in improving the reproductive health of youth.

0442

VALIDITY OF A WEB-BASED QUESTIONNAIRE TO ASSESS PERINATAL OUTCOME Nel Roeleveld*, Marleen van Gelder, Saskia Vorstenbosch, Lineke Derks Bernke te Winkel, Eugene van Puijenbroe (Department for Health Evidence, Radboud university medical center, Nijmegen, The Netherlands)

Previous validation studies showed that maternal recall of perinatal outcomes, including infant birth weight and gestational age, is generally excellent when using interviews or paper-based questionnaires. However, knowledge on the validity of data on perinatal outcome collected with Web-based questionnaires is limited. For 1,124 women with an estimated date of delivery between February 2012 and February 2015 participating in the PRenancy and Infant DEvelopment (PRIDE) Study in the Netherlands, we compared data on pregnancy outcome, including mode of delivery, plurality, gestational age, birth weight and length, head circumference, birth defects, and infant sex from Web-based questionnaires with data from obstetrical records. For the continuous outcome variables, intraclass correlation coefficients (ICC) with 95% confidence intervals (CI) were calculated, while sensitivity and specificity were determined for categorical variables. We observed only very small differences between the two methods of data collection for gestational age (ICC 0.85; 95% CI 0.83-0.88), birth weight (ICC 0.98; 95% CI 0.98-0.98), birth length (ICC 0.89; 95% CI 0.86-0.92), and head circumference (ICC 0.85; 95% CI 0.73-0.95). Agreement between the Web-based questionnaire and obstetrical records was high as well, with sensitivity ranging between 0.90 (post-term birth) and 1.00 (multiple outcomes) and specificity between 0.95 (emergency caesarean section) and 1.00 (multiple outcomes). In conclusion, the validity of the Web-based questionnaire for perinatal outcomes was similar or higher compared to the traditional modes of data collection. Therefore, Web-based questionnaires should be considered as a complementary or alternative method of data collection in reproductive and perinatal epidemiology.

0443

A RANDOMIZED TRIAL OF WEB-BASED FERTILITY-TRACKING SOFTWARE AND FECUNDABILITY

Lauren Wise *, Elizabeth Hatch, Joseph Stanford, Craig McKinnon, Amelia Wesselink, Kenneth Rothman (Boston University School of Public Health)

FertilityFriend.com (FF) is a fertility-tracking software program that allows users to chart their menstrual cycles and record fertility signs, such as cervical fluid quality and ovulation predictor kit (OPK) use. We assessed whether randomization to FF use was associated with improved fecundity in the Pregnancy Online Study (PRESTO), a North American web-based preconception cohort study. At baseline, women completed a health history survey and were randomized with 50% probability to receive a premium FF membership. Women were followed every 8 weeks for up to 12 months or until reported pregnancy. The analysis was restricted to women who had been attempting to conceive for ≥ 6 cycles at study entry ($N=1,444$). Using an intent-to-treat analysis, we estimated fecundability ratios (FR) and 95% confidence intervals (CI) using proportional probabilities regression. Baseline characteristics were evenly distributed between the two randomization groups; 87% completed follow-up (became pregnant or reached other study endpoint). Pregnancy was reported during follow-up by 60% of the 737 women randomized to FF and 62% of the 707 women not randomized to FF. The FR comparing those randomized vs. not randomized to FF was 0.95 (95% CI=0.84-1.07) overall; it was 0.92 (CI=0.80-1.05), 0.89 (CI=0.67-1.18), and 1.57 (CI=0.97-2.54) for those trying <3 , 3-4, and 5-6 cycles at study entry, respectively. Of those randomized to FF, 54% actually used the software. Those trying for 5-6 cycles had higher actual use of FF (58%), higher OPK use (18%), and a faster median time to OPK use (1.5 weeks) than those trying for <3 cycles at study entry. Randomization to FF was not associated with fecundability overall, but it was associated with faster conception among women who had been trying to conceive for 5-6 cycles at study entry. Non-use of FF may have attenuated our results and differential loss-to-follow-up may have introduced a downward bias.

0444-S/P

SUICIDAL BEHAVIOR-RELATED HOSPITALIZATIONS AMONG PREGNANT WOMEN IN THE UNITED STATES, 2006 – 2012

Qiu-Yue Zhong*, Bizu Gelaye, Matthew Miller, Gregory Frichione, Tianxi Cai, Paula Johnson, David Henderson, Michelle Williams (Department of Epidemiology, Harvard T.H. Chan School of Public Health, Boston, Massachusetts, USA)

Background: Suicide is one of the leading causes of maternal mortality in many countries, but little is known about the epidemiology of suicidal behavior among pregnant women in the United States. We sought to examine trends and provide nationally representative estimates for suicidal ideation and suicide and self-inflicted injury (suicidal behavior) among pregnant women from 2006 to 2012 in the United States. **Methods:** Using the National (Nationwide) Inpatient Sample, pregnancy- and delivery-related hospitalizations were identified for women aged 12-55 years. Suicidal behavior and depression were identified by the International Classification of Diseases, Ninth Revision, Clinical Modification codes. Annual estimates and trends were determined using discharge and hospital weights. **Results:** The prevalence of suicidal ideation more than doubled from 2006 to 2012 (47.5 to 115.0 per 100,000 pregnancy- and delivery-related hospitalizations), whereas the prevalence of suicide and self-inflicted injury remained stable. Nearly 10% of suicidal behavior occurred in the 12-18-year group, showing the highest prevalence per 100,000 pregnancy- and delivery-related hospitalizations (158.8 in 2006 and 308.7 in 2012) over the study period. For suicidal ideation, blacks had higher prevalence than whites; women in the lowest income quartile had the highest prevalence. Although suicidal behavior was more prevalent among hospitalizations with depression diagnoses, more than 30% of hospitalizations had suicidal behavior without depression diagnoses. **Conclusions:** Our findings highlight the increasing burden and racial differences in suicidal ideation among US pregnant women. Targeted suicide prevention efforts are needed for high-risk pregnant women including teens, blacks, and low-income women.

0450-S/P

CHARACTERISTICS OF EMERGENCY DEPARTMENT UTILIZERS OF UF DEPARTMENT OF COMMUNITY HEALTH AND FAMILY MEDICINE IN 2014-2015

Denny Fe Agana*, Catherine Striley, Paulette Blanc, Peter Carek (University of Florida (Department of Epidemiology))

Background: Due to the increased expense compared to other medical care settings, Emergency Department (ED) use is a major factor in increased medical care costs in the US. A large proportion of ED visits are considered non-urgent, and could be addressed in an office setting, eventually leading to overall lower costs of care. **Methods:** We conducted a retrospective chart review on the patients associated with UF Department of Community Health and Family Medicine clinics, who also visited the ED during 2013-2015. Outcome variables include age, sex, race, payer-mix, assignment of primary care clinic, average education level (by zip code), average income (by zip code), and classification of ED visit. **Results:** These clinics serve a payer-mix of 23.8% Medicaid, 20.8% Medicare, 53.6% Private pay/3rd party/other, and 1.9% Self-pay. We included 40,642 visits in the preliminary analysis of January 1, 2013- August 15, 2015. 76.8% of ED visits were urgent. Patients by primary care clinic location for urgent visits were 19.6% Eastside Clinic, 11.4% Haile Plantation Clinic, 10.9% Hampton Oaks Clinic, 5.0% Jonesville Clinic, 45.9% Main Street Clinic, and 7.2% Old Town Clinic. 23% visits were non-urgent. Patients by primary care clinic location for non-urgent visits were: 29.4%, 8.8%, 7.8%, 4.4%, 46.7%, and 2.9%, respectively. Comparing these two groups will help us compare differences in these patient populations and use factors associated with the social determinants of health. Additional analysis will be completed when complete data is collected at the end of 2015. **Conclusions:** Patients seen in the Eastside and Main Street Clinics are the top two utilizers of the ED for urgent and non-urgent issues. This analysis reinforces hot-spotting and other characterizations of vulnerable populations who may use the ED for non-urgent reasons. This information provides clinical staff with the opportunity to effectively target intervention to reduce this unnecessary use of higher cost medical services.

0452

EDUCATIONAL DIFFERENCES IN THE ASSOCIATION BETWEEN SMOKING AND HEALTH-RELATED QUALITY OF LIFE

Rana Charafeddine*, Stefaan Demarest, Herman Van Oyen (Scientific Institute of Public Health, Unit Public Health and Surveillance, Belgium)

Background: Previous studies have shown that smoking has a significant and negative association with health related quality of life (HRQL). Also, studies have found that a high educational level is associated with a better HRQL. The present study aims at exploring whether the association between smoking and HRQL differs by educational level. **Methods:** Information on smoking, education and HRQL was extracted from the 2013 Belgian Health Interview Survey (n=5624). HRQL was assessed by the EQ-5D tariff scores of the EuroQol-5D instrument. Higher EQ-5D scores correspond to better HRQL. Separate multivariate regression models were used to estimate the association between HRQL and smoking for each educational level and gender. To assess the interaction between smoking and education, additional models with interaction terms were run. **Results:** Among males, we found a significant association between smoking and HRQL in the high educated group, but not in the low and intermediate educated groups. However, the interaction between smoking and education was not statistically significant. Among females, we found a significant association between smoking and HRQL for all educational categories, but the reductions in the EQ-5D scores between daily and never smokers were greater for the low educated (-0.093) and intermediate educated (-0.109) compared with the high educated (-0.038). Here, the interaction between smoking and education was statistically significant. **Conclusion:** Studies exploring whether the effect of smoking on mortality and morbidity depends on socioeconomic status have found mixed results. Our study adds to this body of literature by suggesting that the association between smoking and HRQL is conditional upon educational level, mainly among women.

0451-S/P

CUMULATIVE SOCIOECONOMIC POSITION ACROSS THE LIFE COURSE AND NEWLY DIAGNOSED TYPE II DIABETES IN THE BRAZILIAN LONGITUDINAL STUDY OF ADULT HEALTH (ELSA-BRASIL)

Sandhi Maria Barreto*, Lidyane Camelo, Luana Giatti, Rosane Griep, Dóra Chor, Bruce Duncan, Maria Inês Schmidt, Sandhi Maria Barreto (Universidade Federal de Minas Gerais)

BACKGROUND: We investigated the association between cumulative socioeconomic position (SEP) across the life course with newly diagnosed type II diabetes (T2D) independently of the clinical predicted risk of diabetes. **METHODS:** Our analytical sample comprised 13629 participants from ELSA-Brasil baseline (2008–2010) without previously diagnosed diabetes. Accumulation of risk was evaluated using an educational based score (childhood and adulthood education), and an occupational based score (youth and adulthood occupational social class). Logistic regressions were performed adjusting for clinical predicted risk of T2D, stratified by sex. **RESULTS:** The chances of newly diagnosed T2D increased linearly with increasing number and severity of exposure to social disadvantage throughout the life. These associations presented higher magnitude in men and for the educational based score. After adjustments for clinical predicted risk of T2D, the magnitude of the associations reduced more in women than in men, but they remained remarkably high. For example, the odds of newly diagnosed T2D in men and women simultaneously exposed to lowest education in childhood and adulthood were, respectively, 5.3 (OR: 5.3; 95%CI: 2.3-9.5) and 2.1 (OR: 2.1; 95%CI: 1.1-3.8) times that of individuals with highest education both in childhood and adulthood. Using the occupational based score, we found that men and women who were exposed to lowest occupational social class in youth and adulthood had 2.0 (OR: 2.0; 95%CI: 1.5-2.7) and 1.5 (OR: 1.5; 95%CI: 1.1-2.2) times the odds of presenting newly diagnosed T2D, respectively, compared with those in highest occupation in youth and adulthood. **CONCLUSIONS:** Our results represent strong evidences that cumulative exposures to social adversities across the life course are associated with occurrence of T2D. Policies to improve SEP across the life course might decrease the process of accumulation of social disadvantage and enforce the primary prevention of T2D.

0453- S/P

MEASURING COMMUNITY RACIAL DISCRIMINATION

Geoff B. Dougherty*, Usama Bilal Thomas A. Glass (Johns Hopkins Bloomberg School of Public Health)

Examining the association between community racial discrimination (CRD) and health requires adequate measures of the exposure at the population-level. Most current instruments measure perceived discrimination using surveys; such instruments may introduce bias due to measurement error and may be restricted to specific domains of discrimination. Rigorously evaluated measures of community racial discrimination based on objective, policy sensitive indicators do not currently exist. We use confirmatory factor analysis (CFA) to evaluate a measurement model for community racial discrimination. This model estimates a factor-based score for the latent construct of interest by combining county-level indicators across multiple domains and accounting for correlated measurement error. We assembled 19 candidate indicators of community racial discrimination including proportion of interracial marriages, ratios of employment rates, high-school graduation rates comparing non-Hispanic whites vs. others. We computed several indicators of school and residential segregation. We limited our analysis to counties with a 2013 population over 75,000 (N=726). Construct validity of the resulting score was evaluated by comparison with criteria measures of health and discrimination. A total of 21 models were evaluated. The final model using 11 indicators demonstrated adequate model fit and was used to generate factor-based scores. This measure correlated with county-level all-cause black mortality, but was uncorrelated with all-race mortality. CRD did not differ in states that previously adopted “Jim Crow” laws. Ecological analysis shows counties with higher CRD had higher rates of mortality from hypertension. This new theory-based scale derived using advanced psychometric methods will facilitate research on the relationship between community racial discrimination and health outcomes.

0454

LIFE-COURSE SOCIOECONOMIC POSITION AND HEALTH-RISK BEHAVIORS: CROSS-SECTIONAL ANALYSIS OF THE BRAZILIAN LONGITUDINAL STUDY OF ADULT HEALTH (ELSA-BRASIL) 2008-2010 Luana Giatti*, Jéssica Costa, Faleiro Lidyane do Valle, Camelo, Dora Chor, Maria de Jesus Fonseca, Rosane Harter, Griep Sandhi Maria Barreto (Universidade Federal de Minas Gerais)

OBJECTIVE: We investigated the association of life-course SEP and social trajectories with health-risk behaviors in Brazilian adults. **METHODS:** We analyzed baseline data of 12080 (35-64 years) participants from ELSA-Brasil study, an ongoing cohort of civil servants. The response variables were low fruits/vegetables intake (FVI), physical inactivity (PI) and smoking (never, former smoker, smoker). Maternal education, youth occupational social class, adulthood occupational social class and social trajectory (youth vs adulthood occupational social class) were the SEP indicators. Binomial and multinomial logistic regressions were used to estimate independent association between each explanatory and response variables stratified by sex and adjusting by age, race and BMI. **RESULTS:** The prevalence of risk behaviors was higher among men, except PI. Low versus high maternal education was associated with higher chance of PI in women and lower chances of former-smoker and smoker in both sexes independently of youth and adulthood SEP. Low versus high adulthood occupational social class was associated with higher chances of presenting: low FVI (men-OR:2.10 95%CI:1.77-2.50; women-OR:1.60 95%CI:1.31-1.94), PI (men-OR:2.23 95%CI: 1.86-2.67; women-OR:4.17 95%CI:2.92-5.95), smoking (men-OR:3.73 95%CI:2.77-5.01; women-OR:2.91 95%CI:2.06-4.09) regardless of other SEP indicators. With regard to social trajectories, we found that comparing to individuals in high-stable SEP, those in low-stable, middle-stable and downward social trajectories showed higher odds of risky behaviors. For instance, the chance of smoking was higher for men in low-stable (OR:2.76 95%CI:1.80-4.23) and downward SEP trajectories (OR:2.05 95%CI:1.19-3.5). **CONCLUSION:** Social adversity in childhood SEP seems to be associated with adulthood risk behaviors mainly in women, whereas adulthood SEP, and presenting low-stable and downward SEP trajectories were associated with adulthood risk behaviors in both sexes.

0456-S/P

ADVERSE CHILDHOOD EXPERIENCES, AIR POLLUTION, AND MENTAL HEALTH IN THE WASHINGTON STATE BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM (BRFSS) Marnie Hazlehurst*, Anjum Hajat, Paula Nurius (University of Washington)

Both adverse childhood experiences (ACEs) and air pollution exposures may act on similar pathways—through inflammation, epigenetic changes, and impacts on the sympathetic nervous system—to lead to an increased health burden. We examined the impact of ACEs and air pollution on three mental health outcomes: psychological distress (measured by the Kessler 6 Index), days of poor mental health, and depressive disorder. This analysis pooled respondents from the Washington State Behavioral Risk Factor Surveillance System (BRFSS) telephone survey in 2009-2011 (n=36,057). Concentrations of ambient fine particulate matter (PM_{2.5}), coarse particulate matter (PM₁₀), and nitrogen dioxide (NO₂) were estimated for participants' zip code of residence during the year prior to the survey date using land-use/kriging models. Air pollution exposures and ACEs were dichotomized for ease of interpretation (higher or lower than the median level of air pollution and at least one ACE versus no ACEs) and models were adjusted for age, race, sex, urban residence, education, income, and neighborhood disadvantage index. Preliminary findings indicate that reporting any ACEs was a highly significant positive predictor of each outcome for participants in low air pollution areas; odds ratios (95% confidence intervals) were 6.14 (4.08, 9.23) for psychological distress; 2.27 (2.09, 2.46) for days of poor mental health in the prior month; and 3.03 (2.63, 3.49) for depressive disorder, in communities with lower PM_{2.5} (similar results for low PM₁₀ and NO₂ areas). The main effects for PM_{2.5}, PM₁₀, and NO₂ were generally in the positive direction but not statistically significant and interactions between these pollutants and ACEs produced results in an unexpected direction but were generally not significant. Overall, the interaction of psychosocial stressors and environmental pollutants in this study needs further examination before conclusions can be drawn.

0455-S/P

THE ASSOCIATION BETWEEN SOCIAL SUPPORT AND SELF-REPORTED HEALTH IN THE WHITEHALL II STUDY Christian Hakulinen*, Marko Elovainio (University of Helsinki & National Institute for Health and Welfare, Finland)

Background: Social support has been associated with better health in numerous studies. There has, however, been only limited number of studies that have examined the association between social support and health using an adult life course approach and whether this association is bidirectional. **Methods:** 6797 participants (30% women) who were followed from phase 2 to phase 8 were selected from the Whitehall II Study. Structural (marital status and social network) and functional (confiding support, practical support, and negative aspects of close relationships) aspects of social support were measured at phases 2, 5, and 7, and mental and physical health was self-reported at phases 3, 4, 5, 6, 7 and 8. **Results:** High structural and functional social support were associated with better mental health, whereas only high functional social support was associated with better physical health. However, the strength of some of these associations changed over the adult life course, for example the association between marital status and mental health weakened with age in women. In addition, the association between social support and health appeared to be bidirectional; higher mental and physical health were associated with more favorable future structural and functional social support. **Conclusion:** There is a bidirectional association between social support with mental and physical health. The association between social support and health may change over the adult life course.

0457

GLOBAL FINANCIAL CRISIS AND CHILDHOOD OBESITY TRAJECTORY BY HOUSEHOLD INCOME: NATIONAL REPRESENTATIVE LONGITUDINAL STUDY IN JAPAN Takeo Fujiwara*, Naoki Kondo, Peter Ueda (The University of Tokyo)

Background The global financial crisis starting from 2007 have spread worldwide since September 2008, when many finance institutions, including Lehman Brothers Holdings inc., bankrupted. We evaluated if risks for developing overweight among poor children changed after the crisis, using Japanese nationally representative longitudinal data. **Methods** We used the data from the Longitudinal Survey of Babies in the 21st Century, following up all children born in specific two weeks in 2001. The total 31,906 babies were annually followed up until 2011. We defined overweight as exceeding the age- and gender-specific cutoffs, provided by International Obesity Task Force, corresponding to 25 (kg/m²) of adult's body mass index. Using logistic regression accounting for within-household clustering, we modeled gender-specific trajectories in overweight status before and after the crisis onset (September 2008) by pre-crisis household income quartile. Those models were adjusted for survey year, household composition, changes in income after the crisis, parental ages and residential city's population density. We used Bayesian Information criteria to confirm that models using September 2008 as the temporal cut-off representing the crisis onset fit the best. **Results:** Boys and girls with the poorest income status (quartile 1) showed the highest odds of developing overweight status after the crisis onset: adjusted odds ratios, compared to the children with the highest income levels (quartile 4), were 1.12 (95%CI: 1.9-1.38) among boys and 1.35 (95%CI: 1.23-1.49) among girls. **Conclusion:** Economically vulnerable children were prone to become unhealthy during financial crisis. Further studies should investigate its potential mechanisms, including increased material and psychosocial stresses.

0459

SELF-REPORTED DISCRIMINATION AND THE DISTRIBUTION OF GLYCOSYLATED HEMOGLOBIN LEVELS Thu Nguyen*, Maria Glymour, Amani Nuru-Jeter (University of California, San Francisco)

Background: There is growing evidence of an association between discrimination and physical health, but research examining discrimination and diabetes outcomes remains limited. Either extremely low or high glycosylated hemoglobin (HbA1c) levels may be unhealthy, so it is important to consider the association between discrimination and the distribution of HbA1c, instead of focusing only on mean differences. **Methods:** We used data from the Health and Retirement Study, a cohort of US adults age 50+ (N=4,227) who responded in 2008 to a modified version of the Everyday Discrimination Scale, asking how frequently in day to day life: they are treated with less courtesy or respect than other people; they receive poorer service; people act as if they are not smart; people act as if they are afraid of them; they are threatened or harassed; or they receive poorer service or treatment from doctors or hospitals. Response categories ranged from “never” (1) to “every day” (6). Summary scores with a range of 1-6 were created by averaging across items. Dried blood spots were assayed for HbA1c in 2012. Quantile regression models were fitted to assess the association between discrimination and the distribution of HbA1c, examining the 10th, 25th, 50th, 75th, and 90th percentiles, adjusted for age, sex, race/ethnicity, and educational attainment. **Results:** Everyday discrimination (mean=1.54, SD=0.69) was not related to the 10th (=0.027(95% CI: -0.016, 0.070)), 25th (=0.023(95% CI: -0.007, 0.054)), or 50th (=0.005(95% CI: -0.025, 0.035)) percentiles of HbA1c. At the 75th percentile of HbA1c (~6.2), every unit increase in everyday discrimination was associated with 0.063 units higher HbA1c (95% CI: 0.002, 0.122). At the 90th percentile of HbA1c (~7.0), everyday discrimination was associated with 0.192 units higher HbA1c (95% CI: 0.018, 0.367). **Conclusion:** Everyday discrimination is associated with elevated HbA1c at higher percentiles of the outcome distribution.

0461-S/P

ASSOCIATION BETWEEN PARENTAL SOCIAL INTERACTION AND BEHAVIOR PROBLEMS IN OFFSPRING: A POPULATION-BASED STUDY IN JAPAN Manami Ochi*, Takeo Fujiwara (National Center for Child Health and Development, Japan / Mie University)

Purpose: Research in parental social support has chiefly examined received social support. Studies have suggested that provided social support may also be protective for child mental health problems. We aim to investigate the association between parental social interaction (both received and provided social support) and offspring behavior problems. **Methods:** We analyzed the data of 982 households, including 1,538 children aged 4 to 16 years, from the Japanese Study of Stratification, Health, Income, and Neighborhood (J-SHINE) survey conducted over 2010–2011. We used a 5-point Likert scale to assess social interaction including parental emotional and instrumental support received from and provided to the spouse, other co-residing family members, non-co-residing family members or relatives, neighbors, and friends. Behavior problems in offspring were assessed using parental responses to the Strengths and Difficulties Questionnaire. Associations between parental social interaction and behavior problems were analyzed using ordered logistic regression. **Results:** We found that higher maternal social interaction is significantly associated with lower odds of both difficult and prosocial behavior problems, while the same associations were not found for paternal social interaction. Further, maternal provided social support showed an independent negative association with prosocial behavior problems in offspring, even when adjusted for received maternal social support and paternal social interaction. **Conclusions:** This study showed that maternal social interaction, but not paternal social interaction, might have a protective effect on offspring behavior problems. Further study is required to investigate the effect of the intervention to increase social participation among mothers whose children have behavior problems.

0460

A LONGITUDINAL MULTILEVEL ANALYSIS OF NEIGHBOURHOOD COHESION AND HEALTH-RELATED QUALITY OF LIFE IN THE FAMILY COHORT Michael Ni*, Tim Mak, Tom Li, C Mary Schooling, Gabriel Leung (The University of Hong Kong)

Introduction: Neighbourhood influences on health can be categorized as compositional effects (“the difference that people make to places”) and contextual effects (“the difference that places make to people”). Using the FAMILY Cohort, we aim to identify the contextual and compositional influences of neighbourhood cohesion on health-related quality of life (HRQoL). **Methods:** A territory-wide random sample of households was surveyed from 2009-2011 and 2011-2014 in Hong Kong. We defined a neighbourhood as a District Council Constituency Area, which consists of about 17,000 residents. Using a longitudinal multilevel model, we examined whether changes in neighbourhood cohesion predicted changes in HRQoL, measured by the mental (MCS) and physical (PCS) component score of the SF-12, adjusting for shared neighbourhood confounders. **Results:** We conducted longitudinal multilevel analyses on 16,354 participants aged 15 years from Wave 1 nested within 7,549 households and 392 neighbourhoods (95.1% of all neighborhoods in Hong Kong). Changes in neighbourhood cohesion was significantly associated with changes in MCS (regression coefficient of 1.45, 95% confidence interval (CI) 0.86 to 2.05), and with changes in PCS (0.80, 95% CI 0.30 to 1.30), adjusting for age, sex, marital status, socioeconomic position and neighbourhood-level attributes (median household income, income inequality, population density). The associations for MCS and PCS were attenuated (MCS: 0.68, 95% CI 0.09 to 1.28, PCS: 0.56, 95% CI 0.05 to 1.05), after additionally adjusting for individual-level perceived neighbourhood cohesion. **Conclusion:** Our findings demonstrate contextual influences on HRQoL, where neighbourhoods with higher cohesion reported better individual HRQoL.

0462

IS VILLAGE-LEVEL INFORMAL SOCIAL CONTROL ASSOCIATED WITH LOWER RISK OF INTIMATE PARTNER VIOLENCE IN RURAL BANGLADESH? A MULTILEVEL POPULATION-BASED STUDY Theresa Osypuk*, Sidney Schuler, Kathryn Yount, Ruchira Naved, Lisa Bates (University of Minnesota School of Public Health)

The risk of Intimate partner violence (IPV) against women is high worldwide, and social context may play a critical role in prevention. However, prior research on contextual influences on IPV is primarily US-based and limited by cross sectional designs, administrative data, and methodological weaknesses. As part of The Influences of Women’s Empowerment on Marriage and Violence in Bangladesh study, we used primary longitudinal multilevel data to test how social context influences risk of IPV against women. We sampled 7133 women and men in 78 rural villages in 2013 and re-interviewed a subsample of 3356 younger women (baseline age 16-37) in 2014 (86% retention). We constructed and validated a novel measure of village-level perceived informal social control (ISC) at baseline, using exploratory and confirmatory factor analysis of 9 items, and tested for differential item functioning using Multiple Indicator Multiple Cause Models among men and women. We assessed women’s IPV exposure at follow up using the Revised Conflict Tactics Scale and constructed measures to reflect past year incidence and severity of 7 types of physical IPV. In linear regression adjusted for the complex survey design and demographics, a one-SD increase in village-level ISC among the younger women subgroup was associated with lower IPV risk at follow up (B(se)= -0.21(.08), p=.02). This association was attenuated with adjustment for village-level wealth and individual-level socioeconomic status (wealth and schooling) but remained significant (B(se)= -.16(.07), p=.042). Village ISC as perceived by older women (age 30-49) or women overall yielded similar patterns of associations with IPV, but effect sizes were smaller. In contrast, men’s perceived village ISC was neither associated with IPV, nor correlated with women’s reports. Understanding contextual influences on IPV may inform prevention strategies, particularly in lower-income settings, where risks of IPV and gender inequality are large.

0463-S/P

MENTAL AND PHYSICAL HEALTH IN THE CONTEXT OF AN ETHNIC ENCLAVE AMONG ARAB-AMERICANS IN MICHIGAN: DATA FROM THE BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM

Laura Sampson*, Abdulrahman El-Sayed, Sandro Galea (Boston University School of Public Health)

Arab Americans are a growing ethnic group in the United States. This population has faced substantial discrimination since the September 11, 2001 terrorist attacks and U.S. involvement in the wars in Iraq and Afghanistan. It has been hypothesized that living in an ethnic enclave may help mitigate the effects of discrimination and other risk factors for poor health among ethnic minorities in the United States. We assessed whether residents in Dearborn, a suburb of Detroit with the largest proportion of Arab-Americans in the U.S. (nearly 40%), had better reported health indicators compared with Arab-Americans living in other parts of Michigan. All data were taken from a subsample of the 2013 Behavioral Risk Factor Surveillance System (BRFSS) including an Arab-American/Chaldean oversample. We assessed mental and physical health indicators as population-weighted reported number of days of poor health in the past 30 days, and used weighted logistic regression models with survey design correction. Among our analytic sample consisting of 466 Arab-Americans, 25.4% were living in Dearborn. For mental health, the top tertile of poor health days was 4 or more days, and for physical health it was 2 or more days. We did not find any statistically significant association between Dearborn residence and either top tertile of poor mental health days (OR = 0.97, 95% CI: 0.48-1.93) or top tertile of poor physical health days (OR = 0.59, 95% CI: 0.29-1.20) when adjusting for sex, language spoken at home, employment status and overall life satisfaction. However, speaking either Chaldean or Arabic at home was protective against poor physical health (OR = 0.18, 95% CI: 0.05-0.65). This finding suggests that language spoken at home may be a stronger indicator of cultural adherence than residence in Dearborn alone, or that being a part of an ethnic enclave did not influence reported health in this sample.

0465-S/P

PRE-ADOLESCENT OVERWEIGHT IN SINGLE-PARENT HOUSEHOLDS AFTER THE GLOBAL ECONOMIC CRISIS: A NATIONWIDE 10-YEAR BIRTH COHORT STUDY IN JAPAN

Koichiro Shiba*, Naoki Kondo (The University of Tokyo, School of Public Health)

Background: Economic downturn is a risk factor of adverse child weight status. We hypothesized that children from single-parent households would particularly be at increased risk of being overweight after the global economic crisis in 2008. **Methods:** We used 10 waves (2001–2011) of a nationwide longitudinal survey among all Japanese children born within 2 weeks in 2001 (boys: n = 15,521, girls: n = 14,434). Childhood overweight was defined according to age and sex-specific cutoff body mass index established by the International Obesity Task Force. The number of parents was assessed in 2008 (before the economic crisis) and in 2009 (after the crisis). The generalized estimating equation model stratified according to sex was used to assess the interaction between the crisis onset (September 2008) and pre/post-crisis changes in the number of parents. The model was further adjusted for parental age and education, household income quartiles before the crisis, negative changes in income during the crisis, residential area, and three-generation households. **Results:** Girls from continuously single-parent households had a greater increase in risk of overweight after the crisis onset (odds ratio: 1.23, 95% confidence interval: 1.08–1.40) relative to their peers from households continuously with both parents. Boys from households transitioning from having a single parent before the crisis to having both parents after the crisis had a lower risk of overweight (0.61, 0.40–0.92). These interactions remained statistically significant after adjusting for covariates, including financial situations of the households. **Conclusions:** Continuously raising a child alone may lead to increased risk of child overweight among girls after the global economic crisis in 2008.

0464

RELATIONSHIP BETWEEN HEALTH LITERACY AND PERCEIVED BODY IMAGE IN UNDERSERVED WOMEN

Maureen Sanderson*, Tilicia Mayo-Gamble, Mary Kay Fadden, Heather O'Hara, William Dupont, Xiao Ou Shu, Neeraja Peterson (Meharry Medical College) Few studies have examined the association between health literacy and perceived body image. As part of a larger clinic-based cross-sectional study, in-person interviews and body measurements were conducted with 476 women ages 40–79. Health literacy was assessed using the Rapid Estimate of Adult Literacy in Medicine consisting of a 66 word scale; women with scores less than or equal to 60 were considered to have limited health literacy and those with scores higher than 60 were considered to have adequate health literacy. Of the 476 women, 25% had limited health literacy (n=118). Measured body mass index (BMI) was converted to categories ranging from 1 (<15.8) to 9 (≥40). Women's perceptions of the picture that looked most like them as an adult while they were not nursing or pregnant using the Stunkard Figure Rating Scale ranged from 1 (thin) to 9 (heavy). Perceived body image (PBI) was defined as the absolute value of the difference between actual BMI and diagram categories collapsing the highest (3 to 7) categories for a score ranging from 0 to 3. Logistic regression was utilized to determine the association between health literacy and PBI. After adjustment for age, education and race, women with limited health literacy were of similar likelihood to report inaccurate PBI (1 odds ratio [OR] 1.09, 95% confidence interval [CI] 0.53–2.27; 2 OR 1.77, 95% CI 0.82–3.83; 3+ categories OR 0.78, 95% CI 0.37–1.63) as women who reported PBI accurately. The effect of limited health literacy on PBI appeared stronger among black women than among non-black women but was not significantly different (p-value for interaction=0.62). Confirmation of our findings in larger studies may assist in elucidating the role of health literacy in accurate perceptions of body image necessary for appropriate weight control.

0466- S/P

MIND THE GAP: EXPLORING THE EXTENT TO WHICH BLACK MEN'S HEALTH VARIES ACROSS THE UNITED STATES

Christopher Tait*, Arjumand Siddiqi, Sanjay Basu (Dalla Lana School of Public Health, University of Toronto)

A pervasive and persistent public health finding is the health disadvantage experienced by Black men in the United States. However, less is known about whether the health of Black men varies across the United States and, the factors that account for observed state-level variation. The objective of this study is to investigate variation in Black men's health—e.g. self-rated health, drinking, smoking, obesity, and diabetes—across the United States and, to determine the role of compositional characteristics in accounting for observed variation. We used data from adult respondents to each annual cycle of the Behavioural Risk Factor Surveillance Survey (BRFSS) between 1993–2012 (n = 136,415). Null random effects multilevel linear models were used to assess state-level variation in Black men's health. Subsequent models adjusted for demographic and socioeconomic covariates including age, household income, and education level were run to determine whether these covariates accounted for observed variation. Amongst Black men, each health outcome examined significantly varied across the United States. The estimated state-level variation in the intercepts was highest for drinking (var=0.007, p < 0.001), self-rated health (var=0.004, p < 0.001), and mental health (var=0.002, p < 0.001). Differences across states in household income levels and education levels of Black men accounted for some, but not all of the observed state-level variation. The present findings provide insight into the extent to which cross-state analyses can provide new information about the status of Black men's health. Results demonstrate that both compositional and contextual differences across states explain cross-state variation in the health of Black men. Overall our study demonstrates that the health of Black men cannot simply be explained by individual characteristics and that state-level characteristics may also be an important component in the process through which Black men's health is shaped.

0467

RELIGIOUS SERVICE ATTENDANCE, PRAYER, RELIGIOUS COPING, AND RELIGIOUS-SPIRITUAL IDENTITY AS PREDICTORS OF ALL-CAUSE MORTALITY Tyler J. VanderWeele*, Jeffrey Yu, Yvette C. Cozier, Lauren Wise, Lynn Rosenberg, Alexandra E. Shields, Julie R. Palmer (Harvard T.H. Chan School of Public Health)

Previous longitudinal studies have consistently shown an association between religious service attendance and lower all-cause mortality. The literature on associations between other measures of religion and spirituality (R/S) and mortality is limited. We assessed the association between R/S and all-cause mortality in the Black Women's Health Study, which has followed a large cohort of U.S. Black women since 1995 with mailed biennial questionnaires. The 2005 follow-up questionnaire contained four R/S questions. Deaths were identified via linkage with the National Death Index. We followed 36,613 respondents from 2005 through 2013 for all-cause mortality. Mortality rate ratios (MRR) and 95% confidence intervals (CI) were estimated for the R/S variables using Cox proportional hazard models. After multivariate control for demographic and baseline health covariates, and other R/S variables, attending religious services several times a week was associated with substantially lower mortality (MRR=0.64; 95% CI: 0.51, 0.80) relative to never attending services. Prayer several times per day was not associated with mortality after control for demographic and health covariates, but trended towards higher mortality when control was made for other R/S variables (MRR=1.28; 95% CI: 0.99, 1.67 for >2 times/day relative to < once a week; p-trend<0.01). Religious coping and self-identification as a very religious/spiritual person were associated with lower mortality when adjustment was made only for age, but the association was attenuated when control was made for demographic and health covariates, and was almost entirely eliminated when control was made for other R/S variables. The results indicate that service attendance was the strongest R/S predictor of mortality in this cohort.

0468-S/P

THE IMPACT OF HUMAN DEVELOPMENT ON INDIVIDUAL HEALTH: A CAUSAL MEDIATION ANALYSIS EXAMINING PATHWAYS THROUGH EDUCATION AND BODY MASS INDEX Aolin Wang*, Onyebuchi Arah (University of California, Los Angeles)

Introduction. Improved health is shown to predict national economic growth and development. Yet, the reciprocal effect of development on individual health is rarely examined. This study examined the impact of human development on individual health and the possible mediating roles of education and body mass index (BMI). **Methods.** We augmented the standardized World Health Survey data with contextual data on human development, measured as human development index (HDI) in 1990, for 42 low- and middle-income countries each country, resulting in a sample of 109,448 participants aged 25 or older. We implemented principal component analysis to create a health score (0 -100) based on measures from eight health state domains, used years of schooling as education indicator and calculated BMI from self-reported height and weight. We extended recent causal mediation analysis technique to a multiple-mediator scenario with random intercepts to account for the multilevel data structure. **Results.** The impact of HDI on health depended on the reference HDI level. Below a reference HDI level of 0.48, HDI was negatively associated with good health (total effect at HDI of 0.23: b=-3.44, 95% CI: -6.39, -0.49 for males and b=-5.16, 95% CI: -9.24, -1.08 for females) but was positively associated with good health above this reference level (total effect at HDI of 0.75: b=4.16, 95% CI: -0.33, 8.66 for males and b=6.62, 95% CI: 0.85, 12.38 for females). A small positive effect of HDI on health via education was found across different reference HDI levels in both sexes (b ranging from 0.24 to 0.29 for males and 0.40 to 0.49 for females) but not via pathways involving BMI only. **Conclusion.** Human development has a non-linear effect on individual health, and mainly through pathways other than education and BMI. Females experienced stronger overall impact of human development on their health than males did.

0469-S/P

PERCEIVED STRESS, STRESS SYMPTOMS AND THEIR ROLE IN NETWORK FORMATION AMONG YOUNG ADULTS: A LONGITUDINAL STUDY OF OBJECTIVELY-MEASURED SOCIAL INTERACTIONS USING SMARTPHONE TECHNOLOGY Agnete Skovlund Dissing*, Tobias Bornakke, Joergensen Thomas, Alexander Gerds, Naja Hulvejrm Rod, Rikke Lund (Department of Public Health, The University of Copenhagen)

Much research has found that social relations overall are protective against stress and promotes well-being. Less research has focused on whether stress limits the ability to engage in social interactions. However, this relationship is important to investigate in order to identify early life factors that may disadvantage individuals in developing potentially lasting social relations which are beneficial to health and well-being later in life. Survey self-reports of social relations are often used to measure the functional aspects of social relations, but may not be adequate to measure social interaction behaviors. Nevertheless, the increasing smartphone technology available provides a framework for gaining insights into social interaction behavior in great detail. In a group of young adults, we aimed at investigating whether stress experience and stress symptoms influence the development of the social interaction behavior as well as functional aspects of social relations over the course of approximately one year. We use data from the Copenhagen Network Study; a study following college students (N=500) with personalized smartphones and repeated surveys. At baseline, the students responded to the perceived stress questionnaire and stress symptom items. The frequency and the range of social interactions on a monthly basis is derived from smartphone information capturing different aspects of social interactions: face-to-face interactions is measured using Bluetooth scans, and interactions beyond face-to-face is measured with call and text message logs. Functional aspects, i.e. social support and perceived ability to form friendships, are measured with items from The Copenhagen Social Relation Questionnaire and WHO Disability Assessment Schedule. The development of social interactions dependent on stress is modeled with latent growth models adjusting for potential confounders.

“-S/P” indicates work done while a student/postdoc

0470

STATE RECREATIONAL MARIJUANA LAWS AND ADOLESCENT MARIJUANA USE Aaron L. Sarvet*, Magdalena Cerdá, Melanie Wall, Tianshu Feng, Katherine Keyes, John Schulenberg, Patrick O'Malley, Deborah Hasin (University of California, Davis)

In the largest departure from past policy, in 2012, Colorado and Washington became the first two states to legalize recreational use of marijuana. These were followed in 2014 by Alaska and Oregon, and 11 additional states are considering similar legalization. The potential impact of legalization for recreational use on U.S. rates of marijuana use is currently a topic of intense debate. The implications of legalization for adolescent marijuana use are of particular concern. In this study, we examined the relationship between legalization of recreational marijuana use (RML) in Washington and Colorado, and change in adolescent marijuana use. We used data from the Monitoring the Future study, national annual cross-sectional surveys of 8th, 10th, and 12th graders in ~ 400 schools in the 48 contiguous U.S. states (n=168,722 students in 2011-2014). Difference-in-difference estimates and associated tests were conducted comparing the change in last-month marijuana use from two years prior to RML (2011-2012) to two years post-RML (2013-2014) in Washington and Colorado versus the contemporaneous changes in all other 46 contiguous U.S. states. In Colorado, there was no change in the prevalence of past-month marijuana use pre- and post-RML. Washington showed an increase from 13.9% to 17.7% in the prevalence of past-month use, and this 4.5% increase was significantly higher than the trend, which was -0.7% in all other states over the same period (difference-in-difference test $p=.033$). An increase in adolescent marijuana use following legalization suggests the need for investment in adolescent substance use prevention programs in parallel with the enactment of recreational marijuana legalization.

0472-S/P

PREVALENCE, PATTERNS AND CORRELATES OF HEROIN USE IN YOUNG ADULTS Timothy Ihongbe*, Saba Masho (Virginia Commonwealth University)

Introduction The prevalence of heroin use, abuse, and dependence in the US has seen a considerable increase over the past decade, especially among young adults (18-25 years). From 2000 through 2010, young adults reported the highest increase in heroin use initiation and average annual rate of drug poisoning deaths involving heroin. This study aims to determine the prevalence, correlates and patterns of heroin use among US young adults. **Methods** Data come from the 2011-2013 National Surveys on Drug Use and Health. Study population included young adults (N=55,940) who provided valid responses to questions on heroin use. Participants self-reported lifetime, past-year and past-month use of heroin. Chi-square statistics and adjusted odds ratios were estimated using a weighting variable to account for the complex survey design and probability of sampling. **Results** Of the respondents, 18.4 per 1000 (95% CI, 16.8-20.0) used heroin at some time in their lives, and 7.3 per 1000 (95% CI, 6.3-8.3) and 3.3 per 1000 (95% CI, 2.6-4.0) did so in the past year and past month, respectively. Sniffing heroin combined with smoking or injecting heroin was the most common method of heroin use. Majority of young adults reported using heroin in combination with other substances such as alcohol, cigarettes, marijuana, non-medically prescribed opioid pain relievers, cocaine and other stimulants and hallucinogens. Cigarette smokers, users of non-medically prescribed opioid pain relievers, illicit drug users, those with major depressive episodes and those arrested and booked for breaking the law were significantly more likely to report lifetime, past-year and past-month use of heroin. **Conclusion** A considerable proportion of young adults used heroin, were polysubstance users and sniffed heroin in combination with other methods of use. Implementation of a comprehensive response that targets young adults using heroin and addresses key risk factors for heroin use is needed.

0471-S/P

RISK FACTORS FOR NARCOTIC POISONING DEATH FOLLOWING BLUNT TRAUMA INJURY Christina Greene*, Gabriel Ryb, Gordon Smith, Patricia Dischinger (University of Maryland, Baltimore)

Introduction: Due to psychosocial pre-injury risk factors, injury effect and post injury exposure to narcotic analgesics, trauma patients could be at a higher risk of narcotics abuse. The purpose of this study is to identify risk factors within the trauma population that could affect their risk of subsequent mortality due to narcotic poisoning (SMNP). **Methods:** Blunt injury patients older than 18 years discharged alive from a Level I Trauma Center between 7/1995 and 12/2007 were identified in the registry. Date and cause of death were determined using the National Death Index through 12/31/2008. Cases that died during the first 30 days after discharge were excluded. Cox proportional hazard regression was used to identify risk factors (demographic, injury mechanism and type, and blood alcohol level) for SMNP. Alpha level of 0.05 was used for statistical significance. **Results:** Of the 46,035 cases available for analysis, 242 died during the 12 years of follow up (median f/u 5.1 years). Cox proportional hazard modeling revealed a significant increased risk of SMNP for: age 30-44 [1.84 (1.36-2.49)], CT scan + mild TBI [1.59 (1.01-2.49)], Brain concussion with LOC [1.49 (1.12-1.98)], male gender [1.68 (1.20-2.35)] and beatings [2.50 (1.75-3.57)], using age <30, MVCs, females and Caucasians as reference. A lower risk was seen for age 55-64 [0.28 (0.10-0.77)] and age 65+[0.20 (0.06-0.65)]. Moderate and severe TBI, other body region injuries, positive ETOH and ethnicity showed no significant effect. Pedestrian and fall mechanism effects failed to reach significance [1.60(0.98-2.60) and 1.41 (0.98-2.03) respectively]. **Conclusion:** Blunt trauma center patients experience a higher adjusted risk of poisoning death due to narcotics. Risk factors linked with SMNP within the trauma population are: age 30-44, CT scan + mild TBI, brain concussion with LOC, male gender and beating mechanism. These groups should be targeted for preventive interventions.

0473

INDIVIDUAL AND PARTNER-LEVEL FACTORS ASSOCIATED WITH CONDOM NON-USE AMONG AFRICAN AMERICAN STI CLINIC ATTENDEES IN THE DEEP SOUTH: AN EVENT-LEVEL ANALYSIS Brandon Marshall*, Amaya Perez-Bruener, Sarah MacCarthy, Leandro Mena, Philip Chan, Caitlin Towey, Nancy Barnett, Sharon Parker, Arti Barnes, Lauren Brinkley-Rubinstein, Jennifer Rose, Amy Nunn (Brown University)

The US HIV/AIDS epidemic is concentrated in the Deep South, yet factors contributing to HIV transmission are not fully understood. We examined relationships between substance use, sexual partnership characteristics, and condom non-use in an African American sample of STI clinic attendees in Jackson, Mississippi. We assessed condom non-use at last intercourse with up to three recent sexual partners reported by participants between January and June 2011. We constructed two separate models to examine both participant- and partner-level correlates of condom non-use, using generalized estimating equations to account for within-participant correlation. Of 1,295 eligible participants, 37.4% were male, the median age was 23 (IQR: 7), and 91.0% identified as heterosexual. Participants reported 2,880 intercourse events, of which 1,490 (51.7%) involved condom non-use. In the participant-level model, older age (adjusted odds ratio [AOR] = 1.03, 95%CI: 1.01-1.04 per year older), lower educational attainment (AOR = 1.70, 95%CI: 1.27-2.27), and ever having sex under the influence of marijuana (AOR = 1.28, 95%CI: 1.07-1.54) were associated with condom non-use. In the partner-level model, sex with a primary partner (AOR=1.62, 95%CI: 1.32-1.98), higher frequency of sex (in a dose-response manner), and reporting financial or material dependence on a sex partner (AOR=1.61, 95%CI: 1.28-2.02) were associated with increased odds of condomless sex. No measures of drug or alcohol use at last sex were associated with condom non-use in the partner-level multivariable model. Socioeconomic and partnership factors were stronger correlates of condom non-use than event-level drug and alcohol use. HIV prevention efforts in the South should address underlying socioeconomic disparities and structural determinants that produce financial and/or material dependence on sex partners and result in sexual risk behavior.

0474-S/P

DO PEOPLE KNOW IF THEIR STATE LEGALLY APPROVED MEDICAL MARIJUANA? TRENDS ACROSS THE UNITED STATES, 2004-2013 Pia M. Mauro*, Julian Santaella-Tenorio, Christine M. Mauro, June H. Kim, Silvia S. Martins (Department of Epidemiology, Columbia University Mailman School of Public Health)

Background: Though 23 states have passed medical marijuana laws (MMLs) in the United States, knowledge of state MMLs remains understudied. We assessed trends in the public's knowledge of their state's MML status using nationwide data comparing states with and without MML over time. **Methods:** Aggregate state-level estimates of the proportion of people correctly identifying their state's MML status were obtained from the 2004-2013 National Survey of Drug Use and Health. Time-varying indicators for MML status differentiated states before enacting MMLs (e.g., Rhode Island 2004-05) and after enacting MMLs (e.g., Rhode Island 2006-13) from states that never passed MMLs. A generalized linear model accounting for state clustering and robust standard errors (rSE) regressed the proportion correctly identifying their state's MML status on this time varying MML variable, adjusting for early adopter status (i.e., MML before 2004), year, marijuana use rate, and census demographic variables. **Results:** Across years, 75.10% (SE=0.28%) of individuals in states that never passed MML correctly identified MML status. In states that ever passed a MML, 67.91% (SE=1.50%) correctly identified MML status before MML enactment, while only 43.47% (SE=1.82%) correctly identified MML status after MML enactment. Adjusted odds of correct MML identification were lower for states after enacting MML (odds ratio (OR)=0.20, [0.12-0.22]), but not before enacting MML, compared to states that never enacted MML. The odds of correctly identifying MML status increased with each year (OR=1.05, [1.01-1.09]), particularly after 2009 (OR=1.27 [1.10-1.47]). **Conclusions:** Large proportions of people in states with MML did not correctly identify their state's MML status. While higher marijuana use was associated with increased knowledge of MML, early adoption of MML did not significantly increase knowledge of that state's MML status.

0476-S/P

SUBSTANCE USE, CHILDHOOD TRAUMATIC EXPERIENCE, AND COMORBIDITY WITH PSYCHIATRIC PSYCHOPATHOLOGY AMONG 12 YEAR OLDS IN SÃO PAULO, BRAZIL Mariel Rodriguez*, Silvia S. Martins, Zila M. Sanchez, Thiago Fidalgo (Columbia University Mailman School of Public Health & Department of Preventative Medicine, Universidade Federal São Paulo)

Background: Our objective was to examine the association between alcohol and/or tobacco lifetime use among 12 year olds, and its association with internalizing (depression, anxiety, and post-traumatic stress disorder) and externalizing (oppositional defiant disorder, conduct disorder, and attention deficit hyperactivity disorder) disorders and traumatic experiences. **Methods:** Data included a school based stratified sample of 180 adolescents attending public schools in two areas: Vila Mariana (middle-class central area) and Capão Redondo (poor outer-city area). Presence of internalizing/externalizing disorders, alcohol and/or tobacco lifetime use, and childhood trauma were assessed with the Kidie Schedule for Affective Disorders and Schizophrenia (K-SADS) interview. Analyses were controlled by neighborhood, gender, socio-economic status, and parental alcohol and tobacco use status. Estimates were derived via weighted logistic regression models. **Results:** The prevalence of childhood trauma was 39.9%. The prevalence of alcohol/tobacco lifetime use among children with trauma was 63.6%. The prevalence of internalizing disorders among alcohol/tobacco users was 41.7% and 46.7% for externalizing disorders. Having a childhood traumatic experience was significantly associated with the lifetime use of alcohol/tobacco (aOR: 4.35 [1.80-9.90]). Independently, internalizing (aOR: 4.59 [2.06-10.23]) and externalizing disorders (aOR: 8.21 [2.79-24.12]) were significantly associated with alcohol/tobacco use. Children with internalizing disorders, whose parents use alcohol, also had a higher chance of engaging in substance use (aOR: 2.20 [1.01-4.78]). **Conclusion:** Understanding the comorbidity of substance use with psychiatric psychopathology among children in Brazil, as well as parental substance use, will provide schools and public health districts with information to offer support and substance use interventions for both parents and students, as well as to connect them with mental health services.

0475

CHILDHOOD ADVERSITY AND THE OCCURRENCE AND CO-OCCURRENCE OF EARLY ALCOHOL USE AND EARLY SEXUAL ACTIVITY AMONG PUERTO RICAN YOUTH Maria Ramos-Olagastí*, Hector Bird, Glorisa Canino, Cristiane Duarte (Columbia University-NY State Psychiatric Institute)

This study tested the relationship between childhood adversities (CAs) and the occurrence and co-occurrence of early alcohol use (AU) and sexual activity (SA) among Puerto Rican youth. Method: The Boricua Youth Study is an epidemiologic study of Puerto Rican youth in the South Bronx, NY, and in the metropolitan area of Puerto Rico, followed yearly for three years. Youths were ages 11-13 at wave 1 (N=946). CAs were assessed at wave 1. We combined lifetime reports of AU and SA across waves. Results: Nearly 17% of youths engaged in AU only, 11% in SA only, and 18% in both. Youths who engaged in AU and those who engaged in AU plus SA were more likely to have experienced maltreatment and violence exposure. Parental antisocial personality increased the odds of engaging in both behaviors. There was a dose-response association between number of CAs and AU only and AU plus SA. Conclusions: Interventions that address the multiple CAs youths are exposed to may help reduce early AU and SA.

0477-S/P

WHO IS CONSUMING MORE ALCOHOL: A COMPARISON OF TWO COUNTRIES Diana Carolina, Sanchez Ramirez*, Diana Richard, Franklin Peter Leggat, Don Voaklander (Injury Prevention Centre. School of Public Health. University of Alberta. Edmonton. Canada)

Background: Alcohol places a significant burden on the population worldwide. Studies comparing the use of alcohol between countries mostly describe the size of the problem but do not further explore the sociodemographic factors associated with it. Objectives: To compare alcohol use and relative alcohol risk between the populations of Alberta and Queensland, and to explore the sociodemographic characteristics associated with alcohol risk. **Methods:** Data from 2500 participants of the 2013 Alberta Survey and the 2013 Queensland Social Survey was analyzed. Patterns of alcohol consumption were assessed using the Alcohol use Disorder Identification Test (AUDIT) (WHO). Regression analyses were used to explore the association between alcohol risk and sociodemographic characteristics. **Results:** A similar percentage of Albertans and Queenslanders reported alcohol consumption during the past month (p=0.052). However, Queenslanders reported having alcohol during more days (p<0.001), when drinking, drank more alcoholic beverages on average (p<0.001) and were more likely to have 6 or more drinks per occasion (p<0.001) compared with Albertans. Consequently, Queenslanders have a greater alcohol risk than Albertans (p<0.001). In both, Albertans and Queenslanders, greater alcohol risk was associated with ages between 18 and 24 years and higher income. Having no religion, living alone and being born in Canada were also associated with alcohol risk in Albertans; while in Queenslanders alcohol risk was also associated with common-law marital status. **Conclusion:** Our results allow to identify the sociodemographic profiles of Albertans and Queenslanders at greater alcohol risk. This represents a valuable source of information for local health authorities and policymakers when designing preventive strategies to target alcohol use. The present study highlights the importance of analyzing patterns of alcohol consumption and the sociodemographic factors associated with it in specific contexts.

0478

CLINICAL TRIAL ENROLLEES WHO USE DRUGS ARE NO DIFFERENT IN ATTITUDES TOWARDS OR RATES OF ENROLLMENT IN RESEARCH

Catherine Woodstock Striley*, Amy Elliott, Abigail Zulich, Evan Kwiatkowski, Linda B., Cottler (University of Florida)

Purpose: There are documented differential rates of research participation by drug use, even in studies primarily enrolling populations with alcohol, drug and mental health problems. In a study that focused on advancing recruitment and enrollment science, we considered differences in 90 day enrollment and attitudes towards research between those who endorsed current drug use versus no current drug use. **Methods:** The Transformative Approach to Reduce Research Disparities Towards Drug Users tested an intervention that randomized drug users and non-drug users to individualized study matching and navigating through HealthStreet, the UF community engagement program, or with an added personalized “ambassador” model with transportation, information and support to give opportunities to participate in research throughout the university. The study team kept a record of participants’ enrollments. A 90 day follow-up interview included attitudes towards research. Here, we compare drug users’ rates of enrollment and attitudes towards research at 90 days. **Results:** In this sample of 614 18 to 85 year old community recruited adults, we recruited roughly half (51%) that currently used drugs. At 90 days, 76% of respondents answered questions about their attitudes towards research. No differences by drug use were seen at 90 days in attitudes except that at 90 days drug users were significantly more likely to endorse the likelihood of learning how to change some behaviors through research (DUs 64.5% vs. NDUs 52.0%, $p=0.0063$). Rate of enrolling in studies did not differ by drug use. **Conclusions:** Enrollment in and attitudes towards research after 90 days did not vary by drug use. Drug users can be successfully enrolled in a variety of research projects.

0480-S/P

MARIJUANA USE AND WEIGHT STATUS AMONG ADOLESCENTS

Denise Vidot* (University of Miami)

Aim: To determine the relationship between current marijuana use and 1) perceived weight status and 2) overweight/obesity among 12-to-18-year-olds. **Methods:** A sample (N=5,305) of 12-to-18-year-olds who completed the 2013 Youth Risk Behavior Survey in Florida were analyzed. Current marijuana use was dichotomized based on self-report of last 30-day use. Actual weight status was based on age-, sex-specific body mass index (BMI) percentiles. Those who were > 85th BMI percentile were categorized as overweight; those > 95th BMI percentile were obese. Those < 85th BMI percentile were the reference group. Perceived weight status, analyzed via Chi Square test, was based on self-report of underweight, about the right weight, and overweight. Logistic regression models adjusted for age, gender, race/ethnicity, and academic performance were fitted to assess relationships between current marijuana use and actual weight status. **Results:** About 22% reported current marijuana use and 29% perceived themselves to be overweight. Based on BMI percentile, 15% were overweight and 12% were obese. There were no differences in the prevalence of overweight (21.8% vs 21.8%) nor obesity (22.7% vs 21.7%) among current marijuana users compared to non-users ($p=0.99$, 0.63, respectively). There were also no significant differences in perceived weight status among current marijuana users compared to non-users ($p=0.86$). Logistic regression showed no statistical differences in the odds of being overweight (adjusted odds ratio [AOR]: 0.97, 95% confidence interval [CI]: 0.80-1.18) nor obese (AOR: 0.86, 95% CI: 0.66-1.13) in current marijuana users and their never user peers. **Conclusions:** This cross-sectional study provides a preliminary assessment of perceived and actual weight status among Florida adolescents who engage in current marijuana use. Further studies should take factors into account that may distort the relationship between marijuana use and overweight/obesity among adolescents. Character count (w/s) = 1,989

0479

AWARENESS AND USE OF ELECTRONIC CIGARETTES INCLUDING HEAT-NOT-BURN TOBACCO PRODUCTS IN JAPAN

Takahiro Tabuchi*, Kosuke Kiyohara, Takahiro Hoshino Kanae Bekki, Yohei Inaba, Naoki Kunugita (Osaka Medical Center for Cancer and Cardiovascular Diseases)

Aims: In addition to traditional electronic cigarettes (e-cigarettes), new heat-not-burn tobacco products Ploom and iQOS have recently begun to be sold by tobacco companies. These products are differently regulated in Japan, depending on whether the contents are liquid or leaf. Our objective was to estimate percentages of awareness and use of e-cigarettes including heat-not-burn tobacco products among the Japanese population, including minors. **Design and Setting:** An internet survey (randomly sampled research agency panelists) with a nationally-representative sample in Japan. **Participants:** 8,240 respondents aged 15-69 years in 2015. **Measurements:** Adjusted percentages of awareness and use of e-cigarettes (nicotine or non-nicotine e-cigarettes and heat-not-burn products) among total participants; product types and the percentages ever used among e-cigarettes ever-users. **Findings:** 48% (95% confidence interval: 47-49) of respondents in Japan were aware of e-cigarettes, 6.6% (6.1-7.1) had ever used, 1.3% (1.0-1.5) had used in the last 30 days, and 1.3% (1.1-1.6) had experience of >50 sessions of ever use. 72% (95% confidence interval: 69-76) of ever users used non-nicotine e-cigarettes, while 33% (30-37) of them used nicotine e-cigarettes, which has the majority share worldwide. 7.8% (5.5-10.0) and 8.4% (6.1-10.7) of them used new device Ploom and iQOS, respectively, with a relatively higher percentage among the younger population. **Conclusions:** Approximately half the respondents were aware of e-cigarettes, 6.6% had ever used. More than 70% of ever-users used non-nicotine e-cigarettes, and 33% of them used nicotine e-cigarettes. 3.5% of never smoking men and 1.3% of never smoking women had ever used e-cigarettes. Corresponding figures for use in the last 30 days were 0.6% and 0.3%, predominantly non-nicotine e-cigarettes.

0481-S/P

REDUCTION IN ALCOHOL, TOBACCO, AND ILLICIT DRUG USE DURING CHILDBEARING YEARS IN THE USA: A COMPARISON OF PREGNANT AND NON-PREGNANT WOMEN

Sara Watchko*, Qiana Brown, Silvia Martins (Department of Epidemiology, Columbia University Mailman School of Public Health, New York, NY, USA)

Background: Alcohol, tobacco, and other drug (ATOD) use vary by pregnancy status, with pregnant women being less likely than non-pregnant women to use substances. However, some pregnant women still use substances during pregnancy. Age of first use for ATOD is an understudied factor that may be related to reductions in substance use among pregnant women. **Study Aims:** To explore the relationship between pregnancy status and reductions in substance use, controlling for age of first use; to replicate research describing substance use trends comparing pregnant and non-pregnant women using a nationally representative dataset. **Methods:** Females ages 12-44 (n=121,372) were sampled from 5 years (2009-2013) of the U.S. National Survey on Drug Use and Health. After descriptive analyses, logistic regression models accounting for the complex survey design tested whether the odds of ATOD use were lower for pregnant than non-pregnant women, controlling for age, race, income, health insurance, and covariates related to substance use. **Results:** 44% of pregnant women and 18% of non-pregnant women reduced their cigarette use in the past year (controlling for covariates, adjusted odds ratio [aOR]=5.90; 95% confidence interval [CI]=4.62, 7.53). 84% of pregnant women and 24% of non-pregnant women reduced their alcohol use in the past year (aOR= 24.39; 95% CI = 20.45, 29.09). 68% of pregnant women and 46% of non-pregnant women reduced their illicit drug use in the past year (aOR=2.95; 95% CI=2.39, 3.64). Compared to non-pregnant women, pregnant women showed greater reductions in illicit drug use ($p < 0.001$), alcohol use ($p < 0.001$), and cigarette use ($p < 0.001$) within the past year, controlling for age of first use for alcohol, cigarettes, and illicit drugs, and other covariates. **Conclusion:** Pregnant women tended to reduce ATOD use more than non-pregnant women. The pattern of substance use reduction remained statistically significant when adjusting for covariates, including age of first use.

0490-S/P

GENETICALLY PREDICTED 17BETA-ESTRADIOL, COGNITIVE FUNCTION AND DEPRESSIVE SYMPTOMS IN WOMEN: A MENDELIAN RANDOMIZATION IN THE GUANGZHOU BIOBANK COHORT STUDY Shiu Lun Au Yeung*, Chaoqiang Jiang, Kar Keung, Cheng Weisen, Zhang Tai Hing Lam, Gabriel Matthew Leung, C Mary Schooling (School of Public Health, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR, China)

Introduction: The role of estrogen in cognitive function and depressive symptoms remains controversial despite the discrepancies between randomized controlled trials (RCT) and observational studies. Mendelian randomization analysis may provide further insights concerning the role of estrogen in these outcomes as it assesses the effect of lifelong endogenous exposure but is less vulnerable to confounding than observational studies. **Method:** A previously derived genetic prediction rule (allele score), based on ESR1 (rs2175898) and CYP19A1 (rs1008805), was used to obtain the genetically predicted 17 -estradiol. Linear regression was used to examine the association of allele score with cognitive function and depressive symptoms among 3,086 older (50+ years) Chinese women from the Guangzhou Biobank Cohort Study recruited from 2003 to 2008 and followed up till 31 December, 2012. From these information, the causal estimates of 17 -estradiol on cognitive function and depressive symptoms were derived using Wald estimation. **Results:** Genetically predicted 17 -estradiol was not associated with delayed 10-word recall (0.42 words per log increase in 17 -estradiol (pmol/L), 95% confidence interval (CI) -0.49 to 1.34) MMSE (0.39 per log increase in 17 -estradiol (pmol/L), 95% CI -0.87 to 1.65) or GDS (0.24 per log increase in 17 -estradiol (pmol/L), 95% CI -0.57 to 1.05). **Conclusion:** These results were largely consistent with evidence from RCTs and did not show any beneficial effect of estrogen on cognitive function and depressive symptoms. However, larger Mendelian randomization analyses are needed to identify any minor effects.

0492-S/P

SUPERVISED VERSUS UNSUPERVISED PELVIC FLOOR MUSCLE TRAINING FOR THE PROMOTION OF URINARY CONTINENCE DURING PREGNANCY: A PRAGMATIC RANDOMIZED CLINICAL TRIAL João Marcos Bernardes*, Liamara Cavalcante, Assis Ana Carolina Monteiro, Santini Luana Schneider, Vianna Adriano Dias (Department of Public Health, Botucatu Medical School/UNESP, Botucatu, Brazil)

Pregnancy or the postnatal period may be the first time many women experience urinary incontinence. Approximately 38% to 61% of primigravida will develop urinary incontinence during their pregnancy. Pelvic floor muscle training is currently considered to be the first-line treatment for urinary incontinence. It has been suggested that treatment effect will be enhanced if the pelvic floor muscle training program is supervised by a health care professional. However, the few studies on supervised and unsupervised exercise regimes for treating urinary incontinence have shown controversial results. Therefore, this study aimed to compare the therapeutic outcomes of an illustrated home exercise guide targeting the pelvic floor muscles in promoting urinary continence during pregnancy with or without the supervision of a physiotherapist. A randomized clinical trial was performed with 87 primigravidae, evaluated six times during pregnancy and divided into three groups: Gsup, supervised; Gobs, not supervised; and Gcon, did not perform the exercises. A miction diary and perineometry were used to evaluate urinary incontinence (primary outcome) and pelvic floor muscle strength (secondary outcome), respectively. Statistical analysis was conducted by Kruskal-Wallis test with post hoc Dunn's for continuous variables and chi-square and Z tests with Bonferroni correction for proportions. At the end of the study, 6.9% of Gsup and Gobs participants had urinary incontinence, while 96.6% of Gcon women were incontinent. Regarding pelvic floor muscle function, Gsup and Gobs had mean contractions of 10 and 8.9 cmH₂O, respectively, while Gcon had a value of 4.7 cmH₂O. Differences between treated groups and the control group were significant; however there was no significant difference between Gsup and Gobs regarding both outcomes. These results imply that both supervised and unsupervised pelvic floor muscle training may be beneficial for the promotion of urinary continence during pregnancy.

0491

THE SOCIOECONOMIC STATUS CAN AFFECT PREGNANCY OUTCOMES, PRENATAL CARE UTILIZATION AND MATERNAL COMPLICATIONS Jin Yong Lee*, Sunghee Bae, Seung Mi Lee, Sang Hyung Lee, Hyun Joo Kim, Jin Yong Lee (Public Health Medical Service, Seoul National University Boramae Medical Center)

Background There have been controversies as to whether the adverse pregnancy outcome is derived from their deprived socioeconomic status. The purpose of this study was to investigate the socioeconomic status affecting on pregnancy outcomes, prenatal care utilization and maternal complications. **Methods** Based on the National Health Insurance database in Korea, we selected women who terminated pregnancy from January 1, 2010 to December 31, 2010. We divided total subjects into the Medical Aid (MA) recipient and the National Health Insurance (NHI) beneficiary, reflecting the indicator of socioeconomic status. Pregnancy outcomes, prenatal care utilization, and maternal complications are viewed to be a consequence of socioeconomic disparities by comparing MA recipients with NHI beneficiaries. Abortion, type of delivery, and maternal complications were defined based on the International Classification of Diseases-10th Revision. **Results** The rate of abortion among MA group was 30.1% in 2010. At the same time, the respective rate was 20.7% for NHI group. Furthermore, 29.4% of MA recipients received less than 4 times of prenatal care, compared to 11.4% in NHI beneficiary. About 7.2% of mothers in MA group had never received prenatal care before giving a birth. Finally, mothers who fall into lower income group also appear to higher rate of maternal complications. **Conclusions** Women in MA recipient group have been exposed to greater risk of prenatal care and preterm delivery. The findings through this study show that unfavorable economic conditions intimately connected with the adverse pregnancy outcomes. Therefore, the social interventions should aim at more in-depth and distal determinants of health.

0493

STRESSFUL LIFE EVENTS AROUND THE TIME OF UNINTENDED PREGNANCY AND WOMEN'S HEALTH: FINDINGS FROM A U.S. NATIONAL PROBABILITY SAMPLE Kelli Hall*, Vanessa Dalton, Melissa Zochowski, Timothy Johnson, Lisa Harris (Emory University School of Public Health)

Objective: Adverse social circumstances around the time of unintended pregnancy, a potentially unique stressful life event (SLE), could impact women's trajectories of stress and stress-induced health sequelae. We explored associations between SLEs around the time of unintended pregnancy and a range of physical and mental health outcomes among a population-based sample of women in the U.S. **Methods:** Data were drawn from a random national probability sample of 1,078 U.S. women aged 18-55 participating in The Women's Health Care Experiences and Preferences Study. Our internet survey was designed to assess different dimensions of health and wellbeing across the reproductive life course and included items measuring reproductive histories, 14 SLEs occurring around the time of unintended pregnancy, chronic disease (CD) and mental health (MH) conditions, and current health and wellbeing (standardized perceived health, depression, stress, and discrimination scales). We used multivariable logistic and linear regression to examine associations between SLE scores and health outcomes, adjusting for covariates. **Results:** Among ever-pregnant women (N=695), SLEs around the time of pregnancy were associated with all adverse health outcomes in unadjusted analyses. In adjusted models, higher SLE scores were positively associated with CD (aOR 1.21, 95%CI 1.03-1.41) and MH (aOR 1.42, CI 1.23-1.64) conditions, higher depression (B .37, CI .19-.55), stress (B .32, CI .22-.42), and discrimination (B .74, CI .45-1.04) scores, and negatively associated with very good perceived health (aOR .84, CI .73-.97). SLE effects were strongest for emotional and partner-related sub-scores. **Conclusion:** SLEs around the time of unintended pregnancy were associated with adverse women's health outcomes. Findings have implications for more holistic public health interventions and integrated models of care that situate reproductive health within a broader context of women's health, wellbeing, and social context.

0494-S/P

RISK FACTORS FOR SEXUAL INACTIVITY AND FEMALE SEXUAL DYSFUNCTION IN AN UNSELECTED SAMPLE OF MIDDLE AGED WOMEN Katrina Kezios*, Bruce Link, Barbara Cohn, Pierra Cirillo, Pam Factor-Litvak (Mailman School of Public Health, Columbia University)

Female sexual dysfunction (FSD) is an understudied yet prevalent women's health issue impacting quality of life. In a cross sectional study of 248 women aged 46-52 we describe the prevalence of and risk factors for FSD. Participants are offspring from the Child Health and Development Studies birth cohort originally recruited 1959 to 1967 in California. To assess FSD we used a modification (Meyer-Bahlburg and Dolezal) of the Female Sexual Function Index (FSFI). In our sample, 32% reported no sexual activity in the past month. Among sexually active women, mean FSFI score was 27.2 (sd 5.9; range 8.4 to 36); scores of ≤ 26.55 were considered at risk for FSD. Logistic regression was used to identify predictors of both sexual inactivity and FSD. Compared to sexually active women, sexually inactive women were more likely to report not living with a partner and being in fair/poor health; these women also scored lower on the FSFI-desire domain, had higher BMIs, slept fewer hours, had lower parity, and were less physically active (all $p < 0.05$). Among those sexually active, 65 (39%) had FSFI scores ≤ 26.55 . Risk factors for FSD included not living with a partner (v. living with a partner), not menstruating (v. still menstruating), no lifetime alcohol use (v. ever consumed alcohol), and lower desire scores. Age, race, religion, parity, employment, education, self-rated health, physical activity, BMI, and depression did not predict FSD in our sample. In a multivariable model including variables identified above, adjusted ORs (95% CIs) for partner status, menstruation, lifetime alcohol consumption, and desire scores were 3.8 (1.3, 11), 2.1 (0.9, 5.1), 3.1 (1.2, 8.5) and 0.2 (0.1, 0.3), respectively. Of note, among those living with a partner, feeling very emotionally close to their partner (v. quite or not close) was protective against FSD (adjusted OR 0.1 95% CI: 0.03, 0.31). In an unselected sample of women we identified important risk factors for both FSD and sexual inactivity.

0496-S/P

VAGINAL DOUCHING IN A COHORT OF YOUNG, AFRICAN AMERICAN WOMEN Helen B. Chin*, Kristen Upson Donna Baird (National Institute of Environmental Health Sciences, NIH)

Background: Vaginal douching is associated with several adverse health outcomes, including bacterial vaginosis, pelvic inflammatory disease, ectopic pregnancy, and preterm birth. Despite these risks, vaginal douching continues to be practiced in the United States, particularly among African American women. **Objective:** The purpose of the present descriptive study was to evaluate the prevalence of current and past douching among a young cohort of African American women as well as to describe douching practices, including the age at which women first douche, the frequency of douching, reasons for douching, and solutions used. **Methods:** We used data from an ongoing prospective cohort study of 1,696 African American women ages 23-34 years in Detroit, MI who provided extensive data at enrollment, including information on douching practices by web-interview. Results: We observed that 43% of women reported ever douching more than 10 times in their lifetime and that 48% started douching in adolescence (before age 18). For the 31% of women in this cohort who continue to douche at least once a year, 38% douche frequently (35% douche 1-3 times per month and 3% douching weekly or more frequently) and most commonly douche after menses (91%), to reduce vaginal odor (51%), and/or after sexual intercourse (38%); 30% exclusively douche after menses. The most frequent douching solution used is water and vinegar (78%), followed by an unscented commercial product (34%) and a commercial product with fragrance (30%); 31% exclusively use a water and vinegar solution. The reasons and solutions used for douching are similar for those who have douched in the past. **Conclusion:** Although vaginal douching is associated with a range of adverse health outcomes, we observed that a substantial percentage of young women continue to douche. Further research is warranted to understand women's belief systems regarding douching to guide interventions to reduce this practice.

0495

POLYFLUOROALKYL SUBSTANCES AND ENDOMETRIOSIS IN US WOMEN IN NHANES (2003-2006) Anna Pollack*, Stephanie Campbell, Masooma Raza (George Mason University)

Exposure to endocrine-active polyfluoroalkyl compounds (PFASs) is nearly ubiquitous, but data on the association between PFASs and endometriosis diagnosis are extremely limited. A sample of 832 reproductive-aged women from the National Health and Nutrition Examination Survey, from the 2003-2004 and 2005-2006 cycles were selected. Eleven serum PFAS metabolite levels were measured and endometriosis status was determined by self-report of doctor diagnosis. Levels were above the limit of detection for $>80\%$ of values for four of the metabolites: perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS), Perfluorohexane sulfonic acid (PFHS) and Perfluorononanoic acid (PFNA) and analysis was restricted to these metabolites. Demographic characteristics were compared by endometriosis status. Weighted survey sampling logistic regression was used to evaluate the association between log-transformed serum PFAS level with endometriosis status. Quartiles of PFAS exposure were also examined. Women reporting a diagnosis of endometriosis were older, had a greater poverty income ratio, higher levels of cotinine, more likely to be non-Hispanic white, compared to those who did not report physician-diagnosed endometriosis. PFNA, PFOA and PFOS were suggestive of an association with self-report of physician-diagnosed endometriosis (odds ratios and 95% confidence intervals 1.42 (1.01-2.01), 1.61 (0.98-2.64) and 1.57 (0.99-2.48), respectively). Endometriosis was not statistically significantly associated with PFAS levels after adjustment for age, body mass index, race, and smoking status as adjustment for relevant confounding factors weakened the association. Despite limitations relating to reliance of self-report of endometriosis diagnosis, these findings are nationally-representative and support the only other available study of PFASs and endometriosis, which suggest that PFOA and PFOS may be of interest in future studies.

0497

WHY WOMEN FALL: SEX-SPECIFIC CORRELATES OF FALLING AMONG ADULTS IN THE UNITED STATES Kelly Ylitalo*, Carrie Karvonen-Gutierrez (Baylor University)

Objective: Falls are an important public health concern because they are associated with loss of independence and disability particularly among women; however, falls are underappreciated among non-elderly populations. The objective of this study is to examine the prevalence of injurious falls among adults, and determine the correlates of falling by age and gender. **Methods:** We utilized data from the 2014 Behavioral Risk Factor Surveillance System, a nationally representative sample of noninstitutionalized adults in the United States. Adults aged ≥ 45 years ($n=342,420$) self-reported falls and injuries from falls during the previous 12 months. We evaluated the prevalence and correlates of injurious falls (any vs. none) stratified by age and gender. Prevalence rates with robust standard errors and weighted multivariate logistic regression were used to evaluate potential sociodemographic, medical, and behavioral correlates of falling. **Results:** The prevalence of injurious falls differed by age and gender: 13.7% of mid-life women aged 45-64 years, 8.8% of mid-life men, 12.2% of older women aged 65-79 years, and 8.1% of older men reported an injurious fall during the previous 12 months. Among mid-life women, obesity was associated with injurious falls (OR=1.20; 95% CI: 1.08, 1.33), but obesity was not associated with falling in any other age-gender group. Mid-life and older women who are formerly married (e.g., currently widowed, divorced, or separated) were significantly more likely to report an injurious fall compared to currently married women, but marital status was not associated with falling among men. **Conclusion:** Mid-life women are at high risk for falls. Targeting this age group for fall and injury prevention is an important aim for practitioners, particularly given unique correlates of falling for this group. Additional research is needed to understand the link between obesity, social support, and falling among women.

0498

IMPACT OF FAMILY PLANNING POLICY ON THE INDUCED ABORTION IN CHINA: TREND ANALYSIS FROM 1979 TO 2013

Wei-Hong Longmei Zhang Tang*, Dianwu Liu, Marleen Temmerman
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Objectives In China, Family Planning (FP) policy has implemented since 1979 for birth control. Induced abortion is legal and available on request for women and is a commonly used way to end an unplanned or unintended pregnancy. The annual number of abortion was recently reported between 6 to 9 million. The abortion data is needed to monitor progress toward improvement of maternal health and access to family planning services. This study assesses trend in the number of induced abortion in China from 1979 to 2012. **Methods** The numbers of induced abortion were obtained from 'Health Statistical Yearbook of China (2013)'. The FP policy was referenced by 'State Council Gazette of the People's Republic of China' and 'Review of Population and Family Planning Event of China'. All the data was included in analyzing the tendency, while only the data after 1990 was used to forecast. Dynamic series analysis was used to analyze both tendency and forecast, ARMA (1,1) and GM (1,1) were used to forecast. **Findings** The growth ratio of abortion were varied from -38.14% to 45.73%. The number began to increase after the implementation of one-child policy in 1979, and reached its highest level in the early 1980s until beginning of 1990s, the period when the PF policy was strictly executed. Using three forecast methods, the predict value of IA number at 2013 might be 6,456,978, 6,833,985 and 6,346,910, respectively. ARMA(1,1) was most accurate among three models judging by relative error and R-square, but the forecasting result was highest of three methods. And considering the 'two-child policy for only-child parent' beginning from 2013, the IA number might be lower than 6,833,985. **Interpretation** FP policy in China has an impact on induced abortion. Reproductive health is a right for all that includes the right of access to safe, effective, affordable and acceptable methods of FP to avoid unintended or unplanned pregnancy

0501-S/P

DOUBLY-ROBUST ESTIMATION OF THE EFFECT OF A CONDITIONAL CASH PROGRAM ON INFANT GROWTH

Jeremy Labrecque*, Aluísio Barros, Richard MacLehose, Erin Strumpf, Jay Kaufman (Department of Epidemiology, Biostatistics and Occupational Health, McGill University)

Objective: Evidence for the impact of conditional cash transfers (CCT), programs that give money to poor families who meet specific health or educational conditions, remains weak. We examine the impact of Bolsa Família (BF), the Brazilian CCT, on child growth to 24 months. **Methods:** We used data from the 2004 Pelotas birth cohort and the Brazilian government. Exposure was categorized into 3 groups by the amount of money families received from BF in the first 2 years of their child's life: 0 Brazilian Reals (R\$), R\$0 to R\$1000 (low exposure) and greater than R\$1000 (high exposure). We employed a doubly-robust estimator, targeted maximum likelihood estimation (TMLE), to estimate the effect of BF on child height at 24 months because the exposure and outcome models involve different types of mechanisms (social and biological respectively). We included a wide variety of confounders including birth length and weight, mother's height, socioeconomic factors and parental behaviors. A sensitivity analysis proposed was used to determine the properties of a binary, uncontrolled confounder (U) that would render the estimates null. **Results:** Of the 2944 infants in the study, 30% received BF within 2 years of birth. Low exposure reduced child growth by 0.42cm (95% CI: 0.24, 0.60) and high exposure reduced child growth by 0.63cm (95% CI: 0.48, 0.78) relative to children from families not receiving BF. The results were robust to uncontrolled confounding. If U was twice as common among the exposed, children with U would need to be 1.3cm taller in order to render the result null among the high exposure group. A difference of 1.3cm is similar in magnitude to the effect of smoking during pregnancy. **Conclusions:** For children of this cohort, BF appears to have a negative effect on child height. An unmeasured confounder would require an unrealistically strong relationship with both the exposure and outcome in order to render these results null or change the sign to show a benefit.

0503-S/P

12 YEAR CHANGES IN CARDIOVASCULAR DISEASE RISK IN RURAL GUATEMALAN ADULTS: PRELIMINARY FINDINGS FROM THE META STUDY

Nicole Ford*, Manuel Ramirez-Zea, Reynaldo Martorell, Aryeh Stein (Nutrition and Health Sciences, Laney Graduate School, Emory University)

Objective: Cardiovascular disease (CVD) accounts for 34% of all deaths in Latin America. The number of deaths attributable to CVD in Latin America is expected to increase by 60% from 2000 to 2020 (as compared to 5% in developed countries). We explored 12-year changes in CVD risk factors in a cohort of rural Guatemalan adults. **Methods:** Study participants (113 men; 227 women) were born in El Progreso, Guatemala from 1962-1977. Cardiometabolic risk was assessed in 2002-3 (at age 25 – 43 y) and 2015 (at age 37 – 52 y). Obesity was defined as body mass index ≥ 30 kg/m². Metabolic syndrome was defined according to 2005 NCEP ATP III diagnostic criteria based on abdominal obesity, glucose, triglycerides, high density lipoprotein cholesterol, and blood pressure. Diabetes was defined by self-report, fasting blood glucose ≥ 126 mg/dL and/or use of diabetes medication. We calculated risk factor prevalence in each year and change over 12 years and made race/ethnic, sex, and age-specific comparisons to Hispanic Americans in the United States, using NHANES data from 2001-04 and 2009-12. **Results:** In 2002-03, 6% of men and 27% of women were obese, 15% of men and 34% of women had metabolic syndrome, and <2% had diabetes. By 2015, the prevalence of obesity had increased to 12% (men) and 41% (women), of metabolic syndrome to 42% (men) and 81% (women) and of diabetes to 7% (men) and 15% (women). Both men and women showed higher prevalence of CVD risk factors at baseline and larger 12-year changes than did age- and sex- matched Hispanic Americans. **Conclusion:** The cohort has a higher burden of CVD risk than does a sample of Hispanic Americans. While women had significantly higher prevalence of most risk factors at both time points, both sexes had substantial 12-year increases in the prevalence of these risk factors. While these results are preliminary since data collection is ongoing, they suggest a strong need for risk factor management in this population.

0502-S/P

ASSESSING THE RELATIONSHIP BETWEEN PSYCHOSOCIAL STRESSORS AND PSYCHIATRIC RESILIENCE AMONG CHILEAN DISASTER SURVIVORS

Cristina Fernandez*, Brandon Marshall, Robert Kohn, Karestan Koenen, Kristopher Arheart, Sandra Saldivia, Benjamin Vicente, Stephen Buka (Department of Epidemiology, Brown University School of Public Health)

Objective: The current study tested the applicability of the Inoculation Hypothesis for psychiatric resilience. To do so, we assessed whether a history of stressful life events protected against developing depression and PTSD after a major natural disaster. **Methods:** Analyses utilized data from a population-based, 5-wave, prospective cohort study (years 2003-2011; N=1,708). At baseline, participants completed the Composite International Diagnostic Interview (CIDI), a comprehensive psychiatric diagnostic instrument, and the List of Threatening Experiences (LTE), a 12-item questionnaire used to measure major categories of stressful life events (from the prior 6 months). In the midst of the study (2010), the 6th most powerful earthquake on record struck Chile. One year later, a modified version of the PTSD module of the CIDI and the Patient Health Questionnaire-9 were administered to assess post-disaster PTSD and depression, respectively. **Results:** Marginal structural logistic regression models with inverse probability censoring and exposure weights indicated that, for every one unit increase in the prevalence of LTE pre-disaster stressors, the odds of developing post-disaster PTSD and depression significantly increased by 21% (OR=1.21; 95% CI=1.08-1.37) and 16% (OR=1.16; 95% CI=1.06-1.27), respectively. When categorizing LTE pre-disaster stressors (0, 1, 2, 3, or 4+), individuals who experienced 4+ stressors (vs. 0 stressors) had significantly higher odds of developing post-disaster PTSD (OR=2.80; 95% CI=1.54-5.09), and a dose-response relationship between LTE pre-disaster stressors and post-disaster depression risk was found. **Conclusions:** In contrast to the Inoculation Hypothesis, results indicated that experiencing multiple stressors increased the vulnerability to developing a mental illness. This is the first study to demonstrate prospectively that pre-disaster stressors are associated with PTSD and depression following a major natural disaster.

0504-S/P

EFFECT OF CORRECTING FOR GESTATIONAL AGE AT BIRTH ON THE RISK OF STUNTING AMONG CHILDREN BORN PRETERM IN PELOTAS, BRAZIL

Nandita Perumal*, Diego Bassani, Johnna Perdrizet, Alicia Matijasevich, Ina Santos, Daniel Roth (Dalla Lana School of Public Health, University of Toronto; Centre for Global Child Health, Hospital for Sick Children)

Children born preterm (CBP; <37 wk gestational age at birth) may be at greater risk of postnatal linear growth faltering compared to term-born children (TBC), due to relative physiological immaturity. In cohorts that include both CBP and TBC, the application of population-based growth standards to CBP using chronological postnatal age (PNA) can lead to outcome identification bias due to misalignment of biological age with the PNA scale. We aimed to compare gestational age corrected age (CA) versus PNA for CBP in the application of World Health Organization and Intergrowth-21st standards to estimate the prevalence of stunting (length-for-age z score <-2 SD) at birth and 3, 12, 24, and 48 months of postnatal age in the 2004 Pelotas (Brazil) Birth Cohort study. We also compared the relative odds and population attributable risk (PAR) of stunting among CBP vs TBC using CA vs PNA. The overall prevalence of stunting was lower using CA vs PNA at birth [(n=4066), 1.3% vs 11.6%, P<0.001] and 3 months of age [5.1% vs 7.8%, P<0.001], but the difference was attenuated by 1 year of age [5.0% vs 5.8%, P<0.001]. The relative odds of stunting among CBP (vs TBC) were substantially attenuated when using CA vs PNA at birth [OR (95%CI): 1.22 (0.9, 1.7) vs 14.7 (11.7, 18.4)] and 3 months [1.48 (0.99, 2.2) vs 9.45 (7.3, 12.2)]. At 12-, 24- and 48-month visits, preterm birth significantly increased the odds of stunting, but the effect was attenuated using CA vs PNA. The PAR of stunting at 3 and 12 months (due to preterm birth) was 5% using CA (vs 38% using PNA) and 6% (vs 19%), respectively. Previous population-based estimates of the burden of stunting among CBP may partially reflect relative smallness for chronological age rather than a biologically meaningful increase in the risk of undernutrition compared to TBC, particularly in early infancy. CA should be used in the application of growth standards to CBP to obtain valid estimates of nutritional status in infancy.

0510

RECURRENT EVENT CONDITIONS: WHAT DOES “RECOVERY FROM AN EVENT” MEAN? Ian Shrier*, Meng Zhao, Alexandre Piche, Pavel Slavchev, Russell J. Steele (Centre for Clinical Epidemiology, Lady Davis Institute, Jewish General Hospital, McGill University)

Many dichotomous outcomes of interest for medical conditions (e.g. hospitalization, injury) can occur on multiple occasions in the same patient. Analyses that are restricted to the first event ignore important information that helps inform on the morbidity and consequences of the condition under study. There are four general ways to conceptualize the pattern of risk and recovery over time when multiple events can occur: homogenous Poisson, non-homogeneous Poisson, renewal and trend-renewal processes. The differences between these are captured in the “intensity” (the recurrent event equivalent of the hazard in time-to-first-event analysis). A Poisson process is characterized by an intensity that is unaffected by the occurrence of events. It is described as homogeneous if the intensity is a constant value over time and recovery means returning completely to baseline. It is non-homogeneous if the intensity can vary over time, where recovery means returning to the level of risk immediately prior to an event. The renewal process is characterized by an intensity that is affected by the occurrence of events and can vary over time. Recovery is returning to baseline after an event, and the patterns of risk between events are identical. In the trend-renewal process, risk also returns to baseline but the pattern of risk over time changes after each event. We illustrate why and how this might occur using concrete examples. We also show that identification of which type of recovery best represents the data requires graphing both the hazard function over time (intensity) and the cumulative distribution function. For each of these, one may model the risks using hazard functions or accelerated failure time; the graphical analyses help inform which model is most appropriate.

0512

HOW SIMILAR ARE SURVEY RESPONDENTS AND THE GENERAL POPULATION? USING RECORD-LINKED DEATH RECORDS TO COMPARE MORTALITY Katherine Keyes*, Caroline Rutherford, Silvia Martins, Frank Popham, Lindsay Gray (Columbia University)

Studies designed to be nationally representative are used to regularly monitor the health of the US population. The validity of inference can be threatened by the extent that individuals who participate in such studies are non-representative of the population. We used data from the 1999-2009 biannual National Health and Nutrition Examination Survey (NHANES) and 1990-2010 National Health Interview Survey (NHIS) that have been linked through the 2010 National Death Index to compare mortality rates between study participants and the contemporaneous general population. Those 20 to 79 at the time of the surveys were included, with 1,303,365 participants and 146,297 (11.2%) deaths in NHIS, and 29,725 participants and 2,170 (7.3%) deaths in NHANES. Survey weighted mortality rates of respondents were determined based on survey age, and then directly age-standardized. These were compared to mortality rates over the same follow-up time determined for the general population based on US census and deaths, constructing contemporaneous pseudo-cohorts of individuals. Mortality was lower for NHIS participants than for the general population in survey years from 1990 through 2007, with mortality rate ratios ranging from 0.69 for those in the 1990 survey compared with the general population to 0.93 among those surveyed in 2007. Mortality rates were similar or higher for NHANES participants than the general population, with mortality rate ratios ranging from 1.09 for 2006 participants to 1.51 for 2008 participants. Survey and other study responders have different mortality rates than the general population, indicating that inference from national surveys may be compromised, and quantification of health-related burden may be mis-estimated. Techniques to adjust estimates from sample surveys using the linked data are being developed and require additional attention as response rates continues to decline.

0511-S/P

DO YOU SEE WHAT I SEE? IMPLICATIONS OF RANDOM AND SYSTEMATIC ERROR IN PERCEPTION FOR STUDIES OF CONTEXTUAL EFFECTS Hannah Leslie*, Maya Petersen, Mark Wilson, Jennifer Ahern (Harvard T.H. Chan School of Public Health)

Background Epidemiologists studying multilevel effects may aggregate individual perceptions of context in order to approximate higher-level exposures that are difficult to measure directly. Such proxies may differ from the true contextual exposure due to random or systematic errors in perception. For example, neighborhood resident perceptions of community cohesion might vary around the true value (random error), or new residents might rate community cohesion more negatively than long-term residents (systematic error). We assess the impact of both types of measurement error on multilevel effect estimation. **Methods** We simulated data based on a causal model in which a group characteristic (γ) and individual perception of this characteristic (X) affect outcome Y (e.g., neighborhood cohesion and individual perception of cohesion decrease depression). Perception X varies randomly from true γ in all cases. We further added biased perception to 25% of observations (subgroup $W=1$). We permuted the magnitude of random and systematic measurement error and simulated 1000 datasets for each of 70 conditions of interest. We regressed Y on X and the group mean of X and examined the role of adjustment for W at individual and group levels on all parameter estimates. **Results** Random and systematic error in perception each biased estimates of the contextual effect. Adjusting for W at both levels was necessary to eliminate bias due to systematic error; attenuation up to -33% remained due to random error. Only systematic error biased the intercept and individual-level effect estimates; controlling for W at both levels recovered unbiased estimates. **Conclusion** When individual perceptions are aggregated to proxy higher-level exposures, bias from measurement error can affect results in ways that traditional confounder rules do not address. In the presence of systematic error, adjustment at both individual and group levels may be necessary to retrieve unbiased estimates of parameters at any level.

0513-S/P

FLAWED DESIGNS: HOW PRE-HOSPITAL MORTALITY CAN AFFECT OBSERVATIONAL RESEARCH ON CARDIOVASCULAR DISEASE RISK FACTORS AMONG SURVIVORS OF ACUTE CARDIAC EVENTS Hailey Banack*, Sam Harper, Jay Kaufman (McGill University)

Observational studies examining the effect of cardiovascular disease (CVD) risk factors on mortality often follow a standard design: a cohort of individuals who have had an acute cardiac event is established in hospital (or at discharge), exposure status is determined at cohort entry and participants are followed through time to ascertain the outcome of interest. An inherent limitation of this study design is that it is restricted to capturing only survivors of the index cardiac event. Typically, individuals who have an acute cardiac event but died prior to hospitalization are not accounted for in the analysis. Observational studies that fail to account for pre-hospital mortality may be affected by selection bias. We used data from the Atherosclerosis Risk in Communities Study ($n=15,040$) to examine the effect of pre-hospital mortality on the relationship between CVD risk factors and mortality among individuals who have had an acute cardiac event. We used inverse probability of censoring weights (IPCW) to correct for selection bias based on observed covariates. The exposure variable consisted of CVD risk factors (smoking, diabetes, hypertension, dyslipidemia, and obesity) and the outcome was all-cause mortality. We calculated risk ratios (RRs) from generalized linear models with a log link and binomial distribution. In unweighted multivariate analyses the estimated RR for mortality ranged from 1.09 (0.98, 1.21) for 1 CVD risk factor to 1.95 (1.41, 2.68) for 5 CVD risk factors. In the analyses weighted by IPCW, the RRs ranged from 1.14 (0.94, 1.39) to 4.23 (2.69, 6.66). Effect estimates from the IPCW-weighted model were consistently larger than unweighted estimates across all risk factor categories. These findings demonstrate that failing to account for pre-hospital mortality in study design or analysis may lead to attenuated effect estimates and a bias towards the null.

0514

BAYESIAN SENSITIVITY ANALYSIS FOR UNMEASURED CONFOUNDING IN CAUSAL MEDIATION ANALYSIS Lawrence McCandless* (Faculty of Health Sciences, Simon Fraser University)

Unmeasured confounding creates terrible problems in observational studies using large administrative databases. The massive sample size crushes p-values and standard errors to zero that are calculated from standard analytic adjustment. While this may delight health researchers who discover that everything is significant, it obscures the role of bias, including unmeasured confounding. The Bayesian approach to statistics provides an appealing way forward because uncertainty about bias can be funnelled into the analysis using prior distributions. The posterior distribution for model parameters incorporates uncertainty from bias in addition to the usual random error. In this work, I present a Bayesian approach to explore sensitivity to unmeasured confounding in causal mediation analysis with confounding in the mediator-outcome relationship. The method is illustrated in a data example from social epidemiology using large administrative databases of electronic health records. I demonstrate that great care is needed in choosing the prior distribution in a nonidentified context because it can have surprising an unexpected influence on the analysis results.

0520-S/P

FERTILITY TREATMENT AND CHILDHOOD TYPE 1 DIABETES MELLITUS - A NATIONWIDE COHORT STUDY OF 565,166 LIVE BIRTHS Laura Ozer Kettner*, Niels Bjerregård Matthiesen, Cecilia Høst Ramlau-Hansen, Ulrik Schiøler, Kesmodel Bjørn Bay, Tine Brink Henriksen (Perinatal Epidemiology Research Unit, Department of Paediatrics, Aarhus University Hospital, Denmark)

Background Previous studies have shown an association between fertility treatment and specific somatic diseases in childhood. However, despite the severity of the disorder, only one previous study has assessed the association between fertility treatment and diabetes in the offspring. **Objective** To assess the association between fertility treatment and childhood type 1 diabetes mellitus. **Methods** All pregnancies resulting in live-born singletons in Denmark from 1995 to 2003 were included in this nationwide cohort. Information about fertility treatment was obtained from the Danish in vitro fertilization (IVF) registry and the Danish National Prescription Registry. Children with type 1 diabetes mellitus were identified from redeemed prescriptions for insulin in the Danish National Prescription Register with up to 18 years of follow-up. The data were analyzed by Cox proportional hazards regression, adjusted for maternal age, smoking, ethnicity, education, parental history of diabetes, and year of birth. **Results** The study included 565,166 pregnancies of which 0.4% children developed diabetes during the follow-up period. Preliminary analyses showed a slight tendency towards an association between ovulation induction (OI) or intrauterine insemination (IUI) and childhood type 1 diabetes mellitus (hazard rate ratio, 95% CI (HR) 1.24 (0.91 – 1.68)), whereas for IVF or intracytoplasmic sperm injection, no association was present (HR 0.98 (0.60 – 1.60)). When the hormones used in OI or IUI treatment were assessed separately, we found an increased risk for the use of follicle stimulating hormone (FSH) (HR 2.97 (0.95 – 9.25)). **Conclusion** Preliminary results showed a slight tendency towards an association between OI or IUI and an increased risk of childhood type 1 diabetes mellitus. The risk may be related to the use of FSH in OI or IUI treatment.

0522-S/P

USING PUBLIC HEALTH DATA SYSTEMS TO INVESTIGATE ASSOCIATIONS BETWEEN EARLY-LIFE EXPOSURE TO BTEX AND NEED FOR ACADEMIC SUPPORT SERVICES IN CHILDHOOD Jeanette Stingone*, Luz Claudio (Icahn School of Medicine at Mount Sinai)

Benzene, toluene, ethyl benzene and xylene (BTEX) are a group of aromatic volatile organic compounds emitted from motor vehicles and industrial sources. Previous research suggests exposure to these compounds is associated with restricted fetal growth and autism. The objective of this research was to examine the association between early-life exposure to ambient BTEX and the use of academic support services, such as early intervention programs and enrollment in special education later in childhood. Data for 235,134 children born between 1994-1998 who attended public school in New York City were obtained through administrative data linkages between birth, early-intervention and educational records across time. Census tract at birth was used to assign estimates of annual average ambient concentrations of BTEX compounds, estimated as part of the Environmental Protection Agency's 1996 National Air Toxics Assessment. Discrete-time hazard models were fit to the data and adjusted for maternal factors such as race/ethnicity, nativity, education, age, marital status and health insurance, as well as a neighborhood deprivation index derived from census variables and children's maximum blood lead levels. Results showed that children with higher exposures to BTEX were more likely to receive academic support services later in childhood. The adjusted hazard ratio comparing children exposed to the highest decile of xylene levels to those with the lowest decile of exposure was 1.15 (95% confidence interval 1.10, 1.19). A similar finding was observed when using a summary measure to compare children exposed to the highest decile of all four pollutants combined to children with the lowest decile of exposure to all pollutants (HR 1.14 95%CI 1.09, 1.20). These findings suggest an association between ambient exposure to BTEX and use of academic support services, as well as demonstrate the potential for public health data systems to contribute to pediatric environmental health research.

0521-S/P

PRENATAL EXPOSURE TO ENVIRONMENTAL PHENOLS AND CHILDHOOD FAT MASS IN THE MOUNT SINAI CHILDREN'S ENVIRONMENTAL HEALTH STUDY Jessie Buckley*, Amy Herring, Mary Wolff, Antonia Calafat, Stephanie Engel (University of North Carolina at Chapel Hill)

Early life exposure to endocrine disrupting chemicals may alter adipogenesis and energy balance leading to changes in obesity risk. Several studies have evaluated the association of prenatal bisphenol A exposure with childhood body size but other environmental phenols remain understudied. Therefore, we assessed associations between prenatal exposure to environmental phenols and fat mass in a prospective birth cohort. We quantified four phenol biomarkers in third trimester maternal spot urine samples in a cohort of women enrolled in New York City between 1998 and 2002 and evaluated fat mass in their children using a Tanita scale between ages 4 and 9 years (173 children with 351 total observations). We estimated associations of standard deviation differences in natural log creatinine-standardized phenol biomarker concentrations with percent fat mass using linear mixed effects regression models. We did not observe associations of bisphenol A or triclosan with childhood fat mass. In unadjusted models, maternal urinary concentrations of 2,5-dichlorophenol were associated with greater percent fat mass and benzophenone-3 was associated with lower percent fat mass among children. After adjustment, phenol biomarkers were not associated with percent fat mass. However, the association between benzophenone-3 and percent fat mass was modified by child's sex: benzophenone-3 concentrations were inversely associated with percent fat mass in girls (beta = -1.51, 95% CI = -3.06, 0.01) but not boys (beta = -0.20, 95% CI = -1.69, 1.26). Although we did not observe strong evidence that prenatal environmental phenols exposures influence the development of childhood adiposity, the potential antiadipogenic effect of benzophenone-3 in girls may warrant further investigation.

0523-S/P

THE RELATIONSHIP BETWEEN ANTENATAL STEROIDS AND POOR OUTCOMES IN NEONATES: MEDIATION OR EFFECT MODIFICATION? Neal Goldstein*, Rob Locke, David Paul (Department of Pediatrics, Christiana Care Health System, Newark, DE)

Background: Antenatal corticosteroids are the standard of care for women at risk of a preterm birth (less than 34 weeks of gestation) and have been demonstrated to be protective against poor outcomes in neonates including mortality and intraventricular hemorrhage (IVH). While its magnitude of effect is known in broad gestational age (GA) ranges, this effect may vary by specific GA. There may also be a mediating effect. The exact causal pathway is unclear, yet is important for more accurate risk measurement. **Methods:** A retrospective cohort of infants admitted to the hospital's neonatal intensive care unit, 1997-2015. The primary exposure was GA at birth and the outcomes were death and severe IVH (grade III or IV). Using Poisson regression, we separately modeled the incidence rate ratio of each outcome testing the mediating and moderating effects of antenatal steroids, controlling for black race, Hispanic ethnicity, chorioamnionitis, premature rupture of membranes, birth weight, and admission year. **Results:** Among 20,967 infants admitted, death occurred in 502 (2%) and IVH in 332 (2%). For each week increase in gestation, there was an associated risk decrease of 29% (95% CI: 25-32%) for death and 38% (95% CI: 35-41%) for IVH. Antenatal steroids were protective of both outcomes. As a mediator, the indirect effect from antenatal steroids on the incidence of death was 2% and IVH was <1%. As a modifier, each week increase in gestation combined with antenatal steroids resulted in an associated risk decrease of 23% (95% CI: 17-28%) for death and 12% (95% CI: 19-37%) for IVH. **Conclusions:** Antenatal steroids are protective against death and severe IVH, yet the pathway differs by GA. There was little evidence of mediation, suggesting an effect modification approach may be more useful in etiologic research. When combined with gestation, steroids are more protective against death and IVH in older neonates.

0525-S/P

BREASTFEEDING AND MOTOR DEVELOPMENT AMONG TERM AND PRETERM INFANTS IN A U.S. COHORT Kara Michels*, Akhgar Ghassabian, Sunni L. Mumford, Rajeshwari Sundaram, Erin M. Bell, Scott C. Bello, Edwina Yeung (Division of Intramural Population Health Research, Eunice Kennedy Shriver National Institute of Child Health and Human Development, Rockville, MD)

Background: Although components of breast milk aid in development, the effect of breastfeeding as opposed to formula feeding on child cognitive development is debated. The relationship between breastfeeding and motor development is of interest because early motor skills can be an important predictor of later language and cognitive abilities. The influence of breastfeeding is of particular interest among preterm infants, given their higher risk for developmental delays. **Methods:** The Upstate KIDS study enrolled mothers delivering live births in upstate New York between 2008-2010. Mothers reported infant motor development at 4, 8, 12, 18, and 24 months postpartum; information on breastfeeding and formula feeding was reported at 4 months. Accelerated failure time models were used to compare times to standing or walking alone across infant feeding types while adjusting for maternal characteristics, fertility treatment, day care initiation, and infant plurality, gender, and baseline Ages and Stages Questionnaire pass status. Main models were stratified by preterm birth status. Sampling weights were used to account for study design. **Results:** The prevalence of exclusive breastfeeding among preterm infants (n=737) was lower than among term infants (n=3533; 13% versus 29%, respectively), but the prevalence of exclusive formula feeding was higher (68% versus 51%). Compared to exclusive formula feeding, exclusive breastfeeding was associated with faster time to walking (acceleration factor [AF] 0.96; 95%CI 0.94, 0.99) and standing (AF 0.92; 95%CI 0.88, 0.96) among term infants. An effect of accelerated walking among preterm infants was suggested, but not precise (AF 0.91; 95%CI 0.83, 1.01). **Conclusions:** We found times to achieve motor milestones were faster among exclusively breastfed term infants than those fed only formula. While our results provide support for current breastfeeding guidelines, they likely do not translate into a large clinical or public health impact.

0530-S/P

ACHIEVING MATERNAL AND CHILD HEALTH GAINS IN AFGHANISTAN: A CASE STUDY IN RESILIENCE Nadiam Akser* (University of Toronto)

Background: Afghanistan has experienced a tumultuous period of democracy overshadowed by festering conflict, widespread insurgency and inflow of development assistance since 2001. While several cross-sectional assessments of health gains have been conducted, no systematic analysis of maternal and child health progress has been done. **Methods:** We undertook a comprehensive, systematic assessment of reproductive, maternal, newborn, and child health (RMNCH) in Afghanistan over the last decade. Primary data on population health, nutrition, immunization, and household assets were obtained from 11 nationally representative surveys conducted between 2003 and 2013. We estimated time trends for key RMNCH indicators, and used linear regression methods to determine predictors of change in health care service utilization. All analyses were weighted for sampling and design effects. **Results:** Between 2003 and 2015, Afghanistan experienced a 29% decline in under 5 mortality. In a little over a decade (2003 to 2013) coverage of several maternal health interventions improved e.g. antenatal care (16.1% to 52.9%), skilled birth attendance (SBA) (14.3% to 46.1%), and facility births (12.8% to 38.8%). Childhood vaccination coverage rates for basic EPI vaccines (BCG, measles, DPT3 and Polio3) doubled over this period (~40% to ~80%). The number of health care professionals deployed also increased. Factors contributing to overall changes in SBA and facility births suggests independent contributions of maternal literacy, deployment of community midwives/nurses, improved access to care, telecommunications access, and absence of conflict. **Conclusions:** Despite conflict and poverty, Afghanistan has made reasonable progress in RMNCH and survival. However, equitable access remains a challenge. Afghanistan will need to focus on increased investments in addressing social determinants of health and evidence-based interventions for newborn survival with effective targeting to reduce health inequities.

0532 S/P

IMMIGRATION STRESS AND ALCOHOL USE SEVERITY AMONG RECENT ADULT HISPANIC IMMIGRANTS: TESTING THE MODERATING EFFECTS OF GENDER AND IMMIGRATION STATUS Miguel Angel Cano*, Mariana Sanchez, Mario De La Rosa, Mariano Kanamori, Mary Jo Trepka, Diana Sheehan, Hui Huang, Patria Rojas, Rehab Auf, Frank Dillon (Florida International University)

BACKGROUND: Compared to other ethnic groups, Hispanics are more likely to engage in heavy drinking and experience alcohol-related disparities. Although Hispanic immigrants account for 37% of the U.S. Hispanic population, few epidemiological studies have examined psychosocial determinants of alcohol use behavior among this underserved population. In addition to normative stressors, Hispanic immigrants may experience immigration stress that may include fear of being deported, discrimination, and family separations due to emigration. Identifying and understanding determinants of alcohol use behavior among Hispanic immigrants is an increasingly significant public health concern. As such, this study aimed to (a) examine the association of immigration stress on alcohol use severity among recent adult Hispanic immigrants (≤ 1 year in U.S.); and (b) examine the moderating effects of gender and immigration status (e.g., undocumented vs. documented). **METHOD:** A hierarchical multiple regression (HMR) and moderation analyses were conducted on a cross-sectional sample of 527 participants from South Florida. The sample included men (45.4%), undocumented immigrants (30.3%), and the mean age was 26.95 (SD=4.98). **RESULTS:** All variables in the HMR accounted for 51% of the variance of alcohol use severity measured by an AUDIT total score. After controlling for demographic variables, language proficiency, and pre-immigration drinking behavior, higher immigration stress was associated with higher alcohol use severity ($\beta = .15, p \leq .001$). Moderation analyses indicated that immigration stress had a statistically significant association with alcohol use severity among men (especially undocumented men); however, no associations were detected among women. **DISCUSSION:** The effects of immigration stress may vary across gender and immigration status. Thus, it may be important to design and implement gender-specific interventions to offset the effects of immigration stress on alcohol use.

“-S/P” indicates work done while a student/postdoc

0531

CHARACTERISTICS ASSOCIATED WITH MEASLES OUTBREAK IN ECUADOR, 2011-2012: A STUDY OF CASES AND CONTROLS TO AGGREGATE DATA Maria Fernanda Rivadeneira*, Sergio Bassanesi, Sandra Fuchs (Postgraduate Studies Program in Epidemiology, School of Medicine, Universidade Federal do Rio Grande do Sul (UFRGS), Brazil.)

Introduction: In 2011-2012, Ecuador had a measles outbreak, after more than a decade without reported cases. This study aimed to evaluate population characteristics associated with measles outbreak. **Methods:** A case-control approach was adopted to analyze aggregate data of parishes representing the smallest political and territorial unity of the country. Cases were those parishes (parishes-cases) who had confirmed measles cases, while in parishes-controls there were no cases of measles. Data were obtained from the epidemiological surveillance of communicable diseases in the country, national census data, and data from prenatal care and vaccination. Socioeconomic status (SES), biological, environmental conditions, and access to health care were investigated. A hierarchical model was conceptualized e multiple logistic regression was applied. **Results:** Among a total of 1024 parishes, 52 were parishes-cases and 972 were parishes-controls. In parishes-cases there was higher percentage of infants (13.5 vs. 5.6), heads of households with higher education level (53.8 vs. 17.1), and indigenous population (40.4 vs. 23.9) than among parishes-controls. The highest quartile of previous immunization against measles (19.8 vs. 9.6%) and prenatal care consultation (25.7 vs. 7.7%) was higher among parishes-controls. After taking into account SES as a confounding factor, some associations did not remain statistically significant. However, ≥ 8 years of education of the household head (OR: 3.66; 95%CI 1.89-7.08), $\geq 15\%$ of the indigenous population (OR: 4.90; 95%CI 1.93-12.48) increased the odds of being parishes-cases. Moreover, quartiles of previous vaccination against measles and percentage of consultations in prenatal care showed an inverse trend of association with measles outbreak. **Conclusions:** The association between percentage of indigenous population, access to health care, and measles vaccination are independent determinants of measles outbreak at population level, in Ecuador.

0533-S/P

POLICE DISCRIMINATION AND DEPRESSIVE SYMPTOMS IN THE CHICAGO COMMUNITY ADULT HEALTH STUDY Amanda Onwuka*, Kristen Brown, Kate Duchowny (University of Michigan)

Background: It well documented that racial and ethnic minorities in the U.S. are more likely to be stopped and questioned on the street, arrested for reasons that turn out to be invalid, and killed by police compared to Whites. Yet, despite this differential treatment, few studies have examined police discrimination as a potential risk factor for negative mental health outcomes. Therefore, we investigated whether individuals who report police discrimination are more likely to experience depressive symptoms. **Methods:** We used data from the Chicago Community Adult Health Study (N=3,105), to examine whether police discrimination, measured by a single item from the Lifetime Discrimination Scale, was associated with depressive symptoms, assessed by the Center for Epidemiologic Studies Depression (CESD) scale. Bivariate tests were used to examine whether reports of police discrimination and depressive symptoms differed by race/ethnicity. We, then, investigated the relationship between police discrimination and depressive symptoms in both the full sample and in race-stratified models using linear regression. **Results:** Bivariate analyses revealed racial/ethnic differences in both police discrimination and CESD scores. Blacks were more likely to report police discrimination and depressive symptoms compared to Whites and Hispanics. Linear regression analyses indicated that experiencing police discrimination was positively associated with higher CESD scores, after adjusting for age, sex, race and education ($p < .0001$). However, in race-stratified models, this relationship held only for Blacks ($p = .01$) and Hispanics ($p = .04$), but not for Whites ($p = .08$). **Conclusion:** The results of our study indicate that police discrimination may be a risk factor for depressive symptoms, particularly among Black and Hispanic populations. Longitudinal research is needed to understand the social and biological pathways through which police discrimination may negatively influence mental health outcomes.

0534-S/P

PREVALENCE OF HURRICANE-SPECIFIC EXPOSURES AND PREDICTORS OF GLOBAL STRESS DUE TO SUPERSTORM SANDY IN A NEW YORK CITY PREGNANCY COHORT Katrina Kezios*, Christina DiSanza, Ezra Susser, Catherine Monk, Ronald Wapner, Pam Factor-Litvak (Mailman School of Public Health, Columbia University)

Natural disasters may be a significant source of prenatal maternal stress (PNMS). Increased levels of PNMS may negatively impact the developing fetus. We investigated the prevalence of hurricane-specific exposures and the predictors of high self-reported global stress due to Superstorm Sandy in a New York City pregnancy cohort of nulliparous women in recruitment at the time of the storm. Our study sample is derived from the Columbia University Medical Center site of the NuMom2Be consortium. As part of NuMom2Be, women were assessed during pregnancy for perceived stress, depression, anxiety, social support, and resilience. Following Sandy we interviewed participants about their exposure to Sandy-specific stressors and asked them to self-report their level of global stress the first and second week after the storm. 336 women provided complete information about their experiences during Sandy (68% within 1 year of exposure). 118 (35%) women were exposed to Sandy during pregnancy and $\geq 70\%$ completed psychological assessments pre-Sandy. Modified Poisson regression with robust standard error variance was used to examine the unadjusted association between demographics, baseline psychological assessments, and exposure to Sandy-stressors, and high global stress following Sandy. High global stress in the first week after Sandy was associated with high hurricane exposure, race and education, and elevated pre-disaster psychiatric symptoms. Women with higher levels of perceived stress and those who exhibited depressive symptomatology or trait anxiety had an increased risk of self-reporting high global stress, while increased social support – particularly that of a ‘special person’ – reduced this risk. Pre-existing mental health symptomatology influences appraisal of a disaster like Superstorm Sandy. These results may help inform interventions for pregnant women at risk for stressful natural disasters.

0535

EPIDEMIOLOGIC BIASES IN ASTHMA STUDIES OF THE 9/11 WORLD TRADE CENTER ATTACK: DISASTER EPIDEMIOLOGY NEEDED Anne M. Jurek*, Steven Mongin, David Kriebel, Manuel Cifuentes, Sherry Baron, Hyun Kim (University of Minnesota)

Purpose: The unplanned and unexpected nature of man-made disasters creates challenges for epidemiologists. Methodological challenges from the World Trade Center (WTC) attack on September 11, 2001, include lack of well-designed and timely epidemiologic studies and systems to perform long-term surveillance. As in all epidemiologic studies, these challenges may bias study results. Relatively little is known, however, about the effects of biases in WTC disaster studies. **Methods:** We reviewed 29 articles examining WTC disaster and asthma in responders and civilians and included 12 articles that calculated ratio effect measures. We identified biases mentioned in each article and their potential impact on study results. **Results:** Reporting (N=9, 75%) and self-selection (N=7, 58%) biases were the main study limitations cited. Two articles mentioned that the target population might have been screened more frequently per WTC disaster exposure. Four papers stated the inability to verify self-reported conditions and four mentioned data limitations. Qualitative evaluation of bias was preferred over quantitative methods. Three articles stated exposure misclassification would underestimate study results, while outcome misclassification was unlikely to explain findings for three papers. No reviewed article conducted a quantitative bias analysis. **Conclusions:** We have identified biases present in epidemiologic studies of WTC disaster exposure and asthma. We will use quantitative bias analysis to evaluate the impact selection and misclassification biases have on reported ratio effect measures and provide recommendations for designing disaster studies.

0540

CHRONIC INFLAMMATION AND RISK OF LUNG CANCER: THE HEALTH, AGING AND BODY COMPOSITION STUDY

Dejana Braithwaite*, Joshua Demb, Esther Wei (UC San Francisco)

Evidence on the association between chronic inflammation and risk of lung cancer remains inconsistent, possibly due to a paucity of studies examining repeated measures of inflammation. In the Health ABC prospective study of 2490 adults aged 70-79 years at baseline, we assessed whether circulating levels of three markers of systemic inflammation, IL-6, CRP, TNF- α , were associated with the risk of lung cancer. Inflammatory markers were measured in stored fasting blood samples. While only baseline measures of TNF- α were available, IL-6 and CRP were additionally measured in 1998, 2000, 2002 and 2004. Multivariable Cox models were fit to determine whether tertiles and log-transformed continuous baseline and cumulatively averaged measures of CRP and IL-6 and baseline measures of TNF- α were associated with the risk of incident cancer. During a median follow-up of 11.9 years, there were 81 incident cases of lung cancer. Baseline CRP levels were associated with incident lung cancer (HR: 1.49 95% CI: 0.90, 2.47). The hazard of incident lung cancer in the highest tertile of IL-6 was more than double the hazard of lung cancer risk in the lowest tertile (HR: 2.51 95% CI: 1.41, 4.47). Hazard of incident lung cancer was similarly statistically significantly elevated in fully-adjusted cumulative averaged models of CRP (HR: 2.05 95% CI: 1.15, 3.65), and there was a similar trend in models of IL-6 (HR: 1.66 95% CI: 0.97, 2.84). Baseline TNF- α levels were not significantly associated with hazard of incident lung cancer (HR: 1.26 95% CI: 0.72, 2.20). In sum, higher levels of CRP and IL-6, as reflected by repeated measures of these markers, may play a role in lung carcinogenesis in older adults.

0542

ALLERGY SYMPTOMS, SERUM TOTAL IMMUNOGLOBULIN E, AND RISK OF HEAD AND NECK CANCER

Jeffrey Chang*, Jenn-Ren Hsiao, Yuan-Hua Wu, Chia-Jui Yen, Chun-Yen Ou, Jehn-Shyun Huang, Tung-Yiu Wong, Sen-Tien Tsai, Cheng-Chih Huang, Wei-Ting Lee, Ken-Chung Chen, Sheen-Yie Fang, Jiunn-Liang Wu, Wei-Ting Hsueh, Forn-Chia Lin, Ming-Wei Yang, Jang-Yang Chang, Hsiao-Chen Liao, Shang-Yin Wu, Chen-Lin Lin, Yi-Hui Wang, Ya-Ling Weng, Han-Chien Yang, Yu-Shan Chen (National Health Research Institutes, Taiwan)

Previous studies reported an inverse association between allergy symptoms and head and neck cancer (HNC) risk. In contrast, a positive association between elevated blood immunoglobulin E (IgE) levels and HNC has been reported. Elevated IgE levels have been associated with exposure to carcinogens, including those contained in alcohol and cigarette. According to the "prophylaxis hypothesis", allergic reaction is a mechanism for body to expel carcinogens and is particularly applicable for cancers occurring in body sites that interface the outside environment, including HNC. To evaluate the "prophylaxis hypothesis" for the association between allergy symptoms or IgE and HNC risk, we hypothesized that the highest risk of HNC would be found in individuals with elevated serum IgE without allergy symptoms (i.e. asymptomatic atopic). To test our hypothesis, we conducted a case-control study of HNC (580 cases and 740 controls) to assess the association between allergy symptoms or serum total IgE and HNC risk and the interaction between allergy symptoms and serum total IgE on HNC risk. Our analysis found a statistically significant positive association between elevated serum total IgE and HNC risk (odds ratio (OR) = 1.52, 95% confidence interval (CI): 1.09-2.14). In addition, we observed a statistically significant inverse association between allergy symptoms and HNC risk (OR = 0.57, 95% CI: 0.44-0.74). Asymptomatic atopic individuals had a significantly increased HNC risk (OR = 2.12, 95% CI: 1.34-3.36) compared to subjects with normal serum total IgE and no allergy symptoms. Our results provided further evidence to support the "prophylaxis hypothesis", showing that allergy symptoms may ameliorate the increased HNC risk associated with elevated IgE levels. Investigating the immune profiles of asymptomatic atopic individuals may provide additional information to decipher the biological mechanisms underlying the interplay between allergy symptoms and IgE on HNC risk.

"S/P" indicates work done while a student/postdoc

0541

SERUM ESTROGENS AND ESTROGEN METABOLITES AND ENDOMETRIAL CANCER RISK AMONG POSTMENOPAUSAL WOMEN IN THE WOMEN'S HEALTH INITIATIVE OBSERVATIONAL STUDY

Louise Brinton*, Britton Trabert, Garnet Anderson, Roni Falk, Ashley Feli, Barbara Fuhrman, Margery Gass, Lewis Kuller, Ruth Pfeiffer, Thomas Rohan, Howard Strickler, Xia Xu, Nicolas Wentzensen (National Cancer Institute, National Institutes of Health, Bethesda, MD)

Background: Although it is well recognized that estrogens play an important role in endometrial carcinogenesis, effects of endogenous estrogen metabolites with varying mitogenic and genotoxic properties have not been well explored. **Methods:** Within the Women's Health Initiative Observational Study (WHI-OS), a cohort of 93,676 postmenopausal women recruited between 1993-1998, we conducted a nested case-control study among subjects who had an intact uterus and who were not currently taking menopausal hormones. Among 313 endometrial cancer cases (271 Type I, 42 Type II) and 354 matched controls, we measured 15 estrogens/estrogen metabolites via HPLC-MS/MS, and derived adjusted odds ratios (OR) and 95% confidence intervals (CIs) for overall and subtype-specific endometrial cancer risk using logistic regression. **Results:** Parent estrogens (estrone and estradiol) were positively related to endometrial cancer risk, with the highest risk observed for unconjugated estradiol (OR 5th vs. 1st quintile=6.19, 95% CI 2.95-13.03, p \leq 0.0001). Nearly all metabolites were significantly associated with elevated risks, with some attenuation after adjustment for unconjugated estradiol (residual risks of 2-3-fold). There were no significant relations between endometrial cancer and specific metabolic pathways or ratios of pathways. The association with unconjugated estradiol was stronger for Type I than II tumors (p \leq 0.01). Estrogen associations did not vary significantly by body mass index (kg/m 2 , BMI), age at diagnosis, or oral contraceptive usage. BMI associations were attenuated after adjustment for unconjugated estradiol levels. **Conclusions:** Parent estrogens as well as individual metabolites appear to be integrally involved in endometrial carcinogenesis. Our results regarding unconjugated estradiol suggest that estrogen receptor-mediated mechanisms may partly underlie the effects of obesity on risk and provide additional support for the notion of etiologic heterogeneity of endometrial cancer.

0543

RISK-BASED TARGETING OF CT LUNG-CANCER SCREENING FOR US SMOKERS

Hormuzd Katki*, Stephanie Kovalchik, Christine Berg, Li Cheung, Anil Chaturvedi (US National Cancer Institute)

Background: Targeting ever-smokers for low-dose computed-tomography (CT) lung-cancer screening using individualized lung-cancer risk calculations may be more effective and efficient than current subgroup-based recommendations. However, there are currently no lung-cancer risk calculators validated in the US population, and empirical evidence is lacking for the superiority of risk-based screening. **Methods:** We developed and validated empirical individualized risk models for lung-cancer incidence and death in the absence/presence of CT screening. We applied these models to the National Health Interview Survey (NHIS), a representative sample of the US population, to estimate the 5-year impact of risk-based targeting strategies for 3 annual CT lung screens, the screening schedule used in the National Lung Screening Trial. We compared the projected effectiveness and efficiency of risk-based screening strategies versus US Preventive Services Task Force (USPSTF) recommendations. **Results:** The empirical risk models were well-calibrated in US ever-smokers ages 50-80. Under USPSTF recommendations, 9.0 million US ever-smokers qualify for lung-cancer screening and 46,488 (95%CI=43,924-49,053) lung-cancer deaths could be averted over 5 years (number needed to screen to prevent one lung-cancer death (NNS)=194). In contrast, risk-based targeting that screens the same number of individuals (9.0 million ever-smokers) at highest 5-year lung-cancer risk (1.9%) could prevent 20% more deaths (55,717; 95% CI=53,033-58,400) and reduce the NNS by 17% (NNS=162). Alternatively, risk-based targeting that preserves the screening effectiveness of USPSTF recommendations (NNS=194) allows screening an additional 3.1 million ever-smokers (5-year lung-cancer risk 1.7%) and could prevent 34% more deaths (62,382; 95%CI=59,567-65,196). **Conclusions:** Risk-based targeting might improve the effectiveness and efficiency of CT lung-screening programs.

0544-S/P

WEIGHT CHANGE AND BODY MASS INDEX TRAJECTORIES ACROSS THE ADULT LIFE COURSE AND RISK OF AGGRESSIVE AND FATAL PROSTATE CANCERS IN THE PLCO CANCER SCREENING TRIAL Scott Kelly*, Barry Graubard, Sean Cleary, Gabriella Andreotti, Naji Younes, Michael Cook (National Cancer Institute (NCI))

Background: Obesity has been associated with higher risk of prostate cancer progression and mortality. Research on weight change and trajectories that lead to obesity and their association with aggressive and fatal prostate cancer risk is limited. **Methods:** We assessed self-reported height, weight, and body mass index (BMI) across the adult life course in relation to prostate cancer among men in the PLCO Cancer Screening Trial. With 13 or more years of follow-up, we identified 7,832 incident cases, of which 3,081 were aggressive and 255 fatal. Cox proportional hazards regression with age as the time metric was used to estimate hazard ratios (HR) and 95% confidence intervals (CI). Latent mixture modeling was used to identify trajectories in BMI across adulthood. **Results:** Body weight and BMI at age 20, 50 and baseline questionnaire (mean age 62.6 years) were significantly associated with increased risks of fatal prostate cancer (HRs, 1.1 to 1.3 per 5 unit increase). Fatal prostate cancer risk was positively associated with higher maximum attained weight at any age (HRQ4 vs Q1 = 1.64; CI = 1.12 to 2.39). We identified five distinct BMI trajectories, and fatal prostate cancer risk was increased in men who were normal weight (HR = 1.92; CI = 1.18 to 3.13) or overweight (HR = 2.93; CI = 1.58 to 5.46) at age 20 and developed obesity by baseline compared to men who maintained a normal BMI. Overweight or obesity was not associated with aggressive prostate cancer, and modest inverse associations were seen for total and nonaggressive prostate cancer. **Conclusion:** Obesity at any time during adulthood increased the risk of fatal prostate cancer. Men who were obese at the onset of adulthood or who had considerable weight gain over their adult life course were at significantly higher risks of fatal prostate cancer.

0545

WEIGHT CHANGE ACROSS THE LIFE-COURSE AND BREAST CANCER RISK ACCORDING TO RECEPTOR CLASSIFICATION AMONG PRE AND POSTMENOPAUSAL WOMEN Bernard Rosner*, A Heather Eliassen, Susan Hankinson, Walter Willett, Wendy Chen, Adetunji Toriola, Catherine Berkey, Graham Colditz (Channing Division of Network Medicine, Brigham and Women's Hospital and Harvard Medical School)

Rationale: Obesity is well established as a cause of postmenopausal breast cancer incidence and mortality. In contrast, adiposity in early life is inversely related to breast cancer incidence. To better integrate understanding of these conflicting relations, we assess adiposity, in late adolescence, and adult years, as well as change in weight, in relation to total invasive breast cancer and subtype defined by receptor status. **Design:** Prospective observational study of 77,232 women from 1980 to 2012 (1,590,730 person-years), with routinely updated weight and breast cancer risk factor information. **Methods:** We documented 4,965 incident invasive breast cancer cases. ER and PR status were obtained from pathology reports and medical records. A total of 2,412 ER+PR+ tumors, 662 ER-PR- tumors, 598 ER+PR- tumors were identified among women with complete risk factor data. Data were analyzed using the Cox proportional hazards model. **Results:** Overall, weight at age 18 was inversely related to incidence of pre and postmenopausal breast cancer. After controlling for weight at age 18, weight loss of 10 lbs or more from age 18 was significantly related to lower risk of breast cancer (RR=0.77; 95% CI = 0.65, 0.91) overall. The association was stronger for premenopausal breast cancer (RR=0.54; 0.32, 0.91). Long-term weight gain was positively related to total incident breast cancer and most clearly to postmenopausal cancer (RR =1.27 per 50 lb weight gain since age 18; 1.20-1.34). Weight gain during premenopausal years as well as weight gain after menopause were both directly related to increased risk and were stronger for never users of postmenopausal hormone therapy. These results were stronger for ER+PR+ breast cancer. **Conclusion:** Adiposity at age 18 has a protective lifelong relation to breast cancer risk. However, there are long-term deleterious effects of weight gain, both pre- and post-menopause. Lifelong weight change can importantly modify breast cancer risk.

0550 S/P

THE IMPORTANCE OF ACCURATE POPULATION DYNAMICS WHEN USING AGENT-BASED MODELS TO SIMULATE EPIDEMIOLOGIC OUTCOMES OF HIV: APPLICATION TO SOUTH AFRICA Nadia N. Abuelezam*, Alethea W. McCormick, Marc Lipsitch, George R. Seage, III (Harvard T.H. Chan School of Public Health)

Agent-based models are used to simulate disease spread in populations and estimate the epidemiologic impact of prevention and treatment programs. The sensitivity of long-term simulations of HIV dynamics to demographic assumptions has not been explored in great detail. We simulate changes to assumptions on birth rates in the South African epidemic using the HIV-Calibrated Dynamic Model (HIV-CDM) in the presence of standard of care testing and treatment. We examined the impact of constant, increasing, decreasing and zero birth rates (with entry into the sexually active population at age 17) on HIV prevalence and annual incidence from 2015 to 2080. We used the HIV-CDM, an agent-based mathematical model calibrated to HIV prevalence, incidence, and sexual behavior in South Africa in the period from 1990 to 2002. Reduced birth rates (with constant age-specific partnership demand per male) results in increasing incidence and prevalence in 17-22 year old males and females of the affected birth cohorts. Prevalence in the general population increases over time (due to a smaller denominator), and incidence decreases over time. When birth rates increase the number of HIV cases increases and demand for therapy increases despite observed decreases in prevalence and incidence. Slight changes in population dynamics (even on a 1-2 year time scale) have significant impacts on long-term incidence and prevalence predictions within and across age groups. The dynamics in the youngest category of susceptible individuals in age-structured models requires special attention and calibration to properly model epidemic trajectories. While many computational and mathematical models do not model birth and death rates in detail, epidemiologic outcomes like prevalence and incidence are sensitive to changing population dynamics. Modelers should thus aim to simulate changes to population size in order to make accurate conclusions about epidemiologic outcomes in long-term simulations.

0552-S/P

DIFFERENCES IN RESTRICTED MEAN TIME TO ART INITIATION BY INJECTION DRUG USE Keri Calkins*, Chelsea Canan, Richard Moore, Catherine Lesko, Bryan Lau (Johns Hopkins Bloomberg School of Public Health)

In time-to-event analyses, hazard ratios may be misleading if hazards are not proportional, and risk differences/ratios may be sensitive to the time at which they are calculated. The restricted mean survival time (RMST) is an underutilized alternative estimand. The RMST is the area under the survival curve and interpreted as the expected survival time within a pre-specified interval. We illustrate the utility of the RMST by applying it to an investigation of the time to initiation of antiretroviral therapy (ART) among HIV-infected injection drug users (IDUs) and non-injection drug users (nIDUs) in continuous HIV care. We followed 2,731 HIV-positive, ART-naïve persons who enrolled in the Johns Hopkins Hospital Clinic Cohort from 1995-2014 until ART initiation, loss-to-clinic (one year without a CD4 or HIV RNA value), 10 years of follow up or administrative censoring. We generated Kaplan-Meier (KM) curves for time to ART initiation, adjusted using inverse probability weighting for sex, race, and baseline AIDS, calendar year, age, CD4 and HIV viral load. The RMST was determined for IDU and non-IDU using direct integration of the survival curve, i.e. the sum of the rectangular areas under the survival curve between each event time. The sample had a mean age of 40.0 years (SD=9.7), was 34.9% female, was 78.0% non-Hispanic Black, was 38.3% IDUs, and had a median CD4 of 334 [IQR= 103-485] at enrollment. The KM curves by IDU status indicated non-proportional hazards. The 10-year restricted mean time to ART initiation was 4.1 years (95% CI 3.6-4.6) for IDU and 3.6 years (95% CI 3.3-3.8) for non-IDU, which equates to a 0.54 (95% CI 0.001-1.08) year delay in initiation of treatment. IDU experience substantial delays in ART initiation, which may be clinically significant for the individual and of great public health importance given the greatly reduced risk of HIV transmission upon receipt of ART. RMST is a useful alternative method for analyzing time-to-event data.

0551-S/P

OPIOID PRESCRIPTIONS IN HIV-INFECTED ADULTS Laurence Brunet*, Sonia Napravnik, Peter Leone, Thibaut Davy, Joseph Eron (University of North Carolina - Chapel Hill)

Increases in opioid use have been well described in the general population, but less is known in HIV-infected persons among whom chronic pain is common. We describe calendar year trends and factors associated with opioid prescription in HIV-infected patients in care. Study population included HIV-infected patients participating in the UNC CFAR HIV Clinical Cohort. Opioid prescription prevalence was calculated annually for calendar years 1999-2014. Time-updated factors associated with annual opioid prescription were assessed using multivariable logistic regression model fit with generalized estimating equations. Among 4,202 patients, 29% were women, 60% Black, 31% white and 9% other race/ethnicity, with median age of 37 (IQR 30-44) at start of follow-up. Patients contributed 28,014 person-years of observation, with a median of 7 years of follow-up (IQR 3-12). One-half of patients received 1 opioid prescription during follow-up. In 1999, opioid prescription prevalence was 12%, increasing to 29% in 2012 (p-value for trend <0.01). Prevalence decreased to 26% and 20% in 2013 and 2014, respectively. In adjusted analyses, men and ethnic/racial minorities were less likely to receive an opioid (OR, 95% CI: 0.68, 0.59-0.80; and 0.78, 0.67-0.92, respectively). Patients with diagnoses of chronic pain and substance abuse were more likely to be prescribed an opioid (OR, 95% CI: 1.99, 1.59-2.50; and 1.32, 1.13-1.53, respectively), as were older patients (OR, 95% CI: 1.15, 1.08-1.22 per 10-year increase in age). Opioid prescription was associated with detectable HIV RNA levels and lower CD4 counts (OR, 95% CI: 1.17, 1.06-1.30; and 2.07, 1.79-2.40 [200], 1.19, 1.07-1.32 [200-500], compared to 500 cells/ml). Annual opioid use more than doubled from 1999 through 2012, and was associated with several clinical and demographic patient characteristics. Given the extensive opioid use among HIV-infected patients, further research on pain management in HIV should be a priority.

0553- S/P

COMPARING DYNAMIC MONITORING STRATEGIES BASED ON EVOLVING CD4 CELL COUNTS: A PROSPECTIVE STUDY OF VIROLOGICALLY SUPPRESSED HIV-POSITIVE INDIVIDUALS IN HIGH-INCOME COUNTRIES Ellen C. Caniglia* (on behalf of CNICS and the HIV-CAUSAL Collaboration, Harvard T.H. Chan School of Public Health)

Background: Clinical guidelines for the management of HIV-positive individuals vary with regards to CD4 thresholds at which monitoring frequency should change. **Methods:** The HIV-CAUSAL Collaboration and Center for AIDS Research Network of Integrated Clinical Systems (CNICS) include prospective studies of HIV-positive individuals from European countries and North America. We compared four monitoring strategies applied to antiretroviral-therapy naïve individuals without AIDS who initiated ART in 2000 or later and became virologically suppressed (two consecutive HIV-RNA 200 copies/ml) within 12 months. Under the first strategy, CD4 cell count and HIV RNA are monitored every 3-6 months when CD4 is below a threshold of 500 and every 9-12 months when CD4 is above the threshold. The other three strategies were identical except that the thresholds were 350, 200, and 0. At virologic suppression (baseline), we made four replicates of each individual (1 per strategy) and censored replicates if and when their data were no longer consistent with their corresponding strategy. We used inverse-probability weighted models to estimate hazard ratios of death and AIDS-defining illness or death, and risk ratios of virologic failure (HIV-RNA>50 copies/ml) at 18 months. **Results:** Of 39,029 individuals, 440 died and 1,024 had AIDS-defining illness or died during follow-up and 1,366 had virologic failure at 18 months. The mortality hazard ratio (95% CI) was 1.07 (0.81, 1.43) for threshold 0, 0.95 (0.78, 1.16) for threshold 200 and 1.06 (0.90, 1.25) for threshold 500, compared with threshold 350. The hazard ratios for the combined endpoint and risk ratios for virologic failure were also close to 1. **Conclusions:** Our findings suggest that, in the short term, virologically suppressed individuals without AIDS in high-income countries can be safely monitored every 9-12 months, regardless of their CD4 cell count. Further follow-up is needed to establish the long-term safety of these strategies.

0560-S/P

IDENTIFYING SENSITIVE PERIODS FOR THE ROLE OF INDIVIDUAL AND ENVIRONMENTAL FACTORS IN ADOLESCENT MARIJUANA USE Seth Prins*, Pardini Dustin, Magdalena Cerdá Columbia University Department of Epidemiology)

Psychiatric disorders, parenting style, peer delinquency, and problems at school are consistent predictors of adolescent marijuana use. Yet the timing at which each of these factors matters for marijuana use is less understood. This study asked the following question: what types of individual and environmental characteristics matter the most for marijuana use at each developmental stage? We analyzed longitudinal data collected annually on boys randomly selected from Pittsburgh public schools. 503 boys were assessed at ages 11-20, with a retention rate of 87%. We estimated lagged cumulative measures of psychiatric symptoms (depression, anxiety, conduct disorder); alcohol use; parenting (parental supervision, positive parenting, parental stress, physical punishment), peer delinquency, and school problems (truancy and suspension). We employed negative binomial latent growth models to estimate the development of marijuana use over time. This approach can test whether time-varying and time-invariant exposures have constant or time-varying effects, and identify time-specific associations between these factors and marijuana use. A longer history of conduct disorder symptoms, prior alcohol use, and school truancy and suspension were consistently associated with marijuana use at ages 11-20. Peer delinquency showed a consistent association starting at age 13. A longer history of positive parenting and parental supervision, in contrast, mattered in early adolescence (i.e. ages 11-14) and again in young adulthood (i.e., age 20). Understanding the timing of drivers of substance use is the first step towards a developmentally-informed approach to substance use prevention. Early involvement of parents in substance use prevention, as well as continued investment in addressing behavior problems, particularly at school, may have a long-term impact on adolescent marijuana use.

0562

DOES PERCEIVED AVAILABILITY OF MARIJUANA MEDIATE THE RELATIONSHIP BETWEEN MEDICAL MARIJUANA LAWS AND MARIJUANA USE? Silvia Martins*, Christine Mauro, Julian Santaella, June Kim, Magdalena Cerda, Katherine Keyes, Rosalie, Pacula Deborah Hasin, Sandro Galea, Melanie Wall (Columbia University)

Perceived availability of marijuana could mediate the relationship between medical marijuana laws (MML) and marijuana use (MU). We examined the relationship between state-level MML and past-month MU and tested whether individual-level perceived availability mediates this association. Data were from the National Survey of Drug Use and Health (NSDUH) restricted use data portal 2004-2013. The primary exposure variable was a time-varying indicator of state-level MML (Before vs. After), the outcome variable was past-month MU, and our potential mediator was perceived availability (easy vs. difficult). A multilevel logistic regression model was fit with age included as a three-level predictor (12-17, 18-25, 26 and older). The interaction between MML and age was included in the model, which also controlled for whether a state ever passed an MML, individual- and state-level covariates. Then we tested for mediation. Past-month prevalence of marijuana did not change in the 10 states that passed MML laws during the period from 2004-2013 after MML passage among 12-17 and 18-25 year-olds. However, among individuals ages 26 and older past month prevalence of marijuana increased from 5.87% to 7.15% (a 1.28% increase) after MML passage (AOR: 1.24 [1.16-1.31]), adjusted for individual and state-level covariates. Perceived availability was significantly associated with MU (AOR=5.73 [5.42, 6.70]) among those 26+ controlling for MML. Also, passing a MML significantly increased perceived availability of marijuana (AOR=1.11 [1.07, 1.15] in this age group. There was a 19% reduction in the association between MML and MU indicating that perceived availability was partially mediating the MML-marijuana use association in this age group. Marijuana use increased after passage of MML among those 26+, and the increase was partially mediated by perceived availability of marijuana use. Further exploration of availability of marijuana in states with MML are warranted.

0561-S/P

EFFECT OF THE 2011 SCHOOL STRIKE ON ADOLESCENT MARIJUANA USE IN CHILE Alvaro Castillo-Carniglia*, Alvaro Esteban Pizarro, José D. Marín, Fernanda Toledo, Nicolás Rodríguez (Postdoctoral fellow, Violence Prevention Research Program, Department of Emergency Medicine, UC Davis School of Medicine)

In 2011, high school students in Chile led a series of “strikes” to demand structural reforms of the country’s education system. The students were primarily from public or private schools who receive state subsidies and the strikes involved blocking access to the schools during this period. That year, studies registered a significant increase in the prevalence and incidence of marijuana use in the school population, especially among students who were exposed to school strikes. The aim of this study was to evaluate the effect of the school strikes in 2011 on marijuana use among adolescents in Chile. We used data from the 9th National Survey on Drug Use in the School Population of 2011. The survey has a two-stage random sample (n ~33,000 nationwide) and includes secondary students from ninth to twelfth grade. The questionnaire is self-administered in classroom and the participation rate was 71.2%. Interviewers registered whether school had been on strike at any time during that year. We performed a cross-sectional analysis, matching students who had been exposed to strikes to those who had not been exposed to strikes through propensity score matching method. The outcomes were the prevalence of marijuana use (last year), the incidence of marijuana use over the last year and the number of days of use in the last month. The students who were not exposed to strikes had a prevalence of 21.8%, an incidence of 11.3% and an average of 7.04 days of marijuana use (among those who used in the last month). The absolute difference between exposed students and non-exposed students was 2.09 (95% Confidence Interval [95%CI] 0.84 to 3.33), 1.62 (95%CI 0.74 to 2.77) percentage points and 0.60 (95%CI -0.27 to 1.48) days, respectively. Students exposed to the 2011 strikes had a higher prevalence and incidence of marijuana use, compared to those who were not exposed. These results contribute to the understanding of the increasing trend in marijuana use observed in recent years in Chile.

0563

SUBSTANCE ABUSE TRENDS AMONG RECENT LATINO IMMIGRANT ADOLESCENTS COMPARED TO US BORN LATINO ADOLESCENTS Sean Cleary*, Mark Edberg, Elizabeth Andrade, Rosa Delmy Alvayero (Milken Institute School of Public Health, George Washington University)

Latinos experience more serious consequences of substance abuse (SA) than other racial/ethnic groups, including intimate partner violence, incarceration, and medical comorbidities. Previous research indicates that SA is higher among U.S. born Latinos compared to immigrants, and is positively associated with time living in the US. Yet few studies sample recently arrived (< 5 years) immigrant adolescents who face significant stress resulting from adjustment to a new culture that may affect SA or who may immigrate with existing SA problems. This study describes substance use trends between 2007 and 2014 in among recent Latino immigrant adolescents compared with US born Latino immigrants. Analyses were based on four serial cross-sectional community surveys of adolescents (n=1,365) aged 12 to 17 years in the DC metropolitan area. Self-reported cigarette use was twice as high in this sample of Latino adolescents as reported in the Monitoring the Future (2013) studies as the national average. Trends of alcohol and drug abuse in this sample decreased over time and were lower than the national average for Latino adolescents. Although drug abuse was lower among recent immigrant Latino youth, an increasing trend was observed in this sample. Among immigrant Latino adolescents, alcohol use increased with length of time in the US, however, among the most recent immigrants prevalence of alcohol use was as high as those living in the US for more than 5 years. Drug abuse was higher among foreign-born than the US-born Latinos adolescents in the sample, and highest among the most recently arrived (< 5 years) immigrants. These results are in contrast to the immigrant health paradox pattern wherein assimilation is related to increase alcohol and drug abuse. Findings have implications for immigrant health policy underscoring the need for greater support of community-based culturally tailored substance abuse prevention and treatment programs for recent Latino immigrant adolescents.

0564

DOES HAZARDOUS DRINKING CONTRIBUTE TO GENDER AND RACIAL DISPARITIES IN HEALTHCARE ENGAGEMENT AND VIRAL LOAD SUPPRESSION AMONG PERSONS LIVING WITH HIV? Robert Cook*, Zhi Zhou, Natalie Kelso, Nicole Whitehead, Christa Cook, Jeffrey Harman, Kendall Bryant, Karalee Poschman, Becky Grigg (University of Florida)

Background: Inconsistent engagement in HIV care and poor HIV viral suppression are more common in women and in racial/ethnic minority groups. Hazardous drinking is also associated with these adverse HIV outcomes. We therefore sought to determine whether the association of hazardous drinking with HIV care engagement and viral suppression varies by gender and racial/ethnic groups. **Methods:** We used data from 2078 randomly-selected PLWH from Florida who participated in the CDC-sponsored Medical Monitoring Project (MMP) between 2009 and 2013. Hazardous drinking was defined as >14 or >7 drinks/week for men and women; inconsistent care engagement defined as <3 HIV visits, and inconsistent viral suppression as having any detectable viremia in past 12 months. **Results.** The sample was 69% male; 36% were white, 45% black, and 18% Hispanic. Past-year hazardous drinking was reported by 15%, 27% were not fully engaged in care, and 31% had detectable viremia. In unadjusted analyses, hazardous drinking was associated with increased odds of detectable viremia (OR 1.37, 95% CI 1.01, 1.85), and a trend towards inconsistent care engagement (OR 1.22, 95% CI 0.95, 1.58). The relationship of hazardous drinking to detectable viremia was similar by gender, but greater in whites (OR 1.78, 95% CI 1.15, 2.76) than blacks (OR 1.09) or Hispanics (OR 1.14). The relationship of hazardous drinking to inconsistent care engagement was much greater in women (OR 2.28, 95% CI 1.41, 3.70) than in men (OR 1.05); but was not significantly different by race/ethnic group. **Conclusions:** Hazardous drinking was more strongly associated with some HIV care outcomes in women and in whites, thus demonstrating potential contribution to gender but not racial disparities in this sample. Understanding the reasons for these differences could help us to better tailor interventions to help improve HIV care outcomes in persons who drink.

0565-S/P

TRENDS IN TREATMENT ADMISSIONS FOR PRESCRIPTION OPIOID ABUSE AMONG PREGNANT WOMEN IN PENNSYLVANIA, 1992-2012 Vanessa Short* (Nemours/Thomas Jefferson University)

Objective: Opioid use during pregnancy is associated with significant adverse outcomes including birth defects and neonatal abstinence syndrome. Current data suggest that prescription opioid abuse among pregnant women has increased in the United States; however, sub-national estimates are limited. Here we investigate patterns of this emerging and important epidemic among pregnant women in Pennsylvania. **Methods:** Admissions data from the Treatment Episodes Data Set were used to describe prescription opioid abuse admissions among pregnant women in Pennsylvania from 1992 to 2012. Trends across time were assessed using the Cochran-Armitage test. Chi-squared tests were used to compare demographic characteristics of admissions by admission year. **Results:** From 1992 to 2012, the overall proportion of pregnant admissions among women of reproductive age remained stable at approximately 4% while admissions of pregnant women for any prescription opioid use increased from 2% to 32% ($p<0.0001$). Pregnant admissions reporting prescription opioids as the primary substance of abuse increased from 1% to 18% ($p<0.01$). Admissions for prescription opioids as the primary substance of use became increasingly common among young (<20 years of age; 0% in 1992 to 9% in 2012, $p<0.0001$), unmarried (57% in 1992 to 95% in 2012, $p=0.0001$), non-Hispanic white women (83% in 1992 to 91% in 2012, $p=0.008$) as did polysubstance use (50% in 1992 to 73% in 2012, $p<0.0001$). The proportion of prescription opioid users receiving medication assisted opioid therapy did not change during the study period ($p=0.11$); approximately 50% of pregnant admissions reporting opioid use received such treatment. **Conclusion:** Abuse of prescription opioids among pregnant treatment admissions has increased significantly over time in Pennsylvania and the demographic characteristics of admissions have shifted. This information may be useful for anticipating future needs for services and for targeting those at risk.

0570-S/P

DISPARITY IN COLORECTAL SCREENING BETWEEN RECENT IMMIGRANTS AND NON-IMMIGRANTS IN CANADA: MEDITATIONAL ROLE OF SOCIOECONOMIC AND HEALTH CARE ACCESS FACTORS Alexandra Blair*, Marie-Pierre Sylvestre, Lise Gauvin, Marie-Hélène Mayrand, Geetanjali D. Datta (Université de Montréal, CRCHUM)

Canadian data show that the uptake of colorectal cancer (CRC) screening lower among recent immigrants in comparison to non-immigrants. Little is known about mediating factors that may explain this disparity. We applied the Vanderweele and Vansteelandt (2010) method of mediation analysis (exposure-mediator interaction) to evaluate the association between recent immigration and CRC screening. The outcome, screening non-adherence (SNA) was defined as not receiving either fecal blood testing in the past 2 years or endoscopy in the past 5 years. Mediators tested were income (CAD), education (less than high school graduation vs. more), and access to a regular medical doctor (MD) (no vs. yes). Logistic models adjusted for sex, age, marital status and mediators. After pooling 8 cross-sectional waves of the Canadian Community Health Survey data (2003-2012), there were 130,470 respondents aged 50-75 (n=3784 recent immigrants, i.e. <10 years previous to survey; n=126,685 non-immigrants). Longer-term immigrants were excluded from this analysis. Recent immigrants (84% SNA) had 1.32 times greater odds of SNA (95%CI: 1.01, 1.73) in comparison to non-immigrant respondents (80% SNA). The natural indirect effects (OR[NIE]) for the recent immigrant/non-immigrant disparity in SNA indicated that the odds of SNA among recent immigrants are elevated by 11% because of lack of access to an MD (OR[NIE]=1.11, 95%CI: 1.03, 1.20), and by 2% due to lower income (OR[NIE]=1.02, 95%CI: 1.001, 1.04). If inequalities in access to MDs and income between recent immigrants and non-immigrants were eliminated, disparities in CRC screening could be reduced. This information is useful for identifying targets of public health interventions that address the social determinants of CRC screening, while focusing on the overall low level of screening participation in both groups.

0572-S/P

DISPARITIES AT THE INTERSECTION OF MARGINALIZED GROUPS John W. Jackson*, David R. Williams, Tyler J. VanderWeele (Harvard T.H. Chan School of Public Health)

SIGNIFICANCE: Health disparities exist across several domains, including race/ethnicity, socioeconomic status, gender, and sexual orientation. Recent calls argue for studying persons who are marginalized in multiple ways, as they often carry the greatest burden of disease. These calls invoke the perspective of intersectionality, a qualitative framework of inquiry applied in the social sciences. Quantitative adaptations are emerging and could inform policy, but there is little guidance as to what measures or methods are helpful. **APPROACH:** Here, we consider the concept of a joint disparity and its composition. We show that its components can illuminate how outcomes are patterned for multiply marginalized groups. **ANALYSIS:** Using the National Longitudinal Survey of Youth, we examined joint disparities for outcomes in early adulthood (incarceration, wages, and unemployment), comparing black males with low SES during childhood vs. white males with high SES during childhood. These three outcomes are strongly related to well-being and longevity. **RESULTS:** For each outcome, both race and SES were critical in shaping the joint disparity but in different ways. Of the joint disparity in incarceration (11%; 95%CI 8 to 14), roughly half was due to SES alone and another third to race alone, but their intersection only contributed eleven percent. For the joint disparity in log hourly wage (-0.26; 95%CI -0.21 to -0.32), roughly half was due to SES alone and another half to race alone; none was attributable to the intersection of race and SES. Only for the joint disparity in unemployment (13.4%; 95%CI 9.7 to 17.2) did the intersection contribute substantially: there it accounted for two fifths of the disparity, with race alone accounting for another two-fifths and SES alone the remaining one fifth. **CONCLUSION:** The joint disparity measure and its composition may prove useful for monitoring and understanding the health of multiply marginalized populations.

0571-S/P

BEING OVERWEIGHT AT 12 MONTHS OF AGE IN HISPANIC VERSUS NON-HISPANIC CHILDREN: COMPARING CLINICAL AND SOCIAL FACTORS Suchitra Hourigan*, Sahel Hazrat (Inova Health System)

Background: Prevalence of childhood obesity is higher among Hispanics compared to Non-Hispanic Whites. **Objective:** Compare the clinical and social factors associated with being overweight in Hispanic versus Non-Hispanic children. **Methods:** Over 2500 families have been recruited in prenatal stage at the Inova Translational Medicine Institute, Falls Church, VA. Clinical and social data were collected during pregnancy and at birth and parents completed surveys every 6 months. Weight for length at 12 months was calculated using WHO gender specific growth charts and overweight was defined as weight for length greater than or equal to 85th percentile. Factors associated with overweight among Hispanics and Non-Hispanic were analyzed using Chi-square and two sample t-tests. Whole genome sequence was generated for the individuals in the study. Self-reported ethnicity was validated using estimated ancestral admixture proportions of four super populations. **Results:** Of the 587 children, 12% were Hispanic and 88% Non-Hispanic; 217 (37%) in total were overweight at 12month of age. Of the overweight children, 31(14.3%) were Hispanic. Clinical and social factors significantly associated (p less than 0.01) with being overweight in Hispanics children were (1) early solid food introduction, (2) juice and sugar sweetened beverage, (3) lower maternal education, and (4) gestational diabetes. Factors significantly associated with being overweight in the Non-Hispanics were (1) increased weight gain during pregnancy, (2) lower maternal confidence score, and (3) higher perceived stress score. Admixture proportion of individuals showed a strong congruence to self-reported ethnicity (M= 0.85, SD=0.20). **Conclusions:** Different factors were found to be associated with being overweight in Hispanic and Non-Hispanic children. Knowledge of these differential factors may allow targeted anticipatory guidance to different populations at an early age for modifiable factors such as dietary interventions.

0573

THE RELATIONSHIP BETWEEN STATE-LEVEL INCOME INEQUALITY AND ACCESS TO PRENATAL CARE AMONG MOTHERS WHO GAVE BIRTH IN THE UNITED STATES IN 1995 Roman Pabayo*, Erin Grinshteyn, Daniel Cook, Peter Muennig (University of Nevada, Reno, Department of Community Health Sciences, Harvard T.H. Chan School of Public Health Department of Social and Behavioral Sciences)

Background: High-levels of income inequality are thought to reduce access to healthcare. Access to healthcare is thought to be an important determinant of infant mortality. Therefore, we examine the relationship between State-level income inequality and access to prenatal care among mothers who gave birth in the US in 1995. **Methods:** We used data from the 1995 United States Vital Statistics Linked Infant Birth and Death Records to assess the relationship between state-level income inequality and a mother's likelihood of receiving inadequate prenatal care. Data were available for 3,712,752 infants and their mothers. Multi-level logistic regression was used to determine if US State-level income inequality, as measured by the Gini coefficient (Z-transformed), was a significant risk factor for inadequate access to prenatal care, while adjusting for individual and state-level covariates. **Results:** Average State-level inequality was 0.40 (SD=0.03) and ranged from 0.36 to 0.53. Among mothers, 5.8% (n=214,882) had inadequate prenatal care. The crude association between State-level income inequality and inadequate prenatal care indicated an increase in each standard deviation of Gini Z-score was associated with an increased likelihood for inadequate prenatal care (OR=1.27, 95% CI=1.10,1.46). When we adjusted for individual and State-level confounders, State-level inequality was associated with increased likelihood of inadequate access to prenatal care but the odds ratio estimate was diminished (OR=1.11, 95% CI=0.98,1.26) and was only marginally significant. **Conclusion:** Mothers living in a state with higher income inequality increases the likelihood of decreased access to health care, such as prenatal care.

0574-S/P

SIMULATING THE IMPACT OF HIGH-RISK AND POPULATION INTERVENTION STRATEGIES ON EQUITY AND EFFICIENCY IN DISEASE PREVENTION Jonathan Platt*, Katherine Keyes, Sandro Galea (Columbia University)

Two main strategies are often used to guide the design of population health interventions. One focuses on those deemed at high-risk for disease to decrease health inequities, and the other may focus on disease risk throughout an entire population to seek the most efficient return on investment of resources. Tension between equity and efficiency often implies a trade-off between maximizing population health and minimizing population health inequity. Using data from the National Health and Nutrition 2011-2012 Survey, we simulated four hypothetical interventions to contrast effects of primary and secondary prevention strategies in both high-risk and general populations. We modeled 3393 adult respondents' systolic blood pressure (SBP) mean, standard deviation, and prevalence of hypertension (SBP<130 mmHg) to measure changes to overall SBP and in SBP disparities resulting from primary prevention (reducing the prevalence of two risk factors (smoking, high body mass index)) or secondary prevention, reducing SBP directly. We also stratified the sample by low and high income individuals to model the effect of interventions in different socioeconomic contexts. The mean SBP reduction was greatest in the population secondary prevention strategy (114.8 mmHg), and the standard deviation was narrowest in the high-risk secondary prevention strategy (8.9 mmHg). Compared to baseline, secondary prevention achieved a greater decrease in hypertension prevalence in the high risk population (95.8%) than in the general population (64.2%). Further, the reduction in hypertension prevalence achieved through high-risk primary prevention in the low income population was nearly three times greater than the high income population (23.1% vs. 8.1%). The efficacy of strategies depends on the target population of the intervention, the prevalence and attributable risk of the exposures of interest, and the assumptions and goals of the interventions we design to improve population health.

0575

INEQUALITIES ON CARESEEKING FOR SYMPTOMS OF PNEUMONIA IN LATINA AMERICA & CARIBBEAN Fernando C Wehrmeister*, Inacio C M da Silva, María Clara Retrepo-Méndez Aluisio, J D Barros, Cesar G Victora (Federal University of Pelotas)

Background: Pneumonia accounts for 16% of all deaths of under-five children worldwide. Access to providers who can prescribe antibiotics can prevent virtually all such deaths. **Aim:** To evaluate inequalities in careseeking for symptoms of pneumonia from appropriate providers. **Methods:** We analyzed the most recent national child health surveys from Latin American & Caribbean (LAC), carried out since 2001. Symptoms of pneumonia were defined as cough plus rapid or difficult breathing (not caused by a blocked nose) in the two weeks preceding the survey. Cadres of appropriate providers were defined in each country. Wealth quintiles were derived from asset indices, and urban/rural residence was ascertained. The slope index of inequality (SII) was calculated to express the difference in careseeking between the richest and poorest extremes of the wealth distribution. **Results:** In 19 surveys, appropriate careseeking ranged from 27% in Saint Lucia to 97% in Cuba, with a median 66%. In the 17 surveys with information on place of residence, careseeking was significantly higher in urban areas in four countries, while no countries showed higher careseeking prevalence in rural areas. The Dominican Republic was the only country where careseeking was higher among the poor (SII=-29.8, 95% CI -50.0; -9.8). From 18 countries with information on wealth, five had significantly higher careseeking among the rich: Bolivia, Colombia, Haiti, Jamaica and Nicaragua, with SIIs of 29.8, 23.4, 35.4, 32.7 and 29.3, respectively. The SII was inversely correlated to log gross domestic product (GDP) per capita ($r=-0.55$; $p=0.019$). **Conclusions:** Inequalities in careseeking for symptoms of pneumonia vary across countries in LAC, with a predominance of pro-rich and pro-urban patterns. Inequalities are wider in countries with low GDP.

0580-S/P

RISK OF IDIOPATHIC PULMONARY FIBROSIS (IPF) IN PATIENTS EXPOSED TO STATINS AND OTHER LIPID LOWERING AGENTS Daina Esposito*, Crystal Holick, Macarius Donneyong, Vibha Desai, Stephan Lanes (HealthCore, Inc and Boston University)

Background: Idiopathic pulmonary fibrosis (IPF), the most common interstitial lung disease (ILD), is an irreversible interstitial pneumonia with a dismal prognosis. There is conflicting evidence on the relation between statin use and IPF. **Objectives:** To assess the relation between statins and IPF and ILD, and compare the risk of IPF and ILD in high versus low-potency statin users. **Methods:** We used the HealthCore Integrated Research Database to establish a cohort of new-users of statins and other lipid lowering agents 50 years old with 6 months of continuous health plan eligibility prior to the first lipid-lowering agent dispensing. IPF was identified by a validated algorithm. ILD, included as a secondary outcome because an ILD that the clinician attributed to statin therapy would not be classified as idiopathic, were identified using applicable ICD-9 diagnosis codes. We controlled confounding using propensity scores and estimated the incidence rate ratio of IPF and ILD for use of statins versus other lipid-lowering agents. **Results:** We analyzed 714,474 statin users and 106,428 patients who used other lipid-lowering agents. Mean age of each group at the initiation of therapy was 60 years. Among statin users, we identified 274 IPF cases and 10,751 ILD cases. Among other lipid-lowering agent users, we identified 39 IPF cases and 1,878 ILD cases. The RR estimate for IPF was 1.13 (95% CI 0.80 – 1.58) for statin users versus users of other lipid-lowering agents, and 0.80 (95% CI 0.42 – 1.51) for users of high versus low potency statins. The RR estimate for ILD was 0.87 (95% CI 0.83 – 0.91) for statin users versus other lipid-lowering agent users and 1.35 (95% CI 1.23-1.49) for high versus low potency statin users. **Conclusions:** We did not identify a relation between statin use and IPF, however statin-users had a lower risk of ILD than did users of other lipid lower agents. High potency statin users had an increased risk of ILD, compared to low potency statin users.

0582-S/P

USING DIAGNOSTIC CODES FROM ADMINISTRATIVE DATA TO DETERMINE ANTIDEPRESSANT TREATMENT INDICATIONS: A VALIDATION STUDY Jenna Wong*, David Buckridge, Michal Abrahamowicz, Robyn Tamblyn (Department of Epidemiology and Biostatistics, Clinical and Health Informatics Research Group, McGill University)

Motivation: Studies evaluating antidepressant use for off-label indications require information on treatment indications, but this information is rarely documented. Most studies estimate antidepressant treatment indications using diagnostic codes from administrative data, but this method has never been validated. **Methods:** Validation study of the accuracy of using diagnostic codes from physician billing and hospital data to determine antidepressant treatment indications. As a gold standard, we used physician-documented treatment indications for antidepressant prescriptions in an e-prescribing system from Jan 2003-Dec 2012. We linked prescriptions with physician billing and hospital data in the past year and calculated the sensitivity, positive predictive value (PPV), and positive likelihood ratio (LR+) of using diagnostic codes from these sources to determine antidepressant treatment indications. **Results:** Among 77,714 prescriptions, antidepressants were most commonly prescribed for depression (56%), anxiety (18%), insomnia (10%), pain (7%), and panic disorders (4%) according to the gold standard. Compared to the gold standard, diagnostic codes from billing or hospital data had very low sensitivity for insomnia (12%) and low sensitivity for panic disorders (65%), anxiety (58%), pain (52%), and depression (50%). The PPV of depression codes (73%) was higher than the very low PPV of codes for insomnia (24%), anxiety (22%), pain (12%), and panic disorders (8%). Insomnia codes had the highest LR+ (2.8) while anxiety codes had the lowest (1.3). Compared to hospital data, billing data was a better source of diagnostic codes, the majority of which were provided by the prescribing physician. **Conclusions:** Diagnostic codes from physician billing and hospital data cannot be used to accurately determine antidepressant treatment indications. Systematic documentation of antidepressant indications at the point of prescribing is essential to properly evaluate antidepressant use for off-label indications.

“-S/P” indicates work done while a student/postdoc

0581

WHAT IS THE EFFECT OF VARENICLINE ON LONG-TERM SMOKING ABSTINENCE IN PRIMARY CARE PATIENTS? Gemma Taylor*, Amy Taylor, Richard Martin, Marcus Munafò, Frank Windmeije, Kyla Thomas, Neil Davies (University of Bristol)

Background: Smoking is biggest cause of avoidable morbidity and mortality in developed nations. Varenicline has been shown to be the most effective intervention for short-term smoking abstinence. However, there is little evidence for its long-term effectiveness versus other stop smoking medications, when prescribed as part of usual care. In this study, we aimed to determine the effect of varenicline on long-term smoking abstinence. **Methods:** A prospective cohort study using electronic medical records from 654 general practices in England. The analysis included 218,800 patients aged 18 and over who were prescribed nicotine replacement therapy (NRT) or varenicline for smoking cessation. Our outcomes were smoking abstinence 1 and 3 years after first prescription. We compared estimates derived from linear regression modelling and instrumental variable analyses using physicians' prescribing preferences as the instruments (i.e. the type of smoking cessation product most recently prescribed by the physicians relative to a competing product). **Results:** 29% of the sample was prescribed varenicline. Linear regressions adjusted for age and sex indicated that people prescribed varenicline had a reduced risk of continuing smoking at 1 year compared to NRT, risk difference per 100 patients treated (RD) -0.32 (95%CI:-0.37 to -0.27) and at 3 year follow-up RD -0.13 (95%CI:-0.19 to -0.07). Instrumental variable analysis indicated that the effect was stronger than estimated by linear regression modelling at 1 year RD -0.56 (95% CI: -0.68 to -0.43) and at 3 years RD -0.34 (95%CI:-0.40 to -0.30). **Conclusions:** This is the first evidence of the long-term efficacy of varenicline for smoking cessation. 1/3 of people were prescribed varenicline. However, patients prescribed varenicline were more likely to abstain from smoking, compared to those prescribed NRT. If varenicline was prescribed more frequently in primary care, smokers would be more likely to maintain long-term smoking abstinence.

0583-S/P

MATCHING WEIGHTS TO SIMULTANEOUSLY COMPARE THREE TREATMENT GROUPS: COMPARISON TO THREE-WAY MATCHING Kazuki Yoshida*, Sonia Hernández-Díaz, Daniel H. Solomon, John W. Jackson, Joshua J. Gagne, Robert Glynn, Jessica M. Franklin (Harvard T. H. Chan School of Public Health)

OBJECTIVES Propensity score matching has become a common tool of epidemiologists in recent years. However, its use in settings with more than two treatment groups has been less frequent. We examined the performance of a recently developed propensity score weighting method in the three treatment group setting. **METHODS** The matching weight (MW) method is an extension of inverse probability weighting that reweights both exposed and unexposed groups to the common support population, effectively emulating a population exact-matched on propensity scores. As with other weighting methods, MW can generalize to multiple treatment group settings. The performance of MW in the three-group setting were compared via simulation to three-way 1:1:1 fixed-ratio propensity score matching. These two methods were also applied to an empirical example that compared safety of NSAIDs, coxibs, and opioids. **RESULTS** The MW estimand can be proven to equal to the exact matching estimand. Overall, MW achieved less bias (83.4% of 504 scenarios without treatment effect heterogeneity) and increased efficiency (91.4% of 672 scenarios) compared to three-way matching. The benefits were more pronounced in scenarios with smaller sample sizes (total 2000), unequally-sized treatment groups (49:49:2 or 2.5:2.5:95), poor covariate overlap, or large unexplained variability in outcome ($R^2 = 0.5$). In the empirical example, MW achieved better balance for 29 out of 35 covariates. Hazard ratios were numerically similar, however, the confidence intervals were narrower for MW. **CONCLUSIONS** MW demonstrated improved performance over three-way matching both in terms of validity and efficiency, particularly in simulation scenarios where finding matched subjects was difficult. Given its natural extension to settings with even more than 3 groups, we recommend MW for comparing outcomes across multiple treatment groups, particularly in settings with small sample sizes and unequal exposure distributions.

0584-S/P

VISUALIZING COMPLEX LONGITUDINAL DATA TO INFORM STUDY DESIGN AND ANALYSIS Xiaojuan Li*, Stephen R Cole, M Alan Brookhart (Epidemiology, UNC Gillings School of Global Public Health)

Comprehensive and complex clinical data hold tremendous potential for generating new knowledge about improving health outcomes. Despite advantages, the complexity of such big clinical data presents a substantial challenge to researchers. For example, the ability to accurately quantify individual exposures and covariates as they evolve through time is critical. Data visualization can be used as a tool to explore such exposures and inform study design and analysis. We demonstrate complex data visualization in an example motivated by a study to evaluate the comparative effectiveness of intravenous iron treatment plans on mortality in 27,754 incident hemodialysis patients. We use clinical data from a large US dialysis provider linked to healthcare utilization data from Medicare. The clinical data contain information on thrice-weekly hemodialysis sessions, intravenous therapy, and laboratory test results used by clinicians to make treatment decisions. The Medicare data contain information on all healthcare use, including hospitalizations. We show that visualizing data can (1) reveal hidden treatment patterns and inform exposure assessment, (2) illustrate the advantage of a “treatment decision design” over a new-user design, (3) suggest mechanisms to censor patients, and (4) demonstrate that categorizing follow up into fixed monthly intervals results in misclassification of time-varying exposures and covariates, which instead can be anchored on days when treatment decisions are made. In addition, we show that use of a cumulative exposure over a long period may mask important time-varying confounding during the intervals. Data visualization can be used to facilitate insights into the complexity of data structure and identify appropriate exposure assessment, study design, and analytical approaches for study questions of interest.

0590-S/P

BUILT ENVIRONMENT AND WALKING BEHAVIOR AMONG BRAZILIAN OLDER ADULTS: A POPULATION-BASED STUDY Marui Weber Corseuil Giehl*, Pedro C. Hallal, Cláudia W. Corseuil, Eleonora d'Orsi (Federal University of Santa Catarina)

Understanding the built environment influence on specific domains of walking is important for public health interventions to increase physical activity levels among older adults. The objective was to examine the association between objective measures of the built environment and walking for transportation among older adults. To achieve this, a population-based study was performed in 80 census tracts in an urban area of Florianópolis, Brazil in 2009/2010, including 1,705 older adults (60+ years). The International Physical Activity Questionnaire (IPAQ) was used to measure the walking for transportation. The built environment characteristics were obtained through Geographic Information System (ArcGIS version 9.3) with data provided by the Florianópolis Institute of Urban Planning (IPUF) and 2010 Population Census (IBGE). All analyses were conducted through a multilevel logistic regression. The results showed that among the total eligible individuals (1,911), 1,705 were interviewed (response rate = 89.2%). Intraclass correlation of the outcome showed that 11.3% of the variation in reported walking for transportation was attributable to between neighborhood differences. The proportion of older adults that had reported 10min./week of walking for transportation was 60%. After considering individual characteristics (gender, age and educational status) individuals who live in neighborhood with higher income (OR: 1.62; CI 95%: 1.02; 2.63), higher population density (OR: 2.11; CI 95%: 1.36; 3.29), higher street connectivity (OR: 1.81; CI 95%: 1.14; 3.88), higher proportion of sidewalks (OR: 1.72; CI 95%: 1.09; 2.73) and paved streets (medium tercile: OR: 1.51; CI 95%: 1.04; 2.45; higher tercile: OR: 2.08; CI 95%: 1.30; 3.32) were more likely to walk (10min./week) for transportation. The built environment may affect walking for specific purposes among older adults. Investments in the environment may increase physical activity levels of older adults in Brazil.

0592- S/P

MORTALITY FOLLOWING NEGATIVE WEALTH SHOCK IN LATE MIDDLE AGE: A MARGINAL STRUCTURAL MODEL APPROACH Lindsay Pool*, Sarah A. Burgard, Belinda L. Needham, Michael R. Elliott, Carlos F. Mendes de Leon (Center for Social Epidemiology and Population Health, Department of Epidemiology, University of Michigan School of Public Health)

Little is known about the long-term health consequences of a sudden loss of wealth during late middle age (51-64 years), when personal net worth is typically maximized in anticipation of retirement. These negative wealth shocks often arise due to medical expenses, meaning health covariates may be both confounders and mediators. We applied a marginal structural model (MSM) approach accounting for this time-depending confounding to estimate the causal association between negative wealth shock and all-cause mortality in the Health and Retirement Study, a nationally representative sample of US adults in late middle age. A negative wealth shock was defined as a loss of 75% or more of net worth between two of the biennial survey waves. All-cause mortality was recorded by National Death Index records and exit interviews. Inverse probability weights that account for demographic, socioeconomic, and clinical confounding were used in marginal structural discrete-time hazard models, during the follow-up period from 1992 to 2012. Among 8,273 HRS participants with any net worth at baseline, 16% experienced negative wealth shock during late middle age. During follow-up, 32.4% of the wealth shocked sample died and 24.2% of the non- shocked sample died. In the MSM, negative wealth shock during late middle age was associated with a 37% higher mortality rate (95% CI 1.20-1.56). In a non-MSM conventional model adjusted for baseline and time-varying covariates, negative wealth shock in late middle age was associated with only a 22% mortality rate (95% CI 1.05-1.42). Independent of preceding health factors, negative wealth shock during late middle age is associated with higher rate of all-cause mortality. The difference in the estimates between the MSM and non-MSM model estimates indicate substantial mediation by worsening health status that also confounds the association between negative wealth shock and mortality.

“-S/P” indicates work done while a student/postdoc

0591S/P

LIFECOURSE TRAJECTORIES OF MULTIMORBIDITY IN CANADA: BIRTH COHORT DIFFERENCES AND PREDICTORS Mayilee Canizares*, Anthony Perruccio, Sheilah Hogg-Johnson, Monique Gignac, Elizabeth Badley (Institute of Medical Science, University of Toronto & University Health Networks. Toronto, Ontario, Canada)

Background: The prevalence of chronic conditions has increased substantially in the past decades with a concomitant occurrence of multiple conditions (multimorbidity). The goal of this study was to determine if the age-trajectories (lifecourse) of multimorbidity differ by birth cohort and how they are affected by changes in socio-economic status (SES) and lifestyle factors in the Canadian population. **Methods:** We used data from the Canadian Longitudinal National Population Health Survey (1994-2010). We examined 10,330 participants born from 1925 to 1974 grouped in five birth cohorts. Data on the number of chronic conditions (up to 18), SES (education, income), and lifestyle factors (BMI, physical activity, sedentary behavior, and smoking status) were collected biannually. The outcome was the presence of multimorbidity (2+ conditions). We used multilevel logistic growth models to examine cohort effects in the age-trajectory of multimorbidity adjusting for sex, SES, and lifestyle factors. **Results:** We found significant cohort differences in the age-trajectory of multimorbidity ($p < 0.0001$): when compared at the same age, each succeeding younger cohort had higher odds of multimorbidity than their older counterparts. The age-trajectories were similar for men and women, although women had higher prevalence of multimorbidity than men in all cohorts. Low SES (education and/or income), being smoker, obese, and with sedentary behavior were associated with increased odds of reporting multimorbidity. Cohort differences were still significant after the inclusion of these factors, although differences were somewhat reduced. **Conclusions:** The results suggest each succeeding younger cohort is reporting multimorbidity at earlier ages, which is not explained by differences in SES and lifestyle. The higher prevalence of multimorbidity at earlier ages is concerning, and it is unknown whether this is related to improvements in medical interventions, increased reporting, or other factors.

0593-S/P

DIABETES AND BLOOD GLUCOSE PREDICT MEMORY DECLINE IN THE HEALTH AND RETIREMENT STUDY Jessica R. Marden*, Eric J. Tchetgen Tchetgen, Ichiro Kawachi, Elizabeth Rose, Mayeda, M. Maria Glymour (Harvard TH Chan School of Public Health)

Background. Type 2 diabetes (T2D) is an established risk factor for dementia, but the evidence for T2D and accelerated memory loss is less consistent. Rate of memory decline is closely aligned with Alzheimer's and cerebrovascular pathology, so understanding how T2D and blood glucose relate to memory decline is crucial to elucidating the mechanisms driving higher dementia rates among diabetics. **Methods.** Health and Retirement Study participants ($n=8,888$) aged 50+ were interviewed biennially from 2006-2012. Diabetes was measured via self-report of a physician diagnosis. Glycated hemoglobin (HbA1c) was measured via dried blood spot (DBS) in either 2006 or 2008. Composite memory (z-scored) was based on immediate and delayed word list memory and the Informant Questionnaire for Cognitive Decline. Memory decline was modeled via linear growth models with age as the timescale from year of DBS collection to 2012. We used inverse probability weights to account for death and drop-out and controlled for a battery of social, behavioral, and health-related confounders. **Results.** 1,837 diabetics and 7,051 non-diabetics contributed an average of 5.2 years of follow-up. Average rate of memory decline was 0.44 standard deviation (SD) units per decade for people without diabetes. Diabetes was associated with a 10% faster rate of memory decline ($\beta = -0.04$ per decade; 95% CI: -0.06, -0.01; $p=0.007$). A 1-unit increase in HbA1c corresponded with an estimated 0.05 SD decrease in memory score per decade (95% CI: -0.08, -0.03; $p<0.001$). Even among individuals with HbA1c below 6.5% (threshold for diabetes), higher HbA1c was associated with faster memory decline ($\beta = -0.05$ per decade; 95% CI: -0.08, -0.03; $p<0.001$). **Discussion.** Higher HbA1c predicted faster memory decline after controlling for an extensive battery of confounders, even in non-diabetics. Blood glucose concentration may partially explain the diabetes-dementia association, although precise biological mechanisms are unknown.

0594-S/P

RACIAL DISPARITIES IN STROKE INCIDENCE: EVALUATING THE ROLE OF SURVIVAL BIAS IN AGE ATTENUATION WITH A SIMULATION STUDY Elizabeth Rose Mayeda*, Kirsten Bibbins-Domingo, Jessica R Marden, Rachel A Whitmer, Maria Glymour (University of California, San Francisco)

Stroke incidence is higher among blacks than other racial/ethnic groups in the United States (US). However, the magnitude of the black-white disparity decreases with age: after age 85, the disparity is eliminated. It is controversial whether this age attenuation reflects improved conditions for blacks at older ages or is an artifact of selective survival (collider-stratification bias). Survival bias could occur if an unmeasured variable influences both mortality and stroke risk. We conducted a simulation study to assess whether selective survival could plausibly account for age attenuation of black-white stroke disparities. We simulated data (300 replications) for a birth cohort of 20,000 blacks and whites with survival distributions based on US life tables. We generated stroke incidence rates for ages 45-95 using Framingham Heart Study rates for whites and a hazard ratio (HR) for the effect of black race on stroke as 2.0 at all ages. In all scenarios, we included U, a continuous variable that doubled stroke risk (HR=2.0). In a base scenario, U had no effect on mortality. Alternative scenarios varied effects of U on mortality for blacks and whites at different ages. As expected, we found no bias in the base scenario when U had no effect on mortality. When U influenced mortality for blacks but not whites, the black-white stroke disparity was attenuated at older ages. For example, in the scenario where U increased mortality of blacks by HR=1.02 per year over age 20 (age 25 HR=1.10; age 85 HR=3.62) but U had no effect on white mortality, the black-white stroke disparity was attenuated at older ages (ages 85-95: average observed HR=1.41; true HR=2.00). We found that selective survival could plausibly contribute to age attenuation of racial stroke disparities and describe scenarios in which this bias could account for previously reported population patterns of racial disparities in stroke. Similar structures may contribute to age attenuation of other social inequalities.

0600-S/P

PRENATAL EXPOSURE TO PERFLUOROALKYL SUBSTANCES AND CHILDHOOD INTELLIGENCE QUOTIENT (IQ): A DANISH NATIONAL BIRTH COHORT STUDY Zeyan Liew*, Beate Ritz, Bodil Bech, Ellen Nohr, Rossana Bossi, Tine Henriksen, Eva Bonefeld-Jørgensen, Jørn Olsen (UCLA Epidemiology)

Background: Perfluoroalkyl substances (PFASs) are widespread persistent organic pollutants found to be endocrine disruptive and neurotoxic in animals. Human studies that evaluate the potential impact of PFASs on offspring intelligence are sparse. We aim to evaluate the association between prenatal PFASs level and child IQ at age 5 in the Danish National Birth Cohort (DNBC). **Methods:** We studied 1,594 mothers and children enrolled in the DNBC during 1996-2002. Sixteen PFASs were measured in maternal plasma collected in early gestation. Child IQ was assessed at age 5 with the Wechsler Primary and Preschool Scales of Intelligence - Revised (WPPSI-R) administered by trained psychologists. We used multiple linear regression models to estimate changes in child full-scale IQ scores according to one unit (LN-ng/ml) increase in prenatal PFASs concentration. We used inverse-probability-weights (IPW) to account for sampling and non-participation in this DNBC sub-cohort. **Results:** Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) were detected in all samples; 5 other PFASs were quantified in > 80% of the samples. Weak negative correlations between prenatal PFOS and PFOA and child IQ were found in model adjusted for child's sex, maternal age, parity, smoking and drinking during pregnancy (per unit increase in PFOS = -1.95; 95%CI -4.80, 0.90, PFOA = -1.61; 95%CI -4.33, 1.11). However, these associations were attenuated and became null when we further adjusted for maternal education and IQ (per Ln-ng/ml unit increase in PFOS = -0.28; 95%CI -3.16, 2.61, PFOA = -0.16; 95%CI -2.92, 2.61). No associations were found for other type of PFASs and child IQ. **Conclusions:** Prenatal PFASs levels were not associated with child IQ scores at age 5 upon adjustment for maternal education and IQ in the Danish National Birth Cohort.

0602

THE COMBINATION OF ENVIRONMENTAL QUALITY WITH INCREASINGLY RURAL RESIDENCE AND ASSOCIATIONS WITH ADVERSE BIRTH OUTCOMES Lynne Messer*, Christine Gray, Shannon Grabich, Jyotsna Jagai, Jian Yun, Kristen Rappazzo, Danell Loddell (Portland State University)

Environmental quality differs across levels of urbanicity, and both urban and rural residence having been previously associated with better health. To explore these relationships, we constructed an environmental quality index (EQI) with data representing five domains (air, water, land, built, sociodemographic) for each United States (U.S.) county. Nine categories of rural-urban continuum codes ranging from (RUCC1 (most urban) to RUCC9 (most rural)) were used to group 3141 counties for analyses. Using six years of geocoded birth records (2000-2005) from the National Center for Health Statistics (n=24,347,911 births), we estimated prevalence ratios (PR) and 95% confidence intervals (95% CI) from fixed slope, random intercept log binomial regression models, clustered at the county-level. White non-Hispanic (NH), black NH and Hispanic race-stratified birth outcomes (preterm birth (PTB); very PTB; low birth weight (LBW); very LBW; term LBW and PTB-LBW) were estimated with standard outcome definitions applied. Models were adjusted for maternal age, education, and marital status. Across counties, the linear combination of the EQI with increasingly rural residence was associated with decreased odds of all six birth outcomes for white NH women (e.g., RUCC9 PTB-LBW white NH PR = 0.92 (95% CI: 0.87, 0.90), compared with the most urban counties (RUCC1). This pattern was largely replicated among Hispanic women (e.g., RUCC9 PTB-LBW PR=0.90 (95%CI: 0.82, 0.98)). The pattern differed for black NH births, however, for which increasingly rural residence (RUCC9) was associated with increased PTB-LBW (PR=1.05; 95% CI: 0.99, 1.11). More consistency was seen for white NH and Hispanic births than for black NH births. The combination of environmental quality across levels of urbanicity was associated with perinatal health, with effects differing by race/ethnicity. Disclaimer: This abstract does not necessarily reflect EPA policy.

“S/P” indicates work done while a student/postdoc

0601

THE EXPOSOME OF NORMAL PREGNANCY: PROOF-OF-CONCEPT Germaine Buck Louis*, Katherine Grantz, Edwina Yeung, Jose Masiog, Cuilin Zhang, Kurunthachalam Kannan, Rajeshwari Sundaram (NICHD)

Introduction: The developmental origins of health and disease and the exposome are novel research paradigms offering promise for understanding the complex patterns of in utero exposures that impact human reproduction and development across the lifespan. We sought to characterize and quantify the exposome of normal pregnancy inclusive of biomedical, lifestyle and chemical exposures to inform about its utility for future study. **Methods:** We randomly selected 50 healthy pregnant women from a pregnancy cohort who had serum/urine samples available each trimester. Using published standard operating procedures, 144 persistent (OCPs, PBDEs, PCBs, PFAAs), 48 non-persistent (BPA, BP-filters, DCP, hydroxyfluorene, hydroxypyrene, naphthalene, parabens, perchlorate, phenathrenes, phthalates, phosphates, TCP, trisoclan), 11 lifestyle (phytoestrogens, thiocyanate, caffeine/paraxanthine, cotinine), and 4 biologic (creatinine, iodine, lipids, melatonin) chemicals were quantitated. Multistage analysis included use of linear mixed models to analyze all exposures over time (pregnancy) using the Benjamini-Hochberg method for correction of false discovery. We used AIC-based R2 to estimate the percent variation in chemicals contributed by time and across women, and graphical techniques (heat maps; hierarchical clustering) to assess the overall patterns of chemical correlations over time. **Results:** Hierarchical clustering approaches identified 2 significant clusters after accounting for time: a cluster comprising 6 compounds that increased over pregnancy (lipids, caffeine, 2- and 4-hydroxyphenanthrene, perfluorohexanesulfonate, paraxanthine), and a cluster comprising 81 chemicals that decreased (OCPs, PBDEs, PCBs, PFAAs). All data will be graphically presented. **Conclusions:** Novel analytical approaches differentiated physiologic variation from distinct chemical patterns over pregnancy, which may inform about the metabolic response to environmental exposures during sensitive windows.

0603

A DATA-DRIVEN SEARCH FOR SEMEN QUALITY PREDICTORS OF MALE FECUNDITY Chirag Patel*, Rajeshwari Sundaram Germaine Buck-Louis (Dept. Bioinformatics Harvard School of Medicine)

Semen quality endpoints such as sperm count, morphology and motility have been reported to be predictive of pregnancy, though with equivocal finding prompting some authors to question the prognostic value of semen analysis. Using an exposome analytic approach, we evaluated 33 biomarkers of semen quality along with other fecundity-related biomarkers (serum lipids and serum cotinine, body mass index, age, ever fathered a pregnancy) in relation to impaired fecundity, defined as requiring >6 prospectively observed menstrual cycles to become pregnant. Using data from 402 male partners participating in the LIFE Study, we used environmental wide association (EWAS) techniques for analysis. In models adjusted for male age, 7 (18% of 40) biomarkers were found predictive of impaired fecundity (p<0.05 corresponding to a false discovery rate <25%), including the percentage of morphologically normal sperm using traditional (OR 0.6 per 1 SD increase, p=0.0003) and strict criteria (OR 0.7; p=0.001) criteria, and the percentage of abnormally coiled tail sperm (OR 1.4 per 1 SD increase, p=0.003). In a multivariate model including the 7 nominally significant variables (p=0.05), the predictive value was 11% higher than a model based upon male age, body mass index, serum lipids, serum cotinine, and having fathered a previous pregnancy (multivariate Area Under the Curve [AUC]=0.72 vs. AUC=0.66, ANOVA p=0.0002, respectively). In the multivariate model, age (OR 1.5 per 5 year increase, p=0.0007) and morphologic abnormalities involving the tail (coiled OR 1.4 per 1 SD increase, p=0.03) or sperm head (amorphous OR 1.6, p=0.02 and pyriform OR 1.5 per 1 SD increase, p=0.03) remained significant. Our findings suggest that the inclusion of semen quality endpoints may improve prediction of fecundity impairments over models restricted to more traditional fecundity biomarkers, but the findings await corroboration in larger cohorts utilizing exposome approaches.

0610-S/P

SLEEP DURATION IS INVERSELY ASSOCIATED WITH BIRTHWEIGHT IN A COHORT OF BRAZILIAN PREGNANT WOMEN. Ana Beatriz Franco-Sena*, Linda Kahn, Dayana Farias, Aline Ferreira, Ilana Eshriqui, Amanda Figueiredo, Michael Schlüssel, Pam Factor-Litvak, Gilberto Kac (Rio de Janeiro Federal University)

Background: High proportions of births of macrosomic or large for gestational age neonates are observed worldwide. Studies on sleep duration suggest it may play a role in weight control. Thus, we hypothesize that the duration of sleep throughout pregnancy may be associated with birthweight (BW). **Objective:** To evaluate the effect of sleep duration throughout pregnancy on BW in nulliparous and parous women. **Methods:** A prospective cohort of 173 pregnant women was followed at the 5-13th, 20-26th and 30-36th gestational weeks. The outcome was the z-score of BW for gestational age and sex, according to the International Fetal and Newborn Growth Consortium for the 21st Century (Intergrowth-21st) curves. The effects of sleep duration (number of hours) in the first trimester of pregnancy, as well as the effects of the variations in sleep duration from 1st to 2nd (value in the 2nd minus value in the 1st) and 2nd to 3rd (value in the 3rd minus value in the 2nd) trimesters, were assessed using linear regression models adjusted by maternal age, pre-gestational BMI, smoking, Edinburgh Postnatal Depressive Scale, gestational weight gain, education, marital status, per-capita family income and planned pregnancy. Analyses were stratified by parity status. **Results:** In nulliparous women, sleep duration in the first trimester of pregnancy was inversely associated ($r = -0.29$, p -value=0.001) with BW z-score. We also detected associations between the variations in sleep duration across pregnancy trimesters (1st to 2nd: [$r = -0.28$, p -value=0.005]; 2nd to 3rd: [$r = -0.15$, p -value=0.039]) and BW z-score. No associations were detected among parous women. **Conclusion:** Sleep duration presented an effect on BW z-score in nulliparous but not in parous women. Our results indicate that, in nulliparous women, longer periods of sleep in the first trimester are associated with lower BW z-scores and the same is true for women who present lower decreases in the duration of sleep throughout pregnancy.

0612

HOW ARE NEW DADS SLEEPING? A PROSPECTIVE STUDY TO IDENTIFY PATTERNS AND DETERMINANTS OF SLEEP QUALITY IN FIRST-TIME FATHERS Deborah Da Costa*, Phyllis Zekowitz, Kaberi Dasgupta, Ilka Lowensteyn, Kelly Hennegan, Rebecca Wickett, Michael Raptis, Samir Khalife (McGill University)

Sleep deprivation and poorer sleep quality are common in women during the perinatal period and have been associated with maternal postpartum depression. Less is known about changes in sleep patterns in men during the transition to parenthood. This study aimed to examine sleep duration and quality in men 2 months following their infant's birth and to identify factors associated with poor sleep quality. Men expecting their first child were recruited from local prenatal classes and university affiliated obstetric clinics. During their partner's third trimester of pregnancy and 2 months following their infant's birth, 459 men (mean age = 34.3 years, \pm 5.5 years) completed standardized online self-report questionnaires measuring depressed mood, physical activity, marital adjustment, life events, financial stress and demographics. Sleep was assessed using the Pittsburgh Sleep Quality Index (PSQI) and a measure of parental stress was added to the postnatal assessment. Multiple linear regression examined correlates of poorer sleep quality at postpartum. Sleep duration was reduced by 48 minutes to 6.2 hours at postpartum, and mean sleep efficiency was reduced from 90.9% to 83.1%. The prevalence of poor sleep quality (defined as PSQI global score > 5) increased from 29.6% during the third trimester to 44.7% at 2 months postpartum. Poorer antenatal sleep quality ($r = 0.38$, 95% CI [0.30, 0.46]), greater postnatal depressive symptoms ($r = 0.17$, 95% CI [0.05, 0.18]) and higher parental stress ($r = 0.20$, 95% CI [0.03, 0.09]) were significant determinants of poorer sleep quality in the postpartum. Sleep is compromised in new fathers following the birth of a child. The findings suggest that sleep hygiene counseling, psychosocial strategies aimed at improving depressed mood, and preparation skills to manage the challenges of parenting are important components to include in prenatal interventions aimed at enhancing the transition to parenthood.

"-S/P" indicates work done while a student/postdoc

0611

THE EFFECT OF SLEEP DURATION AND SATISFACTION ON INJURIES AMONG ADOLESCENTS Won Kyung Lee*, Seung-sik Hwang (Inha University)

Background Sleep duration has been declining among adults as well as adolescent. Sleep deprivation could be harm our health and injuries was suggested to be related to insufficient sleep. However, the influence of sleep deprivation on injuries during adolescence is still under exploration. Therefore, we tried to evaluate the influence of sleep duration and satisfaction on injuries among adolescents. **Methods** We analyzed the data from the Tenth Korea Youth Risk Behavior Web-based Survey (KYRBS), 2014, which was designed and conducted by Korea Centers for Disease Control and Prevention. The representative sample was 400 middle schools and 400 high schools from the two-staged stratified cluster sampling method. Total number of respondents was 73,238 students with the response rate of 97.7%. Students answered the questions on the experience of injuries on school property, sleep duration and their satisfaction from sleep and the confounders. **Results** The adolescent reported that the average sleep durations in weekdays and weekend were 6.4 and 8.6 hours, respectively. 27.9% and 13.4% of the respondent felt dissatisfied and very dissatisfied with sleep duration, while those answering neutral, satisfied, very satisfied were 32.3%, 18.8% and 7.6%, respectively. In terms of injuries on school property, the risk of injuries increased as sleep duration and satisfaction decreased. Injuries increased by 7% if sleep duration decreased by 1 hour. Besides, they got injured 13%, 15%, 26% and 43% more than those very satisfied with their sleep duration if they felt satisfied, neutral, dissatisfied and very dissatisfied. **Conclusions** Sleep duration and their satisfaction from sleep could independently contribute to injuries at school. Insufficient sleep could keep its influence on injuries through inattention controlling for demographic, sensation seeking behavior and physical activity.

0613

DETAILED ASSESSMENT OF DAYTIME SLEEP CHARACTERISTICS AND CHRONOTYPE. AN ANALYSIS OF THE INNOVATION SAMPLE OF THE GERMAN SOCIO-ECONOMIC PANEL STUDY (SOEP) Andreas Stang*, Melanie Zinkhan, David Richter Karl-Heinz Jockel (Center of Clinical Epidemiology; c/o Institute of Medical Informatics, Biometry and Epidemiology (IMIBE); University Hospital Essen, Germany)

Introduction: Daytime napping has been associated with increased and decreased risks of cardiovascular events. Previous studies did not assess details of daytime napping including the reason for, the location and the subjective effect. The aim of this study was to provide these details assessed in a cross-sectional study in Germany. **Methods:** We used data of the innovation sample of the Socioeconomic Panel Study (SOEP), that representing a population-based sample of private households in Germany for people aged 16 years and more. Overall 1383 personal interviews took place between September 2013 and January 2014 among people aged 16-95 years. We estimated prevalences and age- and sex-adjusted prevalence ratios (PR) and 95% confidence intervals (95% CI). **Results:** The prevalence of regular daytime napping was 14.2% and 13.6% among men and women. Reasons for regular daytime napping were nonrestorative nocturnal sleep (7.5% and 27.1%), habitual napping (96.8% and 81.3%) and physical or mental exhaustion (44.6% and 61.1%) among men and women, respectively. Regular long daytime nappers (> 60 min) more frequently reported nonrestorative nocturnal sleep (28.6% versus 14.3%; age- and sex-adjusted PR=1.8, 95%CI 0.9-3.4) and exhaustion (69.1% versus 48.3%; age- and sex-adjusted PR=1.9, 95%CI 1.1-3.5) as reasons for their daytime napping than regular short daytime nappers. Regular (at least 3-4 times/week) loud (louder than usual speech) snoring and self-reported regular (at least 3-4 times/week) breathing arrests during sleep was associated with regular midday napping after adjusting for age and sex (PR=1.9, 95%CI 1.4-2.6 and PR=1.9, 95%CI 1.2-3.0, respectively). **Discussion:** Self-reported regular loud snoring and regular breathing arrests at night, both indicators for sleep apnea, were associated with regular daytime napping. Regular long daytime napping was more frequently associated with nonrestorative nocturnal sleep and exhaustion than short regular daytime napping.

0620-S/P

FRAILITY IN LATIN AMERICA AND THE CARIBBEAN: A SYSTEMATIC REVIEW AND META-ANALYSIS Fabiana Da-Mata*, Priscilla Pereira, Keitty Regina, Andrade Ana Cláudia Figueiredo, Roberta Silva, Maurício G. Pereira (University of Brasília -UnB)

Background: Frailty is characterized by an accelerated decrease in several inter-related physiological systems resulting in malfunction of homeostatic mechanisms. This condition negatively affects older people's quality of life. Few studies investigate frailty prevalence in Latin America and the Caribbean (LAC), a region where adults age with more chronic diseases and disabilities. Having an estimate of frailty prevalence in a region where population ageing is combined with marked social disadvantages may contribute to plan health and social care policies. **Aim:** To investigate the prevalence of frailty among community-dwelling older people in LAC through a systematic review and meta-analysis. **Methods:** Literature search was performed in indexed databases and in the grey literature. The inclusion criteria were population-based studies on frailty prevalence conducted with community-dwelling older people in LAC. Independent investigators carried out the studies' selection process, data extraction, and quality assessment. Meta-analysis and meta-regression were performed using the software STATA 11. **Results:** Out of 1,106 records yielded by the literature search, 18 studies were included in the systematic review and meta-analysis. A total of 19,563 older persons participated in the review and the majority of them were women (63%). Meta-analysis revealed that frailty prevalence in LAC was 21% (95% CI: 15-27, I²=99.2%) and it significantly increased with age. Meta-regression found that studies' quality, proportion of women, and data collection year partially explained the between-studies heterogeneity. **Conclusion:** Roughly two in each ten community-dwelling older persons are frail in LAC. This is a massive estimate in a region of fragile institutions where ageing population has been rapid and it is predicted to continue growing. Scholars and public policies need to focus on the prevention of frailty as it showed to be very common among older people in LAC.

0624

INTERPLAY BETWEEN FAMILY/WORK PROBLEM SEVERITY AND SOCIOECONOMIC STATUS AMONG WORKING MALES AGED 40-65 AND INCREASED RISK OF DEMENTIA THREE DECADES LATER Uri Goldbourt*, Ramit Ravona-Springer (Tel Aviv University Medical Faculty)

Interest in psychosocial problems and their long term association with disease at old age has increased. We undertook to study the association between a number of serious and very serious family, work and economic hardships among working men, aged 40-65 years in 1963, and the prevalence of dementia 36-37 years later. By 1999/2000 (minimum age 76 years), 1892 survivors underwent evaluation of their cognitive status. The variable \PROB\" (1 to 5) reflects the number of family/personal, work and economic hardships reported as \"serious\" or \"very serious\" group. Socioeconomic status (SES), was determined on the basis of reported formal schooling and type of occupation in 5 categories. To account partly for divergent probabilities of surviving and partaking in the 1999/2000 dementia assessment, we weighted each observation by the inverse of the above probability and re-divided the weighted values (INV_prob) into quartiles. Multivariate analysis of the associated with each of the quartiles of INV_prob, adjusted for age and body height was carried out. The estimated adjusted odds ratio (OR) and 95%CI were 1.29 (0.82-2.04), 2.00 (1.31-3.05) and 1.97 (1.21-3.18), respectively, for quartiles 2, 3 and 4 of the weighted PROB. Adjustment for initial (1963) weight, blood pressure, serum cholesterol and smoking habits had negligible effect on the results. The area under the ROC curve for this model was 0.69 and the Hosmer-Lemeshow model fit test yielded associated P=0.23, consistent with adequate model fit. For SES the corresponding age and height adjusted OR were 0.46 (0.31-0.67), 0.27 (0.18-0.41) and 0.26 (0.15-0.45) for quartiles 2, 3 and 4 of the weighted variable. Including both PROB and SES in the analysis had little effect on the association of either with survivors' prevalence of dementia. Mechanisms linking mid-life serious psychosocial hardships to increased risk for dementia represent a research topic with putatively long-term public health interest."

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0623

THE DEMOGRAPHY OF THE UNITED STATES IMMIGRANT POPULATION AGES 50 AND OVER AND ITS IMPLICATIONS FOR POPULATION HEALTH Juanita Chinn*, Shondelle Wilson Frederick (CDC National Center for Health Statistics)

Background: This research on the health of U.S. immigrants ages 50 and older by age at migration and country of origin using the National Health Interview Survey answers the question: what are the health implications of the changing demographics of the United States immigrant population? **Methods:** We use the 2004-2013 restricted Sample Adult Core Files of the National Health Interview Survey (NHIS). The NHIS data are cross-sectional from a random household sample drawn from the civilian, non-institutionalized U.S. adult population. The sample adult files contain the detailed information on health status. The use of the restricted data files allow the measurement of the current age of older respondents, age at migration, and country of origin. The data are restricted to immigrants to the United States ages 50 years and older at the time of survey. After these restrictions, the analytic sample consists of 19,096 respondents. **Results:** When examining immigrants ages 50 and older, the proportion of immigrants from Asia, Southeast Asia, and the Indian subcontinent that immigrated to the United States at age 50 or older is more than triple the proportion that immigrated to the United States as minors. At the same time, older age immigrants with origins in Europe are 28% of those that immigrated as minors and just 6% of those that came to the United States after age 50. We find that late age immigrants have higher odds for hypertension and low self-rated health than older immigrants that immigrated at ages 25 years and older. **Conclusions:** The health status of immigrants in the United States goes beyond the traditional dichotomous analysis of examining nativity. It is multifaceted and varies by age at migration as well as country of origin. **Key Words:** Population Health, Health Equity, Aging, Immigrant Health

0625

NEIGHBORHOOD CHARACTERISTICS AND INFLAMMATORY MARKERS: THE HEALTH AND RETIREMENT SURVEY (HRS) Amii Kress*, Mary Slaughter, Regina Shih (RAND)

Neighborhood characteristics have been associated with numerous health outcomes in older adults. There are likely several pathways through which neighborhoods adversely affect health. Many studies hypothesize that neighborhoods influence health through a stress or allostatic load pathway, however, few studies have objective measures of stress. This study examines the cross-sectional association between neighborhood characteristics, including socioeconomic status (NSES), and c-reactive protein (CRP), a marker of systemic inflammation and indicator in allostatic load indices, in a sample of Health and Retirement Survey (HRS) respondents (n=11,577). The HRS is a longitudinal study of a nationally representative sample of adults over 50 years of age. CRP data were adjusted to levels consistent with NHANES and log-transformed for analyses. Bivariate analyses were used to quantify the association of NSES with mean CRP and odds of elevated CRP (> 3.0 ug/mL). Multivariable models adjusted for potential confounders. Approximately 38% of respondents had elevated CRP. Increasing NSES was associated with a statistically significant stepwise decrease in mean CRP, from 5.27 ug/mL in low to 3.53 ug/mL in high NSES communities. After adjusting for age, sex, and race/ethnicity, residents of high compared to low NSES had statistically significantly lower mean CRP and 14% reduced odds of elevated CRP. The NSES effect was attenuated and no longer significant after adjustment for individual-level SES. Research on potential pathways through which neighborhoods characteristics influence health is necessary in order to develop evidence for causal neighborhood effects on health. The identification of associations between neighborhood characteristics, hypothesized to influence health through a allostatic load pathway, and CRP, a biomarker of chronic stress, is the essential first step in better understanding the mechanism through which contextual factors influence individual-level health.

0626- S/P

RISK FACTORS FOR FALLS IN THE HOMES OF COMMUNITY-DWELLING ELDERLY: A POPULATION-BASED STUDY IN SOUTHERN BRAZIL Natália Lima*, Janaína Motta, Bernardo Horta (Postgraduate Program in Epidemiology, Federal University of Pelotas)

Falls in the elderly occur most frequently within their own homes or in its surroundings. This study was aimed at describing the home environment of the elderly residents in the urban area of Pelotas - Brazil regarding risk factors for accidental falls, and analyze their distribution according to demographic and socioeconomic characteristics factors. A population-based cross-sectional study was carried out among community-dwelling elderly aged 60 or over. The prevalence of risk factors was assessed by questionnaire. Information was obtained for 1077 households. The frequency of these factors was considered high, 1057 (98.1%) households have at least one risk factor and the bathroom was identified as an area of high concentration of risk factors for falling. The most prevalent risk factors were the absence of grab bars on the sidewall of the toilet (91.5%), in the wall of the shower (87.1%) and no non-slip floor or mat in the shower (50.1%) and these were more common in households with individuals of lower socioeconomic status. We suggest the implementation of programs and actions aimed at reducing the occurrence of falls by home visits and modification at home, prioritizing the bathroom.

0628-S/P

ALBUMIN AND HEMOGLOBIN AFFECT THE TRAJECTORY OF COGNITIVE FUNCTION IN COMMUNITY-DWELLING OLDER JAPANESE: RESULTS FROM A 13-YEAR LONGITUDINAL STUDY Hiroshi Murayama*, Shoji Shinkai, Mariko Nishi, Yu Taniguchi, Hidenori Amano, Satoshi Seino, Yuri Yokoyama, Hiroto Yoshida, Yoshinori Fujiwara, Hideki Ito (Institute of Gerontology, The University of Tokyo)

Objectives: This research examined the associations of serum albumin and hemoglobin levels with the trajectory of cognitive function by analyzing 13-year longitudinal data of community-dwelling older Japanese. **Methods:** Data came from community-dwelling adults aged 65 and older who participated in an annual health examination held in Kusatsu Town, Gunma Prefecture. Data collection was conducted from 2002–2014, and a total of 1,744 persons were included in the analysis (57.1% were female; mean age was 71.4). Cognitive function was assessed by the Mini-Mental State Examination (MMSE) at each year. Albumin and hemoglobin levels at baseline were divided into quartiles. The year when a respondent first participated in the health examination was regarded as the baseline year for each individual. Hierarchical linear modeling was used to analyze the intrapersonal and interpersonal differences in cognitive function. **Results:** Participants' MMSE score declined at an accelerated rate over the 13-year period. Lower baseline albumin levels were associated with an accelerated decline in MMSE score. These findings indicated that participants with the lowest baseline albumin level (below the first quartile) had a greater accelerated decline in MMSE score over time compared with those with the highest (above the third quartile). Lower hemoglobin levels were associated with an accelerated decline in MMSE score, particularly among those with a lower baseline MMSE score. Therefore, relative to the group with the highest baseline hemoglobin level, the MMSE scores of the other three groups with lower levels declined at an accelerated rate over time in people with lower baseline MMSE scores. **Conclusion:** These findings suggest the importance of nutritional intervention for preventing cognitive decline and future onset of dementia.

0627

AGEISM, RESILIENCE, COPING, FAMILY SUPPORT, AND QUALITY OF LIFE AMONG OLDER PEOPLE LIVING WITH HIV/AIDS IN NANNING, CHINA Hongjie Liu*, Yongfang Xu, Xinqin Lin (University of Maryland School of Public Health)

Although the HIV epidemic continues to spread among older adults over 50 years old in China, little empirical research has investigated the interrelationships among ageism, adaptability, family support, and quality of life among older people living with HIV/AIDS (PLWHAs). In this exploratory cross-sectional study among 197 older PLWHAs over 50 years old, path analytic modeling was used to assess the interrelationships among ageism, resilience, coping, family support, and quality of life. Compared with female PLWHAs, male PLWHAs had a higher level of resilience and coping. There were no significant differences in the scores of quality of life, ageism, family support, HIV knowledge, and duration of HIV infection between males and females. The following relationships were statistically significant in the path analysis: (1) family support → resilience [β (standardized coefficient) = 0.18], (2) resilience → ageism (β = -0.29); (3) resilience → coping (β = 0.48); and (4) coping → quality of life (β = 0.24). In addition, male PLWHAs were more resilient than female PLWHAs (β = 0.16). The findings indicate that older PLWHAs do not only negatively accept adversity, but build their adaptability to positively manage the challenges. Family-based interventions need take this adaptability to adversity into consideration.

0629

PREVALENCE, INCIDENCE AND ASSOCIATED FACTORS OF COGNITIVE AND FUNCTIONAL IMPAIRMENT (CFI) AMONG ELDERLY FROM SÃO PAULO CITY (BRAZIL) – THE SABE (HEALTH, WELLNESS AND AGING) STUDY Ana Teresa de Abreu, Ramos-Cerqueira*, Jair Lício Ferreira Santos, Albina Rodrigues, Torres, Yeda A. de Oliveira Duarte, Maria Lúcia Lebrão (Botucatu Medical School - São Paulo State University (UNES) - SP - BRASIL)

Objectives: to estimate the prevalence and incidence of CFI in the elderly from São Paulo, and to study the factors associated. **Methods:** The SABE Study began in 2000, with a two-stage probability sample of individuals aged 60 years and over. To study the incidence of CFI the initial sample was composed of individuals who were 65 years and over in 2000 (N = 1707), but who did not present CI (N = 1362); of these, 457 participants were reassessed in 2010. Subjects were evaluated using the Mini-Mental State Examination, the Pfeffer Functional Activities Questionnaire, and the instrument which investigates living and health conditions. Logistic regression were conducted with the calculation of odds ratios adjusted for covariates that integrated four models: besides sex and age, variables related to early living and health conditions (1), social variables (2), health and lifestyle (3), and self-evaluation of health and memory, and performance in basic and instrumental activities of daily living (4). **Results:** The prevalence of CFI was 10.1% (95%CI 8.2-12.4%). The incidence of CFI was 16.5/1,000 person-year (95%CI 13.1-21.0). Variables independently associated with the prevalence were: age, being single, not living alone, illiteracy, heart disease, self-evaluation of memory as not very good and impaired performance of instrumental activities of daily living (RF), higher income, one or two self-reported diseases and absence of mental disorders (PF). Concerning the incidence the independent factors were: age, impaired performance of three or more instrumental activities of daily living (RF) and being able to read and write a message (PF). **Conclusions:** The findings indicate the relevance of social aspects, besides age, as independent risk or protective factors for both outcomes, indicating the need for effective public policies to improve the living conditions and to reduce social inequalities, which could contribute to reducing the prevalence and incidence of CFI.

0630-S/P

ARE THE RELATIONSHIPS BETWEEN DOMAINS OF PSYCHOSOCIAL STRESS AND ALLOSTATIC LOAD MODERATED BY AGE? Stephanie Reading*, Arun Karlamangla, Dallas Swendeman, Beate Ritz, Tara Gruenewald, Natalie Slopen, David Williams, Brandon Koretz, Teresa Seeman (Kaiser Permanente of Southern California)

PURPOSE: The experience of stress has been shown to be positively associated with allostatic load (AL), a state of physiological dysregulation that results from the occurrence of repeated or chronic stress leading to adverse health. Age has been found to be a moderator of this relationship, with those who are older showing a weaker association between the experience of stress and AL compared to those who are younger. However, little is known as to which stressful life experiences may be driving this moderating effect of age. **METHODS:** Data were obtained from a national sample of 1,182 adults, ages of 34-84, from the Midlife Development in the United States study. The participant's age and experience of eleven psychosocial stress domains (psychological and physical work stress, work-family spillover stress, perceived inequality, relationship and neighborhood stress, discrimination, current financial and early life stress, past year problems in the immediate family and stressful life experiences) were assessed via questionnaire. Biological data were collected from 24 biomarkers to measure AL. Linear mixed effect regression analyses examined the moderating effect of age with respect to the relationship between each psychosocial stress domain with AL. **RESULTS:** Findings indicated that three of the eleven psychosocial stress domains (psychological work stress, discrimination and neighborhood stress) were statistically significantly moderated by age with individuals 55 years of age and older showing a weaker association between these psychosocial stress domains with AL compared to those who were 54 years of age and younger. **CONCLUSIONS:** In younger ages, AL levels tend to be more variable compared to more stagnant high levels at older ages. Therefore, it may be that younger individuals are more affected from employment by work-related stressors (psychological work stress) and stressors that are comparably less manageable and modifiable (discrimination and neighborhood stress).

0632

VITAMIN D AND COGNITIVE IMPAIRMENT IN THE ELDERLY MEXICAN POPULATION Sreenivas P Veeranki*, Brian Downer, Rebeca Wong (University of Texas Medical Branch)

Background 25-hydroxyvitamin D's (25OHD) role in skeletal health has been well established, but recent findings have linked it to non-skeletal conditions such as cardiovascular disease, cancer, diabetes, and stroke. Other emerging condition of interest is cognitive impairment where 25OHD has shown neuro-protective effects by clearing amyloid plaques between neurons. Relationship between serum 25OHD and dementia has been noted in U.S. and Europe populations, with no investigations conducted in Mexican elders. **Methods** Data were obtained from 1,017 adults aged 60 years who completed cognitive assessments, medical examinations, physical performance measures and provided blood samples in the 2012 Wave of Mexican Health and Aging Study, a representative prospective cohort of elderly Mexicans. Cognitive assessments were conducted using Cross-Cultural Cognitive Examination, and participants were categorized into non-, mildly- and severely-impaired groups. Serum 25OHD was categorized into four groups: Normal ($\geq 30\text{ng/ml}$), Insufficient (21-29ng/ml), and Deficient ($<20\text{ng/ml}$). Logistic regressions were used to estimate the relationship. **Results** Overall 21.4% and 6% reported mild or severe cognitive impairment. Multivariable adjusted odds ratios (95% confidence interval) of mild cognitive impairment in participants who were 25OHD insufficient or deficient in comparison with those who were sufficient were 0.79 (0.52-1.21) and 0.74 (0.46-1.20) respectively. Adjusted odds ratios of severe cognitive impairment in participants who were 25OHD insufficient or deficient in comparison with those who were sufficient were 0.55 (0.23-1.34) and 1.13 (0.48-2.78) respectively. Log-transformed levels of 25(OH)D were not significantly associated with the adjusted odds of mild ($p = 0.34$) or severe ($p=0.22$) cognitive impairment. **Conclusion** Study findings suggest that vitamin D insufficiency or deficiency is not associated with mild or severe cognitive impairment in the elderly Mexican population.

0640-S/P

DEVELOPING A COPD INCIDENCE RISK MODEL: TEMPORAL ASPECTS OF SMOKING EXPOSURES AND COPD RISK

Joanne Chang*, Jihyou Jeon, Rafael Meza (University of Michigan, School of Public Health, Department of Epidemiology)

Background Chronic Obstructive Pulmonary Disease (COPD) is the third leading cause of death in the United States. Although it is established that cigarette smoking is the main risk factor for COPD, less is known about the temporal relationship between exposure and COPD risk. We calculated the absolute risk of developing COPD as a function of individual smoking history in men and women.

Methods We analyzed COPD self-reported incidence among non-smokers, current smokers, and former smokers in the Nurses' Health Study (NHS) and the Health Professionals Follow-Up Study (HPFS) from 1998-2008, using time-varying Cox regression models. Baseline hazard of COPD was estimated among non-smokers using Weibull and Log-normal models. To determine the absolute risk of COPD, we created a single-year model, which included predictors such as age, and time varying duration of smoking, smoking exposure, and years since quitting. We compared the goodness of fit of different models using Akaike Information Criteria (AIC). The best fitting models were used to calculate absolute risk of COPD. Observed and estimated COPD by smoking status was plotted to compare the differences.

Results The mean age at diagnosis for COPD is 70.3 and 66.2 years (HPFS and NHS, respectively). In both genders, smoking exposure (in pack-years), smoking duration, and interaction between smoking exposure and age are strongly associated with COPD incidence risk. Among former smokers, the age-adjusted risk was higher in men (HPFS) than women (NHS). However, the baseline risks were similar in both cohorts.

Conclusions Our risk prediction model can be helpful to predict the risk of COPD given individual smoking histories, and to project the incidence of COPD at the population level as smoking patterns continue to change.

0641-S/P

THE ASSOCIATION BETWEEN CENTRAL OBESITY, METABOLIC FACTORS AND ASTHMA IN ADOLESCENTS OF SOUTHERN TAIWAN

Yen-Ru Chen*, Tsu-Yu Yuan, Li-Yu Wang, Tsu-Nai Wang (Department of Public Health, College of Health Science, Kaohsiung Medical University, Kaohsiung, Taiwan)

Background: The prevalence of asthma and atopy has increased distinctly over the last two decades. Arising prevalence of obesity and metabolic syndrome has also been observed. Previous studies have proved that obesity cause subsequent development of asthma. But few studies have discussed the relation between metabolic factors and asthma. **Objective:** This study aimed to assess whether there is an association with asthma, atopy and metabolic factors which include obesity, high serum cholesterol, hypertension and high triglyceride.

Methods: The cross-sectional study randomly sampled 7583 subjects years old from elementary, junior and senior high schools in southern Taiwan. There were 5754 eligible subjects in the ultimate analysis. Allergic disorders were determined by the subjects who had ever been diagnosed by a doctor. Body mass index [BMI], blood pressure, the levels of triglyceride and total cholesterol were measured. Furthermore, we conducted a meta-analysis including 13 studies according to criteria to review the association with asthma, BMI and total cholesterol. **Results:** We found a significant association between asthma and abdominal fat (aOR=4.34, p=0.009) and high concentrations of cholesterol (aOR=1.93, p<0.001) after adjusting for potential confounding factors.

Atopy had a significant relationship with borderline level (aOR=1.31, p=0.039) and high level (aOR=1.47, p=0.007) of cholesterol. There was a trend effect between asthma, atopy (p=0.007, p=0.004) and cholesterol. The number of metabolic factors was significantly associated with increasing asthma and atopy risk (p=0.017; p=0.005). Other metabolic factors included blood pressure and triglyceride, but a significant relationship with asthma and atopy was not found after adjusting for confounding factors. **Conclusion:** Asthma patients are more obese, have higher concentrations of cholesterol and more metabolic factors.

0642

EARLY LIFE EXPOSURES AND RISK OF ASTHMA

Marie-Claude Rousseau*, Florence Conus, Marie-Elise Parent (INRS-Institut Armand-Frappier)

We aimed at identifying early life exposures associated with subsequent risk of asthma in a cohort of persons born in 1974 in the province of Quebec, Canada, and followed for asthma occurrence until 1994. This cohort was originally designed to study bacillus Calmette-Guerin (BCG) vaccination in relation to asthma. Using a two-stage sampling strategy with a balanced design according to BCG vaccination and asthma status, information was obtained from socio-demographic and health administrative databases (stage 1 sample, n=76,623) and telephone interviews conducted with a subset of subjects (stage 2 sample, n=1,643). Subjects were considered as having asthma if they had 2 physician claims or 1 hospitalization for asthma. The factors investigated were birth weight, gestational age, parents' age at childbirth, number of older siblings, type of delivery, breastfeeding, daycare attendance, pet ownership, parental smoking during pregnancy and infancy, family history of asthma, parental education, and occurrence of whooping cough, mumps, measles, rubella, chickenpox or worm infections before age 6. Applying a backward elimination strategy, logistic regression was used to estimate odds ratios (OR) and 95% confidence intervals (CI) for factors related to asthma risk, adjusted for census-based income and rural/urban residence. Multiple imputations by the Markov Chain Monte Carlo method were used to handle missing values. Among the 1,643 stage 2 sample subjects, 58% were females and 51% had asthma. Early life exposures associated with asthma risk were number of older siblings (2 vs. 0; OR: 0.71, 95% CI: 0.54-0.94), as well as father's (OR: 2.19, 95% CI: 1.53-3.13), mother's (OR: 1.98, 95% CI: 1.46-2.69), and siblings' history of asthma (OR: 1.43, 95% CI: 1.11-1.84). Results did not differ by sex. In conclusion, among the early life exposures examined, familial composition and antecedents of asthma were the only ones associated with risk of asthma in our study population.

0650-S/P

IMPACT OF MATERNAL OBESITY ON NEONATAL MARKERS OF INFLAMMATION AND IMMUNE RESPONSE

Nikhita Chahal*, Alexander McLain, Akhgar Ghassabian, Kara Michels, Erin Bell, David Lawrence, Miranda Broadney, Edwina Yeung (Eunice Kennedy Shriver National Institute of Child Health and Human Development)

Background: Despite the high prevalence of pre-pregnancy obesity in the United States, the impact of maternal obesity on offspring inflammation is unclear. We examined the effect of pre-pregnancy obesity on neonatal inflammatory and immune responses in a birth cohort. **Methods:** The Upstate KIDS Study (2008-2010) was designed to investigate infertility treatment and child development. Pre-pregnancy body mass index (BMI) was derived from vital records. Inflammatory biomarker and immunoglobulin levels were measured from newborn dried blood spots (NDBSs). An inflammation score was derived from levels of six biomarkers (interleukin-6 (IL6), IL8, IL1-alpha, IL1ra, tumor necrosis factor alpha, c-reactive protein), with a higher score indicating a greater inflammatory response. We examined immunoglobulin (Ig) levels separately. We used generalized estimating equations to examine associations between maternal obesity and biomarker levels in singletons and twins (n=3567), after adjusting for maternal age, race, education, marital status, health insurance, pregnancy vitamins use, pregnancy smoking, paternal BMI, and plurality. Sampling weights were applied to account for study design. **Results:** Twenty-five percent of mothers were obese and 26% were overweight before pregnancy. Inflammation scores did not differ between infants born to obese mothers and those born to normal weight mothers, but elevated IgM levels were detected (adjusted mean difference=0.10, 95%CI: 0.04-0.16). In contrast, infants born to overweight mothers had elevated inflammation scores (adjusted mean difference=0.11, 95%CI: 0.01-0.22; compared to infants of normal weight mothers). However, IgM levels did not differ between these two groups. IgE and IgA levels did not differ among infants. **Conclusions:** Inflammation and immune markers may differ between neonates born to normal weight versus overweight or obese mothers. NDBSs could provide a useful tool for evaluating neonatal responses to prenatal exposures.

0651-S/P

ASSOCIATION BETWEEN SMOKING AND TELOMERE LENGTH AMONG OLDER ADULTS VARIES BY SEX AND TIMING OF EXPOSURE MEASUREMENT Chenan Zhang*, Diane Lauderdale, Brandon Pierce (University of Chicago)

Inconsistent associations between smoking and telomere length (TL) have been reported in epidemiologic studies, perhaps due to the time-varying nature of smoking behavior. We estimated the associations between TL (measured by quantitative-PCR using DNA extracted from saliva) and concurrent and past smoking status (measured biennially for up to 16 years prior to TL measurement) using data from the Health and Retirement Study (n=5,616). Smoking was associated with reduced TL when using prospective measures of smoking status among men and women, but the association was strongly attenuated in cross-sectional analyses among men. This attenuation was largely due to a higher rate of smoking cessation during the study period among males with shorter TL compared to longer TL. Short TL was also associated with poorer overall health, suggesting that male smokers with short TL were more likely to quit smoking due to poor health. Quitting in early- or mid-life was associated with longer TL compared to current smokers and recent quitters. Our results support the hypothesis that smoking shortens TL, and provide a potential explanation for inconsistent associations between smoking and TL reported in previous studies. Time-varying associations should be considered in future studies of smoking behavior, TL, aging, and disease risk.

0660

COLORECTAL CANCER, COMORBIDITY, AND RISK OF VENOUS THROMBOEMBOLISM: ASSESSMENT OF BIOLOGICAL INTERACTIONS IN A DANISH NATIONWIDE COHORT-

Thomas Ahern*, Erzsebet Horvath-Puho, Karen-Lise Garm Spindler, Henrik Toft Sorensen, Anne Ording, Rune Erichsen (University of Vermont)

Venous thromboembolism (VTE) is a major source of morbidity and mortality in cancer patients. Colorectal cancer (CRC) and comorbidity are both associated with VTE incidence, but no study has evaluated synergy between these factors. We conducted a Danish nationwide cohort study to evaluate biological interaction between CRC diagnosis and prevalent comorbidity with respect to incident VTE. We used the Danish Cancer Registry to identify CRC cases diagnosed between 1995–2010. We used the Danish Civil Registration System to enumerate a general population reference cohort, comprised of up to 5 subjects without CRC who matched each case on age, sex, and single comorbidities. We ascertained comorbidities from the Danish National Patient Registry and summarized each subject's disease burden with the ordinal Charlson Comorbidity Index (CCI). We calculated age- and sex-standardized VTE incidence rates (SIRs) and interaction contrasts (ICs) to evaluate departure from the additive effects of CRC and levels of the CCI. We evaluated modification of ICs by cancer site (colon vs. rectum), cancer stage (non-metastatic vs. metastatic) and type of VTE (pulmonary embolism vs. deep vein thrombosis). We enrolled 56,189 CRC patients, among whom 1,372 VTE cases were diagnosed over 145,211 person-years of follow-up (SIR=9.5 cases/1,000 person-years). Among 271,670 matched reference subjects, 2,867 VTE cases were diagnosed over 1,068,860 person-years (SIR=2.8 cases/1,000 person-years). CRC and comorbidity were both positively associated with VTE, but there was no evidence for interaction between these factors (for example: comparing the 'severe comorbidity' stratum with the 'no comorbidity' stratum, IC=0.8, 95% CI: -3.3, 4.8). There was no modification by cancer site, stage, or type of VTE. In summary, we observed neither a deficit nor a surplus of VTE cases among patients with both comorbidity and CRC, compared with rates expected from those risk factors in isolation.

0662

DIABETES, PROSTATE CANCER SCREENING, AND RISK OF LOW- AND HIGH-GRADE PROSTATE CANCER

Paolo Boffetta*, Rachel Dankner, Laurence Freedman (Icahn School of Medicine at Mount Sinai)

Results on the association between diabetes mellitus and prostate cancer incidence are inconsistent. We followed from 2005-12 a population of 1,034,073 men, aged 21-90 years, for incidence of diabetes (N=185,888) and prostate cancer (N=10,335). Frequency and level of PSA testing were compared according to diabetes status. After adjusting for PSA testing, a reduced risk of low-moderate grade (Gleason score 2-6) prostate cancer was observed among diabetic men (hazard ratio [HR] 0.91; 95% confidence interval [CI] 0.85-0.96), while an increased risk was observed for high-grade cancer (Gleason score 7-10; HR 1.13; 95% CI 1.02-1.25). The increased risk of high-grade prostate cancer was restricted to the first year of follow-up. Diabetic men performed approximately 10% more PSA screening than non-diabetic men, but their rate of PSA positivity (>4ng/mL) was 20% lower. The low level of PSA positivity among diabetic men could account for the reduced incidence of low-grade prostate cancer among diabetic men; the positive association observed for high-grade prostate cancer parallels the findings for other hormone-related cancers.

0661-S/P

THE BURDEN OF LUNG AND COLORECTAL CANCERS IN APPALACHIA: A COMPARISON OF INCIDENCE AND 5-YEAR SURVIVAL BY SUB-REGION

Jordan Baeker Bispo*, Reda Wilson, Hannah Weir, BinHuang, Mark Dignan (Department of Public Health Sciences, University of Miami)

Background: Cancer disparities between Appalachian and non-Appalachian regions of the United States are well documented and are typically described using data on incidence and mortality. In this poster we focus on incidence and survival and compare the burden of two preventable cancers, lung and colorectal, among men and women within five Appalachian sub-regions. **Methods:** We calculated five-year survival probabilities for all primary cancers diagnosed at local, regional and distant stages during years 2005-2009 and annual incidence per 100,000 population for males and females in the same period. Incidence and survival data came from cancer registries funded by the National Program of Cancer Registries and the Surveillance, Epidemiology and End Results Program. **Results:** In 2009, colorectal cancer incidence was highest in Central Appalachia (60.9 per 100,000 males and 44.8 per 100,000 females) and lowest in South Central Appalachia (49.4 per 100,000 males and 35.4 per 100,000 females). Five year colorectal cancer survival was lowest in Central Appalachia. Lung cancer incidence was also highest in Central Appalachia (137.0 per 100,000 males and 82.6 per 100,000 females) and lowest in Northern Appalachia (88.3 per 100,000 males) and Southern Appalachia (56.9 per 100,000 females). Five year lung cancer survival was lowest in Central and Northern Appalachia. **Conclusions:** Within the Appalachian region, Central Appalachia tends to face the highest incidence and poorest survival probabilities for colorectal and lung cancers, the burden most pronounced among males. These outcomes may reflect elevated rates of poverty, risky behaviors like smoking, and limited access to care in this sub-region.

0663-S/P

VITAMIN D SUPPLEMENTATION, MENOPAUSAL HORMONE THERAPY, AND BREAST CANCER RISK IN FRENCH WOMEN: EFFECT MODIFICATION BY BMI

Claire Cadeau*, Agnès Fournier, Isabelle Savoye, Marie-Christine Boutron-Ruault (Inserm, U1018, Team 9)

Background: Experimental studies suggest protective effects of vitamin D on breast carcinogenesis but epidemiological data remain inconclusive. Vitamin D bioavailability was demonstrated to be lower in overweight and obese subjects, but few epidemiological studies have considered a potential influence of BMI on the association between vitamin D supplementation and breast cancer (BC) risk. Since we previously reported an interaction between vitamin D supplementation and menopausal hormone therapy (MHT) use on postmenopausal BC risk, we investigated whether BMI (< 25, ≥ 25 kg/m²) modified the reported associations. **Methods:** Between 1995 and 2008, 57,403 postmenopausal women from the French E3N prospective cohort were followed-up. Vitamin D supplement use was obtained from biennial questionnaires up to 2005 and administrative data on health expenditures since 2004. Multivariable hazard ratios (HR) for primary invasive breast cancer and 95% confidence intervals (CI) were estimated using Cox models. All statistical tests were two-sided. **Results:** 2,482 invasive breast cancers were diagnosed during 581,085 person-years of follow-up. The previously described inverse association between vitamin D supplementation and BC risk in MHT users was similar in normal and overweight women (Pheterogeneity = 0.91). Among MHT nonusers, vitamin D supplementation was associated with an increased BC risk, especially in women with BMI < 25 kg/m² (HR = 1.47, 95% CI: 1.10, 1.97) but not in overweight women (HR = 0.96, 95% CI: 0.60, 1.53), although heterogeneity between risks was not statistically significant (Pheterogeneity = 0.13). **Conclusion:** Our results suggest that vitamin D supplementation may be associated with increased postmenopausal breast cancer risk among nonusers of menopausal hormone therapy with BMI < 25 kg/m². In the present context of increasing use of vitamin D supplements and decreasing use of menopausal hormone therapy, our findings deserve further investigation.

0664-S/P

PRIMARY GASTROINTESTINAL MELANOMA: COMPARISON OF INCIDENCE, PROGNOSTIC FACTORS AND SURVIVAL OUTCOMES TO CUTANEOUS MALIGNANT MELANOMA AND GASTROINTESTINAL CARCINOMA (SEER: 1973-2011)

Catherine Chioreso*, Mary Charlton, Jennifer Schlichting Chi Lin (University of Iowa)

The treatment of primary gastrointestinal (GI) melanomas poses a challenge to clinicians because there is insufficient knowledge about the disease due to its rarity. The purpose of this study is to compare prognostic factors, treatment patterns and survival outcomes of primary GI melanoma to cutaneous melanoma and GI carcinoma. The Surveillance, Epidemiology, and End Results (SEER) database was used to identify cases from 1973 to 2011. Pearson chi square was used to detect differences in sociodemographics, tumor characteristics, and treatment by cancer type. Cox proportional hazards regression was used to determine predictors of survival. A total of 641, 234,668 and 865,543 patients with primary GI melanoma, cutaneous melanoma and GI carcinoma, respectively, were identified. Patients with GI melanoma had more characteristics in common with GI carcinoma patients than those with cutaneous melanoma: higher median age (68, 67, and 56, respectively), greater proportion of distant disease (30%, 23%, and 4%, respectively) and a greater proportion of patients who received radiation in addition to surgery (11%, 10% and 1%, respectively). The most common sites for GI melanoma were anus (N=306) and rectum (N=229). Across all cancer types, the percentage of patients receiving surgery was highest at the localized stage while the proportion of patients receiving both surgery and radiation therapy was highest at the distant stage. In multivariate analysis, older age at diagnosis (HR=1.6, CI:1.2, 2.2), being married (HR=1.2, CI:1.0, 1.4), advanced stage (HR=3.0, CI:2.4, 3.9) and receipt of radiation therapy only (HR=2.0, CI:1.4, 3.0) significantly increased the hazard of death for primary GI melanoma. GI melanoma patients had the lowest survival, followed by GI carcinoma with cutaneous melanoma patients having the best survival. Given its rarity and poorer survival, future studies should explore how treatment can be optimized for primary GI melanoma patients.

0666-S/P

ASSOCIATION BETWEEN TOBACCO SMOKING AND METHYLATION OF GENES RELATED TO LUNG CANCER DEVELOPMENT

Xu Gao*, Yan Zhang, Lutz Breitling, Hermann Brenner (German Cancer Research Center (DKFZ) / Heidelberg University)

Lung cancer is a leading cause of cancer-related mortality worldwide, and cigarette smoking is the major environmental hazard for its development. This study was intended to examine whether smoking could alter methylation of genes at lung cancer risk loci identified by genome-wide association studies (GWASs). By systematic literature review, we selected 75 genomic regions based on 120 single-nucleotide polymorphisms (SNPs). DNA methylation of 2854 corresponding CpG candidates in whole blood samples was measured by the Illumina Infinium Human Methylation450 Beadchip array in two independent subgroups of the ESTHER study. After correction for multiple testing, we successfully confirmed smoking associations for one previously established CpG site within gene KLF6 and identified 12 potentially novel sites located in 7 genes: STK32A, TERT, MSH5, ACTA2, GATA3, VTI1A and CHRNA5 (FDR <0.05). Current smoking was linked to a 0.74% to 2.4% decrease of DNA methylation compared to never smoking in 11 loci, and all loci except cg19696491 (CHRNA5) showed significant association (FDR <0.05) with life-time cumulative smoking (pack-years). In conclusion, our study demonstrates the impact of tobacco smoking on DNA methylation of lung cancer related genes, and thus may provide novel insights into the biological pathways that link tobacco smoking to risk of lung cancer. The potential usage of these epigenome-based biomarkers for early detection, risk stratification and prevention of lung cancer should be explored in future epigenetic studies.

0665-S/P

ERADICATION OF HELICOBACTER PYLORI AND GASTRIC AND OESOPHAGEAL CANCER: A SYSTEMATIC REVIEW AND META-ANALYSIS.

Eva Doorakkers*, Nele Brusselaers, Jesper Lagergren, Lars Engstrand (Karolinska Institutet)

Background: *Helicobacter pylori* (*H. pylori*) is associated with an increased risk of gastric adenocarcinoma and gastric mucosa associated lymphoid tissue (MALT) lymphoma, and a seemingly decreased risk of oesophageal adenocarcinoma. We aimed to assess how eradication therapy for *H. pylori* influences the risk of developing these cancers. **Methods:** This was a systematic review and meta-analysis. We searched PubMed, Web of Science, Embase and the Cochrane Library and selected articles that examined the risk of gastric cancer, MALT lymphoma or oesophageal cancer following eradication therapy, compared to a non-eradicated control group. **Results:** Among 3629 articles that were considered, 9 met the inclusion criteria. Of these, 8 cohort studies assessed gastric cancer, while 1 randomized trial assessed oesophageal cancer. Out of 12,899 successfully eradicated patients, 119 (0.9%) developed gastric cancer, compared to 208 (1.1%) out of 18,654 non-eradicated patients. The pooled relative risk of gastric cancer in all 8 studies was 0.46 (95% confidence interval 0.32-0.66, I² 32.3%) favouring eradication therapy. The 4 studies adjusting for time of follow-up and confounders showed a relative risk of 0.46 (95% confidence interval 0.29-0.72, I² 44.4%). **Conclusion:** This systematic review and meta-analysis indicates that eradication therapy for *H. pylori* prevents gastric cancer. There was insufficient literature for meta-analysis of MALT lymphoma or oesophageal cancer

0667-S/P

THE ASSOCIATION BETWEEN AMBIENT FINE PARTICULATE AIR POLLUTION AND LUNG CANCER INCIDENCE. RESULTS FROM THE AHSMOG-2 STUDY

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Background: A few studies suggest an association between ambient fine particulate matter (PM_{2.5}) and mortality from lung cancer (LC), but the relationship is not well established for LC incidence. **Objectives:** To assess the association between incident LC and PM_{2.5} and ozone (O₃), using the Adventist Health and Smog Study-2 (AHSMOG-2) cohort. **Methods:** A total of 80,285 AHSMOG-2 subjects were followed for an average of 7.7 years. Ambient air pollution levels at subjects' residences for the years 2000 and 2001 were linked with LC incidence data from U.S. state cancer registries. **Results:** A total of 250 incident LC cases occurred during 598,927 person-years of follow-up. Hazard Ratio (HR) with 95% confidence interval (CI) for LC incidence associated with each 10-µg/m³ increase in PM_{2.5} was 1.46 (1.05, 2.05) in the two-pollutant multivariable model with O₃. When limiting analyses to those who had lived more than 5 years at their enrollment address, the HR's became stronger with a 59% and 60% increase in incident LC for each 10 µg/m³ increment in PM_{2.5} in single- and two-pollutant models, respectively. **Conclusion:** Increasing levels of ambient PM_{2.5} are associated with increasingly higher LC incidence. No independent effect was found with ambient O₃ levels.

0668-S/P

PROSPECTIVE STUDY OF HUMAN POLYOMAVIRUSES AND RISK OF CUTANEOUS SQUAMOUS CELL CARCINOMA IN THE UNITED STATES Analá Gossai*, Tim Waterboer, Heather Nelson, Jennifer Doherty, Angelika Michel, Martina Willhauck-Fleckenstein, Shohreh Farzan, Brock Christensen, Anne Hoen, Ann Perry, Michael Pawlita, Margaret Karagas (Geisel School of Medicine at Dartmouth, Hanover, NH)

Polyomaviruses (PyV) are potentially tumorigenic viruses. However, little is known about PyV antibody stability over time, and there are limited prospective studies assessing whether past virus exposure predicts risk of future squamous cell carcinoma (SCC). In a prospective, nested case-control study conducted in the USA, we determined BK and JC seroprevalence and longitudinal serostability. Participants were derived from a skin cancer prevention trial, all of whom had had at least one basal or squamous cell skin cancer prior to study entry. A total of 113 SCC cases and 229 gender, age, and study center-matched controls were included in our study. We collected repeated serum samples from controls, and both pre- and post-diagnosis samples from a subset of SCC cases. Antibody response against BK and JC VP1 capsid proteins was measured using multiplex serology. Odds ratios (OR) for SCC associated with seropositivity to each PyV type were estimated using conditional logistic regression. PyV seroreactivity was stable over time, with intraclass correlation coefficients of 0.86 for BK and 0.94 for JC. Among cases, there was little evidence of seroconversion following SCC diagnosis. JC seropositivity prior to diagnosis was associated with an elevated risk of SCC (OR=2.54, 95% CI: 1.23-5.25), with a trend of increasing risk with quartiles of JC seroreactivity (P for trend=0.004). Prediagnostic seropositivity for BK was also positively associated with SCC risk (OR=3.90, 95% CI: 0.48-31.96) although the estimate was less precise, with a trend of increasing risk with quartiles of BK seroreactivity (P for trend=0.02). These findings suggest a single measure may be used as a reliable indicator of long-term antibody status, and that post-diagnostic samples may reflect pre-diagnostic serostatus. They further support the possibility that in individuals who have had a diagnosis of keratinocyte cancer, a history of PyV infection may increase the risk of future occurrences of SCC.

0670-S/P

PATIENT DEMOGRAPHICS AND TUMOR CHARACTERISTICS OF HIV-POSITIVE AND HIV-NEGATIVE CANCER CASES IN SOUTH CAROLINA Benjamin Hallowell*, Sara Robb, Kristina Kintziger (University of Georgia)

Objective: We compared the demographic and disease characteristics of HIV-positive (HIV+) and HIV-negative (HIV-) individuals with a diagnosis of cancer in South Carolina (SC). **Design:** Descriptive analysis using a matched case-control design. **Methods:** All HIV+ cases reported to SC's enhanced HIV/AIDS Reporting system from 1996-2010 were linked with the SC Central Cancer Registry. HIV- controls were selected via probabilistic matching at a ratio of 1:5, matched on cancer site and year of cancer diagnosis from the cancer registry. Analyses were stratified by race (black vs. white) and malignancy type (AIDS-defining, AIDS-associated, vs. non-AIDS-defining malignancies). Logistic regression models were used to assess which factors were associated with HIV status. **Results:** There were 1,133 HIV+ cancer cases and 5,988 HIV-matched controls were included in the final analyses. HIV+ cancer cases were more likely to be deceased at follow-up (adjusted odds ratio [aOR]: 3.37; 95% confidence interval [CI]: 2.78, 4.09), male (aOR: 2.95; 95% CI: 2.46, 3.54), black (aOR: 7.68; 95% CI: 6.50, 9.08), younger at age of cancer diagnosis (aOR: 0.92; 95% CI: 0.91, 0.92), more recently diagnosed with cancer (aOR: 1.08; 95% CI: 1.06, 1.11), and have an AIDS-defining malignancy (aOR: 2.01; 95% CI: 1.58, 2.56) when compared to HIV- cancer controls. **Conclusion:** The higher mortality and younger age at diagnosis along with the other risk factors identified highlight the need for better cancer screening, prevention, treatment and education, particularly among young, male, black HIV+ individuals.

0669- S/P

ANTHROPOMETRIC MEASURES AND RISK OF PROSTATE CANCER BY DEFINED BY ERG EXPRESSION SUBTYPE Rebecca Graff*, Thomas Ahearn, Andreas Pettersson, Claire Pernar, Sarah Markt, Kathryn Wilson, Michelangelo Fiorentino, Massimo Loda, Edward Giovannucci, Lorelei Mucci (Department of Epidemiology, Harvard T.H. Chan School of Public Health, Boston, MA, USA)

Background: Accumulating evidence suggests that prostate cancers with and without the TMPRSS2:ERG gene fusion are etiologically distinct. Whether anthropometric measures are differentially associated with fusion subtype has not been thoroughly explored in the literature. **Methods:** We examined associations between adult height, BMI at age 21, and updating BMI over time and risk of prostate cancer defined by ERG expression subtype using a prospective cohort study of 49,372 men from the Health Professionals Follow-up Study. As a surrogate for TMPRSS2:ERG, ERG expression was assessed by immunohistochemistry on tumor tissue microarrays constructed from radical prostatectomy specimens. We utilized multivariable competing risks models to calculate hazard ratios (HRs) and 95% confidence intervals (CIs) for risk of ERG-positive and, separately, ERG-negative disease. We implemented inverse probability weighting to account for only evaluating fusion status in surgically treated cases. **Results:** During 23 years of follow-up, we identified 5,847 incident prostate cancers. Among them, 913 were assayed for ERG status. Adult height (per five inches) was associated with an increased risk of ERG-positive prostate cancer (HR: 1.24; 95% CI: 1.03, 1.50), but not with ERG-negative disease (HR: 0.98; 95% CI: 0.82, 1.18). Pheterogeneity: 0.07. While BMI at age 21 was not differentially associated across ERG subtypes, increasing updating BMI over time (per five kg/m²) was inversely associated with ERG-positive disease (HR: 0.86; 95% CI: 0.74, 1.00), but not with ERG-negative disease (HR: 1.03; 95% CI: 0.90, 1.18). Pheterogeneity: 0.07. Inverse probability weighting did not materially change the results. **Conclusions:** Our results suggest that adult height and obesity may be differentially associated with the risk of ERG-positive and ERG-negative prostate cancer. In addition, the bias introduced by only evaluating fusion status in surgically treated cases does not appear to be substantial.

0671

CHILDHOOD SOCIOECONOMIC POSITION AND PUBERTAL ONSET: IMPLICATIONS FOR BREAST CANCER Robert Hiatt*, Susan L. Stewart, Kristin Hoeft, Lawrence Kushi, Gayle Windham, Frank Biro, Susan Pinney, Mary Wolff, Susan Tietelbaum, Dejana Braithwaite (University of California San Francisco)

Higher socioeconomic position (SEP) has been associated with increased risk of breast cancer. Its relationship with the age of menarche, which is inversely associated with risk of breast cancer, and to the age of pubertal onset is less clear. We studied the relationship of SEP to pubertal onset in multiethnic cohort of pre-pubertal girls aged 6-8 years at baseline and followed for 5-8 years in the Breast Cancer and the Environment Research Program in three study sites across the United States with annual clinical examinations performed from 2004 to 2012. Analyses were conducted with accelerated failure time models using a Weibull distribution, with left, right and interval censoring. Among 1235 girls, household family income and mother's education were assessed for associations with pubertal onset, measured by breast budding (Tanner Stage B2) and pubic hair development (Tanner Stage PH2). Girl's BMI% at entry to the study and black or Hispanic race/ethnicity were the strongest predictors of pubertal onset by both measurement, but SEP measured by household income was an independent predictor in adjusted models. Girls from the lowest quintile of SEP entered puberty on average 4.9 months earlier than girls from the highest quintile (time ratio=0.96, 95% confidence interval 0.93-0.99) adjusted for BMI% and race/ethnicity. The meaning of SEP in this relationship bears further study, but our results suggest that early life social circumstances beyond race/ethnicity and body size may influence the timing of pubertal development.

0672

THE GEOGRAPHIC DISTRIBUTION OF UPPER UROTHELIAL CARCINOMAS IN CROATIA Danira Karzic*, Danira, Sara Wagner Robb, John Vena, Zdenko, Sonicki Ante, Cvitkovic, Marijan Erceg, Tamara Poljicanin, Mario Sekerija (Medical University of South Carolina)

Several studies have described associations between upper urothelial carcinomas (UUCs) and Balkan endemic nephropathy (BEN), a chronic tubulointerstitial disease that is endemic along the tributaries of the Danube River in several Balkan countries. In Croatia, 14 villages within the county of Brod Posavina are considered endemic for BEN. Unfortunately, the common etiology between the association of UUCs and BEN remain unclear. The purpose of our study was to demonstrate the geographical distribution of UUCs using a geographical information system (GIS) and compare trends in UUC incidence between Brod Posavina, Grad Zagreb, and Croatia for 2001-2005, 2006-2011, and the entire 11-year period. A total of 608 UUC cases from the Croatian National Cancer Registry were analyzed and indirect standardization was employed to compute standardized incidence ratios (SIRs). Although Brod Posavina only made up 3.7% of the total Croatian population, it had the highest frequency of UUCs (n=86) after Grad Zagreb (n=107). We found a 3.9-fold increased risk in UUC development in Brod Posavina when compared to Croatia during 2001-2011. In addition, females had a greater risk for UUCs than males in Brod Posavina. Between 2001-2005 and 2006-2011, we observed a 120% decline in UUC incidence in Brod Posavina. Similar downward trends were observed in Brod Posavina after stratifying by gender. As for Grad Zagreb, no elevated cancer risks were noted, except in 2001-2005. Furthermore, our study found a greater risk of UUC development in Brod Posavina than Croatia, as a whole. However, we observed a decline in UUC incidence during the last decade. In conclusion, our findings provide novel insights into the geographic distribution of UUCs and should serve as preliminary data for future cancer research.

0674-S/P

INCIDENCE AND RISK STRATIFICATION IN SECOND PRIMARY THYROID CANCER AMONG CHILDREN IN THE UNITED STATES: ANALYSIS USING SEER DATA Lavisha McClarin*, Laurens Holmes Jr., Olivia Carter-Pokras, Cher Dallal, Shuo Chen (University of Maryland-College Park School of Public Health)

Purpose: Thyroid cancer affects approximately 1 in every 1,000 to 2,000 children every year in the United States. First primary and second primary thyroid cancer represents the fourth most common malignancy among certain pediatric age groups due to increasing incidence rates among children over the past several decades. The absence of research in this area has led to a gap in knowledge of potential risk factors that could lead to the prevention and intervention of one of the fastest growing carcinomas in the United States. Given the extensive use of radiation for diagnostic and therapeutic purposes, the increase in the incidence of this type of malignancy in children could be a result of previous clinical intervention. This study aims to describe the rate of primary and second primary thyroid cancer among the pediatric population residing in the National Cancer Institute's Surveillance Epidemiology and End Results Cancer Registry program geographic locales, identify temporal trends among the second primary thyroid cancer pediatric population, and assess potential risk factors for second primary thyroid cancer such as sex, age at onset, race/ethnicity, previous cancer therapy type. **Methods:** This study utilizes a retrospective cohort study design in the analysis of data collected from the 1973 to 2012 Surveillance, Epidemiology, and End Result (SEER) Cancer Registry; which includes Hurricane Katrina impacted Louisiana cases. Eligibility criteria include cases, diagnosed between the ages of 0 to 19 years old, with primary thyroid cancer or second primary thyroid cancer. Variables of interest include race, ethnicity, previous cancer therapy type, geographic locale, and age at diagnosis. Statistical analysis will include calculating summary statistics, annual percent change and temporal trend analysis. In addition to this, univariate and multivariable logistic regression analysis will also be conducted.

0673-S/P

ESTROGEN-RELATED FACTORS AND RISK OF MELANOMA AMONG POSTMENOPAUSAL WOMEN IN THE NIH-AARP DIET AND HEALTH STUDY Wayne Liu*, Michal Freedman, Rachel Zamoiski, Elizabeth Cahoon (National Cancer Institute)

Melanoma is the seventh most common cancer among women in the United States with 31,200 new cases expected in 2015. Moreover, melanoma incidence is higher in women than in men under aged 50, but much lower in women compared to men after aged 50 years. Exposure to ultraviolet radiation is the primary environmental risk factor for melanoma, however photosensitizing compounds, such as estrogens, may enhance the risk associated with UVR exposure. Few studies have examined the relationship between reproductive factors or female hormone use and risk of melanoma. Using data from the United States NIH-AARP Diet and Health Study, a large, prospective cohort, we assessed the relationship between reproductive factors and hormone use in relation to first primary malignant melanoma for geographically-dispersed women exposed to a wide range of ambient UVR. Between 1995 and 2006, 713 cases of primary malignant melanoma were diagnosed among 168,318 non-Hispanic white, postmenopausal women. Younger age at menarche (10 versus 15 years, HR = 1.47, 95% CI, 1.00-2.14) and older age at menopause (50 versus <45 years, HR = 1.29, 95% CI, 1.05-1.59) were associated with increased risk of malignant melanoma. Reason for menopause (natural/surgical), ovary status, parity, age at first live birth, oral contraceptive use, and menopausal hormone therapy use at baseline were not associated with risk of melanoma. Our results suggest that a longer period of menstruation, and thus greater cumulative exposure to endogenous estrogens, may increase the risk of malignant melanoma in postmenopausal women.

0676-S/P

ALCOHOL CONSUMPTION AND RATES OF CANCER SCREENING: IS CANCER RISK OVERESTIMATED? Lin Mu*, Kenneth Mukamal (Yale School of Medicine, Beth Israel Deaconess Medical Center)

Purpose: Alcohol consumption in moderation has been associated with incident breast and colorectal cancer. Whether these associations may be overestimated by more intensive screening among moderate consumers is unknown. This study examines the associations of alcohol consumption with cancer screening. **Methods:** In six iterations (2002-2012) of the Behavioral Risk Factor Surveillance System, a telephone survey of U.S. adults conducted by the Centers for Disease Control and Prevention, participants reported their alcohol use and recent screening for several cancers. We assessed whether alcohol use was associated with breast, cervical, and colorectal cancer screening after sample-weighted adjustment for sociodemographic and health care utilization factors. **Results:** Among 2,191,483 survey respondents, 80.5% (weighted prevalence) of eligible individuals reported having an up-to-date mammogram, 87.7% having a Pap test, and 56.8% having a colonoscopy/sigmoidoscopy. For all breast, cervical, and colorectal cancers, moderate consumers were more likely to report screening (84.7%, 91.2%, 61.1%) than non-consumers, even after multivariate adjustment (adjusted prevalence ratios: 1.04, 1.04, 1.07; p<0.001 for all). Among binge consumers, the weighted prevalence was lower than that in non-binge consumers (binge vs non-binge moderate consumers: 80.5% vs 85.5%, 89.9% vs 91.8%, 52.8% vs 63.3%) but still higher than non-consumers for breast and cervical cancer screening. **Conclusions:** In the U.S., moderate consumers consistently report a greater likelihood of breast, cervical, and colorectal cancer screening than do non-consumers. Given the likelihood of overdiagnosis, further study of alcohol consumption and cancer should include cancer-specific mortality, which is less sensitive to differences in screening and detection.

0677-S/P

GENETIC POLYMORPHISMS OF PHASE I METABOLIZING ENZYME GENES, GRILLED AND SMOKED MEAT INTAKE, AND BREAST CANCER INCIDENCE

Humberto Parada*, Susan Steck, Rebecca Cleveland, Susan Teitelbaum, Alfred Neugut, Regina Santella, Marilie Gammon (University of North Carolina at Chapel Hill)

Background: Intake of grilled/smoked meats, a source of polycyclic aromatic hydrocarbons (PAHs), is positively associated with breast cancer incidence. PAHs are metabolized by cytochrome P450 (CYP) enzymes producing reactive intermediates that form DNA adducts. Single nucleotide polymorphisms (SNPs) in CYP genes that alter enzyme activity may increase breast cancer risk. **Objectives:** We examined associations between 22 CYP SNPs and breast cancer incidence, and their interaction with grilled/smoked meat intake. **Methods:** Participants included 2009 white women with a first diagnosis of in situ or invasive breast cancer (n=988) and frequency-matched controls (n=1021) from a population-based case-control study. Lifetime grilled/smoked meat intake was assessed by questionnaire. SNPs were selected because of their reported link to carcinogenesis in laboratory studies. We also calculated an 'at-risk' SNP index (number of alleles for SNPs associated with increased breast cancer incidence). We used multivariable unconditional logistic regression to estimate odds ratios (OR) and 95% confidence intervals. **Results:** ORs for breast cancer were inversely associated with CYP1A1 rs1048943 AG+GG genotype (0.71 (0.50-0.99) vs. AA genotype); and positively associated with CYP1B1 rs10175338 TT genotype (1.59 (1.12-2.26) vs. GG genotype), rs10175368 TT genotype (1.54 (1.09-2.08) vs. CC genotype), and the CYP3A4 rs2242480 CT+TT genotype (1.25 (1.00-1.56) vs. CC genotype). We observed multiplicative interactions (p 0.05) between lifetime grilled/smoked meat intake (median vs. <median) with CYP1A1 SNP rs1048943, CYP1B1 SNPs rs10175338, and rs10175368. Further, ORs were elevated 50% for median grilled/smoked meat intake among women with 0-4 'at-risk' alleles, but not those with 4-8 'at-risk' alleles. **Conclusions:** SNPs of phase I metabolizing enzyme genes may play a role in breast cancer development, and may modify the positive association between grilled/smoked meat intake and breast cancer.

0679-S/P

DISPARITIES IN CANCER INCIDENCE AND SURVIVAL BETWEEN INDIGENOUS AND NON-INDIGENOUS ADULTS IN CANADA: FOLLOW-UP OF THE 1991 CANADIAN CENSUS COHORT

Diana Withrow*, Loraine Marrett, Diane Nishri, Maegan Prummel, Michael Tjepkema (Aboriginal Cancer Control Unit, Cancer Care Ontario)

PURPOSE: Canada has 3 constitutionally recognized Aboriginal groups: First Nations (FN), Inuit, and Métis, comprising 4.3% of the population. Ethnicity is not routinely collected in Canadian cancer registries so studies using additional data sources are needed. We used a linkage of 3 population-based databases to the census to compare cancer incidence and survival of FN, Métis and non-Indigenous adults in Canada. **METHODS:** Respondents aged 25+ to the 1991 Long Form Census were followed up for cancers and deaths from 1992 to 2009. Incidence rates were estimated for common cancers, age-standardized to the World Standard population. Poisson regression was performed to assess the relative risk of cancer in FN or Métis compared to non-Aboriginal adults, adjusting for age, income and rurality. Age-standardized 5-year relative survival was estimated and flexible parametric models were used to estimate the excess mortality rate ratio for FN and Métis compared to their non-Indigenous peers. **RESULTS:** Compared to non-Aboriginal adults, FN had significantly lower incidence of prostate, male lung, and female breast cancers, yet significantly higher incidence of colorectal, kidney, and cervical cancers. Métis had significantly higher incidence than non-Aboriginal adults of female breast, lung, and cervical cancers, and significantly lower incidence of female colorectal cancer. FN adults with colorectal, lung, female breast, and prostate cancers all had significantly poorer 5-year survival compared to their non-Indigenous peers. Prostate cancer survival was significantly poorer for Métis men compared to non-Aboriginal men. **CONCLUSIONS:** Novel methods for ongoing monitoring of cancer burden in these populations are necessary to identify appropriate priority areas for intervention (e.g., programs and policies), and to support cancer control planning and advocacy.

0678

TREATMENT TRENDS IN HEAD AND NECK CANCER EXAMINED USING SEER PATTERNS OF CARE DATA

Jennifer Schlichting*, Mary Charlton, Nitin Pagedar (University of Iowa College of Public Health, Department of Epidemiology)

Recent advances in head and neck cancer (HNC) treatment, such as the addition of taxanes and cetuximab to chemotherapy regimens, as well as the increase in HPV-related HNC, have changed clinical approaches to HNC management. We sought to identify treatment trends in a population-based cohort of HNC patients. The US SEER patterns of care program collected additional information on stratified random samples of HNC patients diagnosed in 1997 (n=473), 2004 (n=1317), & 2009 (n=1128). Linear treatment trends were examined in multivariate binomial and multinomial logistic regression models. Orthogonal coefficients were used to model year of diagnosis as a continuous variable in order to accurately reflect the spacing between data collection years. HPV testing was examined for 2009. SAS software survey procedures were used to incorporate sampling weights and account for complex sampling in standard error calculation. After adjustment for age, race/ethnicity, insurance and marital status, Charlson score, HNC site, stage, and hospital characteristics, linear increases were observed from 1997-2009 for use of chemotherapy only (trend=1.34, p=.03), radiation and chemotherapy only (trend=.97, p=.0002), and surgery, radiation, and chemotherapy (trend=.71, p=.03) [surgery only referent]. Linear increases from 1997-2009 were also observed for use of cisplatin/carboplatin (trend=.96, p<.0001), taxanes (trend=1.50, p<.0001), as well as from 2004-2009 for cetuximab (trend=2.15, p<.0001). Less than 10% of 2009 cases had known HPV status; of these, 21% were positive. Hispanic ethnicity (OR=.35, 95% CI=.16-.79), unknown/no insurance (OR=.04, 95% CI=.007-.22), and laryngeal cancer (OR=.15, 95% CI=.02-.92) were all associated with decreased odds of known HPV status. Treatment patterns have changed for HNC, leading to increased incorporation of chemotherapy. HPV testing rates should be targeted for improvement, especially for patients in traditionally underserved sociodemographic groups.

0680-S/P

PERINATAL AND EARLY LIFE RISK FACTORS FOR CHILDHOOD AND ADOLESCENT MELANOMA

Katherine Wojcik*, Loraine Escobedo, Julia Heck, Beate Ritz, Myles Cockburn (Department of Preventive Medicine, Keck School of Medicine, University of Southern California, Los Angeles, California, USA)

Background: Skin cancer is the most common cancer in the US and worldwide. Melanoma remains the deadliest form, being responsible for ~75% of all skin cancer deaths. While 70,000 new melanomas are expected in the US in 2015, nearly 9,000 will occur in California. For persons <30 years of age, melanoma is the 2nd most common cancer diagnosis, yet the majority of risk factors are from studies in adults >50 years. Striking gender differences by age exist, where younger females are at much greater risk of melanoma than men. Younger people may have different underlying biology and may have age-specific risk factors or windows of susceptibility that differ from older adults. Given such contrasts with adults, current knowledge may not reflect important contributors to pediatric, adolescent, and young adult melanomas. **Methods:** A population-based, case-control study among persons born in California was used to investigate the association of melanoma and perinatal/early life risk factors, including early life ambient ultraviolet radiation (UV) and infant birth weight from birth records, along with interactions by age and race/ethnicity. **Results:** Higher UV exposure was significantly associated with 26-43% higher odds of melanoma depending on age at diagnosis, but particularly for ages 15-19yrs. High birth weight versus normal birth weight was associated with 20% increased odds (OR:1.20; 95%CI:1.03-1.41), while low birth weight appeared protective (OR:0.58; 95%CI:0.42-0.80). Among Hispanic persons, the odds of melanoma at ages 0-5 were 3 times the odds of diagnosis at ages 25-29 (OR: 3.05; 95%CI: 1.50-6.17). **Conclusion:** Higher birth weight and UV in early life are important melanoma risk factors. Early UV exposure may play a particularly strong role in melanomas at ages 15-19, while persons of Hispanic background may be more likely to get a melanoma in early childhood than as a young adult.

0681

MEETING OR EXCEEDING PHYSICAL ACTIVITY GUIDELINES IS ASSOCIATED WITH REDUCED RISK FOR CANCER IN MEXICAN-AMERICANS Shenghui Wu*

(University of Texas Health Science Center at San Antonio)

Background: Epidemiologic studies have shown that inadequate physical activity was associated with cancers in whites and other ethnic groups, but in Mexican-Americans data are limited. This study aimed to measure the association between physical activity and cancer risk in Mexican-Americans. **Methods:** Participants were drawn from the Cameron County Hispanic Cohort (n=3,391), a randomly selected Mexican-American cohort in Texas on the US-Mexico border. Physical activity was assessed using the International Physical Activity Questionnaire. Cancer was self-reported by the participants as being told by a health care provider that they had cancer. **Results:** Ninety-nine participants of the cohort (2.94%) reported a diagnosis of cancer. Compared to participants who did not meet US physical activity guidelines, subjects who met physical activity guidelines of 150 moderate and vigorous minutes per week (600 METs) reduced their risk for cancer by 87% (OR=0.13; 95% CI: 0.03-0.54), and subjects with total minutes per week of moderate and vigorous/strenuous activity greater than 745 METs decreased cancer risk by 86% [odds ratio (OR)=0.14; 95% confidence interval (CI): 0.03-0.60] comparing with their counterparts, after adjusting for age, gender, body mass index, smoking and alcohol drinking status, education and total portions of fruit and vegetable intake. **Conclusions:** Meeting or exceeding recommended levels of moderate and vigorous physical activity was associated with a significantly reduced risk for cancer in Mexican-Americans. Meeting or exceeding recommended levels of physical activity appears to be an effective target for cancer prevention and control among Mexican-Americans independent of BMI and other factors.

0683-S/P

CAN SOCIOECONOMIC AND CLINICAL FACTORS EXPLAIN THE COLON CANCER SURVIVAL PARADOX BETWEEN STAGE IIB AND STAGE IIIA? A PROPENSITY SCORE MATCHED ANALYSIS Meijiao Zhou*, Quyen Chu, Xiao-Cheng Wu (Louisiana Tumor Registry & Epidemiology, School of Public Health, Louisiana State University Health Sciences Center, New Orleans, Louisiana)

Background: Previous studies have found that stage IIB colon cancer patients had lower survival rate than stage IIIA patients. The underlying cause for this survival paradox is not clear. **Objective:** To examine whether the socioeconomic (SES) and clinical factors are associated with the survival paradox. **Methods:** We analyzed 10,312 stage IIB and stage IIIA colon cancer cases (age >18 years) diagnosed in 2004-2012 from the 18 SEER registries. Age, race, marital status, county-level SES (i.e., income, education, insurance), as well as inadequate lymph nodes (LNs) retrieved, anatomic subsite, tumor grade, and radiation therapy were used to build the propensity score (one to one match) to compensate for differences in characteristics between stage IIB and stage IIIA cases (two pairs of N=3172). Kaplan-Meier and multivariable cox proportional hazards models were employed to evaluate the difference in 5-year cause-specific survival (CSS). **Results:** The 5-year CSS rate was lower for stage IIB than for stage IIIA cases before (63.2% versus 88.0%) and after propensity score matching (67.3% versus 87.3%). After matching, stage IIB cases with < 12 LNs retrieved had the lowest 5-year survival rate (55.0%), followed by stage IIB, >12 LNs (73.0%), stage IIIA, <12 LNs (84.4%), and stage IIIA, >12 LNs (88.9%). In the multivariable analysis, the significant predictors of poor 5-year CSS were stage IIB, black race, older age, single/ widowed/divorced, higher tumor grade, and <12 LNs retrieved. The hazard ratio (HR) of stage IIB vs stage IIIA decreased from 3.72 (95% CI: 3.34, 4.15) to 3.08 (95% CI: 2.71, 3.51) after propensity score matching, taking into account of the significant factors. **Conclusion:** Socioeconomic and clinical factors limitedly explain the survival paradox. Further research on other clinical factors are warranted.

0682-S/P

SOCIOECONOMIC STATUS INFLUENCES THE UTILIZATION OF CHEMOTHERAPY DIFFERENTLY BETWEEN WHITE AND BLACK TRIPLE NEGATIVE BREAST CANCER PATIENTS Lu Zhang*, Jessica King, Tekeda Ferguson, Xiao-Cheng Wu, Mei-chin Hsieh, Vivien Chen (Louisiana State University Health Sciences Center, School of Public Health)

Background: Black women are more likely to be diagnosed with and die from triple negative breast cancer (TNBC) than white women. Chemotherapy (chemo) is the only recommended treatment for TNBC, which has been proven to improve survival. **Objective:** To evaluate the association of no chemo use with insurance, census tract residence, and census tract poverty in non-Hispanic white (NHW) and non-Hispanic black (NHB) TNBC patients. **Methods:** Invasive TNBC cases diagnosed in 2011 and abstracted by 10 population-based cancer registries for CDC funded Enhancing Cancer Registry Data for Comparative Effectiveness Research (CER) project were analyzed. SES was defined with 3 measures: Insurance: private, Medicare or other public, Medicaid, none or unknown; Census tract residence: urban, rural, mixed; Census tract poverty: <10%, 10-20%, 20%. No chemo use was the dependent variable with receiving chemo as the reference. The association of no chemo use with SES was examined adjusting for age, stage, grade, tumor size, lymph nodal status, comorbidity. **Results:** A total of 2,632 NHW and 998 NHB cases were analyzed. NHW patients were more likely than NHB not to receive chemo (25% vs. 18%) (p<0.001). In NHW, Medicaid insured patients were 1.49 times (95% CI: 1.00-2.22), and patients with unknown or without insurance were 1.84 times (95% CI: 1.17-2.91) more likely to have no chemo than privately insured patients. In contrast, in NHB, patients with unknown or without insurance were 26% more likely to have chemo (95% CI: 0.09-0.76) than those privately insured. Patients residing in urban and rural mixed area were 1.25 times (95% CI: 1.00-1.57) more likely to have no chemo than those in urban area for NHW. No significant difference was found by residence area for NHB or by census tract poverty for NHW or NHB. **Conclusions:** Insurance has opposite effect on chemo use in NHW and in NHB with TNBC. Residing in urban and rural mixed area predicts lower likelihood to receive chemo for NHW with TNBC.

0684-S/P

SUGAR-SWEETENED BEVERAGE INTAKE AND COLORECTAL CANCER SURVIVAL Emilie Zoltick*, Meir Stampfer, Edward Giovannucci, Stephanie Smith-Warner, Molin Wang, Shuji Ogino, Charles Fuchs, Andrew Chan, Kana Wu (Harvard T. H. Chan School of Public Health)

There is increasing evidence for the role of positive energy balance and hyperinsulinemia in the incidence of colorectal cancer (CRC); yet, the influence of such factors on mortality in CRC patients is less clear. Fructose, sucrose, and sugar-sweetened beverages (SSB) are among the largest sources of energy intake in the U.S. diet and SSBs have been consistently associated with hyperinsulinemia. We assessed the association between post-diagnosis SSB and total fructose and sucrose intake, based on self-reported food frequency questionnaires, and CRC-specific and all-cause mortality among stage I-III CRC cases from the Nurses' Health Study (1980-2010) and Health Professionals Follow-up Study (1986-2010). Cox proportional hazard models were used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs). A total of 1,999 CRC cases were included in the analyses with 799 total deaths and 313 CRC-specific deaths. There was a 22% increased risk of CRC-specific mortality for men and women consuming 5 or more servings of SSBs per week compared to less than 1 serving per month, but the results were not statistically significant (HR=1.22, 95% CI: 0.79, 1.89; p-trend=0.63, p-heterogeneity by sex=0.83). The association with all-cause mortality was also not significant (HR=1.16, 95% CI: 0.89, 1.50; p-trend=0.30, p-heterogeneity by sex=0.87); however, when focusing on total fructose and sucrose intake, the association with all-cause mortality was stronger (for a 10% increase in caloric intake from fructose HR=1.31, 95% CI: 0.87, 1.97; and for a 10% increase in caloric intake from sucrose HR=1.25, 95% CI: 1.00, 1.57). There was no statistically significant heterogeneity by age at diagnosis, stage of disease, or body mass index. We did not find evidence for a positive association between SSBs and CRC-specific mortality, but our results suggest that higher fructose or sucrose intake may possibly be associated with higher all-cause mortality among CRC patients.

0690-S/P

ADOLESCENTS' BODY MASS INDEX (BMI) AND CARDIOVASCULAR DISEASE RISK AMONG ADULTS: RESULTS FROM 12 YEARS OF FOLLOW-UP AMONG THE NATIONAL LONGITUDINAL STUDY OF ADOLESCENT TO ADULT HEALTH (ADD HEALTH COHORT) Rehab Auf*, Marah Selim Ziyad, Ben Taleb Mehmet, Tevfik Dorak, Miguel Cano (Florida International University)

Background: Obesity is an increasing problem among adolescents with serious health effects. This study aims to examine the impact of adolescents' obesity on the increased risk for cardiovascular disease (CVD) among participants in the Add Health cohort by examining the association between blood lipoproteins profile and BMI trajectories. **Methods:** The Add Health study followed children who were attending middle and high school for 4 waves along 12 years. Growth modelling was used to examine the relation between body mass index (BMI) at baseline and longitudinal trajectories to predict the BMI at the last follow up point and the blood lipids profile (cholesterol, Low Density Lipoproteins – LDL, and High Density Lipoproteins – HDL), while controlling for important sociodemographic factors. **Results:** The study included 6,493 individuals (females: 3,349, 51.6%) who took the baseline survey between 7 to 12 grades at school. The majority of the study participants were White (66%) followed by Black (24%). In the growth model, higher BMI at baseline and higher trajectories predicted higher BMI at wave 4 ($p < 0.001$). The growth/change in BMI was neither a predictor of total cholesterol nor LDL ($p > 0.05$). However, higher BMI at baseline ($\beta = -0.046$, $p = 0.009$) and BMI trajectories ($\beta = -0.23$, $p = 0.008$) predicted lower HDL at wave 4, after controlling for use of dyslipidemia medications and other demographic factors. The model had good fitness indicators (SRMR = 0.056 and CFI = 0.9). **Conclusions:** Adolescents' obesity was associated with higher risk for adults' obesity and elevated risk for CVD as defined by lower levels of HDL, which dyslipidemia medications did not correct. This underscores the need for more efforts to control childhood obesity as a preventive measure for cardiovascular diseases. This study reports a novel and plausible association between childhood obesity and adult HDL levels from national representative cohort.

0692

GROWTH DIFFERENTIATION FACTOR 15, ITS 12-MONTHS RELATIVE CHANGE, AND RISK OF CARDIOVASCULAR EVENTS AND TOTAL MORTALITY IN PATIENTS WITH STABLE CORONARY HEART DISEASE: 10-YEAR FOLLOW-UP OF THE KAROLA STUDY. Dhayana Dallmeier*, Hermann Brenner, Ute Mons, Wolfgang Rottbauer, Wolfgang Koenig, Dietrich Rothenbacher (Dept. of Internal Medicine II-Cardiology, University of Ulm Medical Center, Ulm, Germany.)

Background: Growth differentiation factor 15 (GDF-15) belongs to the transforming growth factor β superfamily and is involved in inflammatory and apoptotic pathways. It has been proposed as a predictor of mortality and disease progression in patients with cardiovascular disease. We investigated if baseline levels and 12-month changes of GDF-15 are associated with subsequent cardiovascular events (CVE) and total mortality in patients with stable coronary heart disease. **Methods:** Baseline GDF-15 serum concentrations were measured in participants at a cardiac rehabilitation program (median follow-up 10 years). Cox-proportional hazards models evaluated the associations with a subsequent CVE and total mortality after adjustment for well-established cardiovascular risk factors: age, sex, body mass index, smoking, diabetes, hypertension, total cholesterol, HDL-cholesterol, statins use, Cystatin C (Model 1), N-terminal pro-Brain natriuretic peptide (NT-proBNP), high sensitive (hs) CRP, and hs Troponin T (TnT) (Model 2). **Results:** Among 1073 subjects (84.7% men, mean age 59 years, median baseline GDF-15 level 1232.0 ng/L [interquartile range 916.0, 1674.0]) we observed 190 CVE and 162 deaths. Those with GDF-15 1200.0 and 1800.0 ng/L (HR 1.68 [95% CI 1.08, 2.62]) and those with GDF-15 >1800.0 ng/L (HR 1.73 [95% CI 1.02, 2.94]) had an increased risk for death even in Model 2. The 12-months relative median change was -16.7%. An increment $>20.0\%$ was associated with a HR of 1.84 [95% CI 1.04, 3.26] for a CVE in Model 1, but non-significant in Model 2. For mortality those with a relative change $>20.0\%$ had a HR of 2.26 [95% CI 1.32, 3.86] even in Model 2. **Conclusions:** GDF-15 at baseline is independently associated with subsequent CVE and 10-years total mortality. Twelve-month relative changes remained associated with subsequent CVE when adjusting for well-established cardiovascular risk factors, and with total mortality even after further adjustment for NT-proBNP, CRP and hs-TnT.

“-S/P” indicates work done while a student/postdoc

0691

HYPERTENSION AND MODIFIABLE RISK FACTORS FOR CARDIOVASCULAR DISEASES AMONG COLLEGE STUDENTS ACCORDING TO SEX FROM A NORTHEAST BRAZILIAN CITY Luana Castro*, José Barbosa, Alcione dos Santos, Antônio Silva, Eduarda Bogéa (Conceição de Maria Cordeiro)

Cardiovascular diseases are a serious public health problem, currently being considered the main cause of death and disability worldwide. Although each cardiovascular risk factor in isolation has an impact on health, very often these risk factors are aggregated in individuals. Due to the scarcity of studies that address the hypertension and other cardiovascular risk factors in young adults in Brazil and especially in the Northeast, the region in which these events are on the increase, this study was carried out with the objective of estimating the prevalence of hypertension, and other modifiable risk factors for cardiovascular diseases among college students according to sex, in a population-based sample in São Luís, Maranhão, Brazil. It is a cross-sectional study of stratified sample by the nature of the institution, with three public and six private network, held from August 2011 to October 2012. Data collection was done through questionnaires and anthropometric measurements. For the statistical analysis the Mann-Whitney test and chi-square were used. The sample consisted of 614 females (62%) and 354 males students (38%). The median age was 22 years for men and 23 years for women. Smoking was uncommon between both sexes (4.3%), but men smoked nearly four times more than women (8.0% vs 2.1%, $p < 0.001$). Consumption of alcohol in the last month was 50.2%, with higher consumption among men (58.6%, $p = 0.004$). The prevalence of physical inactivity was 69.6%, whereas women were more sedentary than men (76.1% $p < 0.001$). High fat consumption has been observed in 29.9%, being marginally higher for women (32.9%) than for men (25.1%, $p = 0.058$). The weighted total prevalence of hypertension was 27.1%, being much higher for males (46.3%, $p < 0.001$). The main findings of this study were high prevalence of hypertension (27.1%) and higher prevalence of cardiovascular risk factors among male college students.

0693

DISCUSSIONS BETWEEN PARENTS AND PROVIDERS ON TRANSITION TO ADULT HEALTH CARE FOR ADOLESCENTS WITH PEDIATRIC HEART DISEASE, NATIONAL SURVEY OF CHILDREN WITH SPECIAL HEALTH CARE NEEDS, 2009-2010 Karrie Finn*, Sherry Farr, Matthew Oster, Margaret Honein (National Center on Birth Defects and Developmental Disabilities)

Children with heart disease require lifelong care. A smooth transition from pediatric to adult care may decrease risk for morbidity and mortality. Little is known about the prevalence and predictors of transition-related discussions between parents of children with heart disease and the child's healthcare providers. Using self-reported, population-based data from the 2009-2010 National Survey of Children with Special Health Care Needs, our aim was to assess the prevalence and predictors of transition-related discussions between providers and parents of children 12 to 17 years of age with special health care needs (CSHCN) and heart disease. Logistic regression was used to generate adjusted prevalence ratios (aPR) for demographic characteristics and transition-related discussions. All calculations used weights to generate population-based estimates. Of the 758 interviews of CSHCN with heart disease (representing 220,000 individuals nationally), 52% were female, 65% were white, 37% had medical homes, and 60% had private insurance. Less than half of parents of CSHCN with heart disease reported discussing with providers their child's health insurance as an adult (25.4%), eventual shift to adult care (22.3%), and adult healthcare needs (47.5%). Among parents who did not have discussions, up to 67% reported desiring one. Having a child 16-17 years of age, compared to 12-13 years, was associated with discussing future health insurance (aPR 1.9, 95% CI [1.2, 3.1]), a shift to adult care (aPR 2.2, 95% CI [1.2, 4.0]), and adult healthcare needs (aPR 1.4, 95% CI [1.0, 1.9]). Having a medical home was associated with discussing future health insurance (aPR 1.8, 95% CI [1.3, 2.6]) and other adult healthcare needs (aPR 1.4, 95% CI [1.1, 1.8]). Less than half of parents of CSHCN with heart disease reported discussions with healthcare providers around transition to care for their children, despite evidence that a substantial percentage would find transition-planning beneficial.

0695

TRENDS IN SCHIZOPHRENIA AND CARDIOVASCULAR DISEASE RISK FACTORS IN CANADA FROM 2001-2010: REPEAT CROSS-SECTIONAL SURVEYS Maria Chiu*, Atif Kukaswadia, Nathaniel Jembere, Michael Lebenbaum, Paul, Kurdyak (Institute for Clinical Evaluative Sciences)

Background Cardiovascular disease (CVD) is a leading cause of death worldwide. People with serious mental illnesses, e.g., schizophrenia, have an increased risk of death due to CVD compared to the general population. However, little research has focused on the cardiovascular health of this high risk group. This study estimated the age- and sex-standardized prevalence of CVD risk factors in a population-based sample of Canadians with and without schizophrenia. We examined whether the prevalence changed over time, and if individuals with schizophrenia had more comorbid CVD risk factors. **Methods** Ontario respondents in the Canadian Community Health Survey were linked to administrative health databases. Schizophrenia status was determined using a validated algorithm. Eight CVD risk factors were examined: current smoking status, obesity, diabetes, hypertension, monthly binge drinking, eating fruit/vegetables <3 times a day, physical inactivity and psychosocial stress. The overall prevalence of CVD risk factors was compared between those with and without schizophrenia. To examine changes in prevalence over time, the 2001 to 2005 survey cycles were compared to the 2007/8 to 2009/10 survey cycles. Finally, the proportion with 3 CVD risk factors was compared between the two study groups. **Results** The prevalence of most CVD risk factors was significantly higher among those with schizophrenia than the general population, e.g. smoking: 35.9% vs. 21.1%. Over time, the prevalence of obesity and diabetes increased by 1.4- and 1.7-fold, respectively, in the schizophrenia group. The prevalence of 3 risk factors was higher among those with schizophrenia than those without (46% vs 26%, $p < .001$). **Discussion** We found a higher prevalence of individual and multiple CVD risk factors among the schizophrenia population that was worsening over time. This highlights the need for targeted interventions and risk factor prevention strategies to reduce the burden of CVD in this vulnerable population.

0697

HYPOVITAMINOSIS D IS ASSOCIATED WITH VISCERAL ADIPOSITY, HIGH LEVELS OF LOW DENSITY LIPOPROTEIN AND TRIGLYCERIDES IN ALTERNATING SHIFT WORKERS OF MINAS GERAIS STATE IN BRAZIL. George Luiz Lins Machado Coelho*, Aline Priscila Batista, Raimundo Marques do Nascimento Neto, Fausto Aloísio Pedrosa Pimenta, Silvia Nascimento de Freitas, Márcio Weissheimer, Lauria, Ticiana Vazzoler Ambrosim, George Luiz Lins Machado Coelho (Universidade Federal de Ouro Preto)

Introduction: Studies suggest that there is a strong association of low vitamin D levels with cardiovascular disease and its risk factors. Hypovitaminosis D (<30 ng/ml) is a recent public health problem that has reached different populations. **Objective:** To investigate whether vitamin D deficiency is an additional mechanism to explain the disturbances in the lipid profile as well as the excess of abdominal fat presented by alternating shift workers of a mining company in the region of the Conspirators, Minas Gerais, Brazil. **Methods:** Cross-sectional study was conducted in a sample of 391 adult males, ranging from 20 to 57 years old, in regime of shift rotation that had at least one risk criteria for cardiovascular disease. Demographic, behavioral, clinical, anthropometric and body composition variables were obtained. A blood sample was obtained for determination of calcidiol (25 (OH) D), parathyroid hormone intact molecule, calcium, phosphorus, lipid profile, blood glucose, insulin deficiency, C-reactive protein and adipokines. The average age of the 391 study participants was 36.1 ± 7.3 . **Results:** The prevalence of vitamin D deficiency and dyslipidemia was 73% and 74.2%, respectively. Excess visceral fat was significant in vitamin D deficiency group, with an OR of 2.3 (95% CI: 1.3 to 4.0). Dyslipidemia showed levels of vitamin D significantly lower (OR = 2.7; 95% CI = 1.6-4.3) than individuals with normal levels of cholesterol and fractions, and triglycerides. After separating the individuals by age, seasonality and BMI, vitamin D deficiency had a significant inverse association and dose-dependent with low density lipoprotein LDL-c, (OR: 5.9) triglycerides (OR: 2.4) and visceral fat (OR: 2.3). **Conclusion:** Our results suggest that excess visceral adiposity is a strong predictor of vitamin D deficiency and associated with hypertriglyceremia increases the risk of hypovitaminosis D, and this is a strong contributor to the atherogenic lipid phenotype of Metabolic Syndrome.

0696

LOW HDL CHOLESTEROL AS A CARDIOVASCULAR RISK FACTOR IN RURAL, URBAN, AND RURAL-URBAN MIGRANTS: PERU MIGRANT COHORT STUDY María Lazo-Porras*, Antonio Bernabe-Ortiz, German Malaga, Robert. H. Gilman, Ana Acuña-Villaorduña, Deborah Cardenas-Montero, Liam Smeeth, J Jaime Miranda (CRONICAS Center of Excellence in Chronic Diseases, Universidad Peruana Cayetano Heredia, Lima, Peru)

Introduction: Whilst the relationship between lipids and cardiovascular (CV) mortality has been well studied and appears to be controversial, very little has been studied in the context of rural to urban migration in low-resource settings. **Objective:** Determine the profile and related factors for HDL-c patterns with a focus on isolated and non-isolated low HDL-c in three population-based groups according to their migration status and determine the effect of HDL-c patterns on the rates of cardiovascular outcomes (i.e. stroke and myocardial infarction) and mortality. **Methods:** Cross-sectional and 5-year longitudinal data from the PERU MIGRANT study designed to assess the effect of migration on cardiovascular risk profiles and mortality in Peru. Two different analyses were performed: first, we estimated prevalence and associated factors with isolated and non-isolated low HDL-c at baseline. Second, using longitudinal information, relative risk ratios (RRR) of composite outcomes of mortality, stroke and myocardial infarction were calculated and compared according to HDL-c levels at baseline. **Results:** Data from 988 participants, rural (n=201), rural-to-urban migrants (n=589), and urban (n=199) groups, was analyzed. Low HDL-c was present in 56.5% (95%CI: 53.4%-59.6%) without differences by study groups. Isolated low HDL-c was found in 36.5% (95%CI: 33.5-39.5%), with differences between study groups. In multivariable analysis, urban group (vs. rural), female gender, overweight and obesity were independently associated with isolated low HDL-c. Only female gender, overweight and obesity were associated with non-isolated low HDL-c. Longitudinal analyses showed that non-isolated low HDL-c increased the risk of negative cardiovascular outcomes (RRR=3.61; 95%CI: 1.23-10.6). **Conclusions:** Isolated low HDL-c was the most common dyslipidemia in the study population and was more frequent in rural subjects. Non-isolated low HDL-c increased three- to fourfold the 5-year risk of CV outcomes.

0698-S/P

FOOD ENVIRONMENT, DIETARY INTAKE, AND CARDIAC ARREST RISK Stephen Mooney*, David Siscovick, Nona Sotoodehnia, Tanya Kaufman, Charlene Goh, Garazi Zulaika, Rozenn Lemaitre, Philip Hurvitz, Daniel Sheehan, Gina Lovasi (Department of Epidemiology, Mailman School of Public Health, Columbia University)

Background Neighborhood food environments may contribute to sudden cardiac arrest incidence and mortality. The neighborhood environment may limit local access to cardio-protective foods such as fish and nuts, or may facilitate local access to low-cost processed foods, including those containing cardio-harmful trans-fats. **Methods** We linked residential addresses of subjects from the Cardiac Arrest Blood Study-Repository (CABS-R) to nearby food sources using the National Establishment Time-Series (NETS) longitudinal database of registered businesses. CABS-R is a registry of blood samples and abstracted emergency response records of sudden cardiac arrest cases and population-based controls from King County, WA. We performed three analyses of food sources within a 5km buffer of the home address: 1) in relation to case status for 899 cases and 807 controls, 2) in relation to dietary biomarkers for 1894 cases, and 3) in relation to survival after cardiac arrest for 1808 cases presenting with ventricular fibrillation. **Results** Unhealthy food outlet density near the subject's home was associated with cardiac arrest (OR: 1.79, 95% CI: 1.59, 2.03 per z-score increase). However, healthy food outlet density was similarly associated (OR: 1.75, 95% CI: 1.56, 1.98 per z-score increase). Both fish markets and overall healthy food outlets near the subjects' home were unassociated with markers indicating fish consumption. Unhealthy food sources near the home were associated with a lower proportion of fatty acids that were trans-fats (0.034 percent decrease per z-score increase 95% CI: 0.006, 0.062). Survival after cardiac arrest was unassociated with local food environment (OR: 1.03, 95% CI: 0.93, 1.51 per z-score increase in healthy food sources, OR: 1.02, 95% CI: 0.92, 1.14 per z-score increase in unhealthy food sources). **Conclusions** We did not find support for the hypothesized effect of the food environment on case status or dietary biomarkers.

“-S/P” indicates work done while a student/postdoc

0699-S/P

UNDERSTANDING THE HYPERTENSION MANAGEMENT CONTINUUM IN SUB-SAHARAN AFRICA USING A CASCADE APPROACH: A SYSTEMATIC REVIEW

Anton Palma*, Miriam Rabkin (Columbia University)

Cardiovascular disease (CVD) is the world's leading cause of death, and a substantial health burden in low- and middle-income countries. Expanding access to CVD prevention and treatment is a priority WHO goal, and effective identification and management of CVD risk factors such as hypertension (HTN) is vital to this effort. Although HTN is relatively easy to diagnose, and treatable with lifestyle interventions and inexpensive medications, it often remains undiagnosed and uncontrolled. We hypothesized that a "cascade" approach characterizing HTN prevalence, awareness, treatment and control would be useful to inform health service planning for HTN, as it has for HIV programs, and conducted a systematic review of the literature on HTN in sub-Saharan Africa (SSA) using this lens. Studies published between 2000-2015 describing HTN prevalence, awareness, treatment and control in SSA were identified via a PubMed database search. Studies were characterized as population-based or non-representative, and categorized by cascade "step" and country. To account for variability in sample size, weighted estimates were used for population-based studies. To date, we have evaluated 302 of 1,072 identified articles, of which 103 were eligible for analysis. Of these, 50 (49%) were population-based, representing n=176,196 individuals from 16 countries. Pooled analysis yields a weighted HTN prevalence of 29% overall (range: 9-52%). HTN awareness was described in 12 studies (3-64%), treatment in 9 (18-59%), and control in 8 (2-33%). Estimates from non-representative studies exhibit wider variability for all cascade steps. The review confirms high prevalence and inadequate control of HTN in SSA, with wide variability across studies and settings. Representative country-level data on HTN awareness, treatment and control are scarce, which poses a significant barrier to the design and implementation of public health interventions to combat HTN and prevent CVD-related illness and death.

0701

DIABETES DIAGNOSIS, GLYCEMIA, AND MORTALITY IN ACUTE HEART FAILURE PATIENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

Sherman Selix*, Kevin Towle, Alexander Riordan, David Galbraith (Cardno ChemRisk)

Background: A prior history of diabetes and high blood glucose levels are established risk factors for hospital admission for acute heart failure (AHF). However, evidence of their prognostic value on mortality after AHF hospital admission is conflicting, with some studies reporting a paradoxically protective effect. **Methods:** Selecting from PubMed and Web of Science databases, we reviewed two sets of articles evaluating the effect of diabetes history and the effect of glycemia, respectively, on mortality from all causes in patients with AHF. **Results:** Combining 14 studies, addressing a total of 327,501 AHF patients, a random effects meta-analysis found no relationship between a prior diagnosis of diabetes and all-cause mortality (summary RR: 1.00, 95% CI: 0.88-1.13, I²: 87%). The three largest studies regarding 301,448 patients (92% of our patient pool) all reported a significant protective effect for a prior diabetes diagnosis (summary RR: 0.82, 95% CI: 0.80-0.84, I²: 0%). Two of these three studies suggested that more aggressive clinical treatment of diabetic patients might help prevent mortality. Still, in other cohorts diabetics experienced greater mortality, and overall no association was found in the literature reviewed. From our second, separate, search, combining four studies showed elevated admission glucose levels were a significant risk factor for mortality (summary RR per g/L: 1.28, 95% CI: 1.14-1.44, I²: 6%). Hyperglycemic patients with no previous diagnosis of diabetes experienced worse survival than all previously diagnosed diabetics, as well as non-diabetics with normal glucose levels, in all four studies that provided data regarding these three patient groupings. **Conclusion:** Our analysis suggests that admission glucose level is predictive of mortality outcomes in AHF patients, while a previous diabetes diagnosis is not. We hypothesize that this may arise from higher mortality rates in AHF patients with undiagnosed and untreated diabetes.

0700

BIRTH WEIGHT AND ADOLESCENT BLOOD PRESSURE MEASURED AT AGE 12 YEARS IN THE GATESHEAD MILLENNIUM STUDY.

Mark Pearce*, Kay Mann, Laura Basterfield, Charlotte Wright, Kathryn Parkinson, Ashley Adamson (Newcastle University)

Background: Birth weight and growth in early life have been shown to be directly predictive of later blood pressure. However, not all studies consistently find a significant reduction in blood pressure with an increase in birth weight. In addition, the relative importance of birth weight and of other lifestyle and environmental factors is often overlooked and rarely studied in adolescents. We aimed to investigate early life predictors, including birth weight, of adolescent blood pressure in the Gateshead Millennium Study (GMS), a birth cohort from Northern England, and to assess the relative importance of factors from across the lifecourse to date. **Methods:** The GMS is a cohort of 1029 infants born in 1999-2000 in Gateshead in northern England. Throughout infancy and early childhood, detailed information was collected including birth weight, gestational age, duration breast fed and measures of height and weight. Assessments of 491 returning singleton participants at age 12 years included measures of body mass and blood pressure. Linear regression and path analysis were used to determine predictors of blood pressure at age 12 and their relative importance. **Results:** Birth weight was not directly associated with blood pressure. However, after adjustment for contemporaneous BMI or height, an inverse association of standardised birth weight on systolic blood pressure was significant. The relative importance of birth weight on later systolic blood pressure was smaller than other body measures (height and BMI) measured at the same time as blood pressure. **Conclusion:** There was no independent association of birth weight on blood pressure seen in this adolescent population. It is more apparent that contemporaneous body measures have an important role to play. Lifestyle factors that influence body mass or size, such as diet and physical activity, is where intervention should be targeted.

0702-S/P

THE EFFECT OF NATIVITY ON LONGITUDINAL CHANGE OF LOW-DENSITY LIPOPROTEINS IN A COHORT OF OLDER MEXICAN AMERICANS

Tu My To*, Mary Haan (UCSF)

Introduction: High levels of low density lipoproteins (LDL) are associated with increased risk of cardiovascular disease. However, there is little information on changes in LDL levels over time among older adults of ethnic minorities. Though studies have suggested that immigrant populations are characterized with better overall health, it is unclear how LDL and longitudinal changes in LDL differ between foreign- and native-born individuals. **Methods:** Analyses used data from the Sacramento Area Latino Study on Aging (SALSA, n=1789), a cohort of community-dwelling older Mexican Americans. LDL measures were available at baseline and at four follow-ups over a ten-year period. A mixed effects linear model was used to examine the association between nativity (dichotomized as US or Mexico/Other) and continuous LDL level. Other covariates included time since enrollment, gender, and baseline measures of age, BMI, acculturation, statin use, diabetes status, having health insurance, and having a regular doctor. Interaction terms between time and nativity as well as time and baseline age were included to assess rate of change. **Results:** In the SALSA cohort, 51% were born outside the US. Baseline LDL level was 119.8 (SD 35.0) mg/dL for US-born and 125.4 (SD 33.8) mg/dL for foreign-born participants (p-value=0.001). In the mixed model, the US-born had lower LDL compared to foreign-born participants (beta=-5.7 mg/dL; p-value=0.004; 95% CI: -9.6,-1.8). Rate of LDL change due to nativity was significant, with LDL increasing over time among those born in the US (beta=0.72 mg/dL; p-value=0.004; 95%CI: 0.23,1.2). **Conclusions:** There is a difference in LDL levels by nativity status that remains significant even after adjustment for various demographic and health characteristics. Results from rate of LDL change suggest that the foreign- and native-born populations become similar over time. Further investigation is needed into behavioral and biological mechanisms by which this may occur.

0710-S/P

PROSPECTIVE COHORT STUDY OF VITAMIN D AND AUTISM SPECTRUM DISORDER IN EARLY CHILDHOOD

Yamna Ali*, Laura Anderson, Sharon Smile, Yang Chen, Gerald Lebovic, Patricia Parkin, Catherine Birken, Jonathon Maguire (St. Michael's Hospital; Dalla Lana School of Public Health, University of Toronto)

Autism spectrum disorder (ASD) is defined by social communication impairments as well as restricted and repetitive patterns of behaviour. Established risk factors are non-modifiable such as male sex, genetic causes, and family history. It has been hypothesized that low levels of vitamin D may be associated with increased risk of ASD. However, the temporality of this association has not been investigated. The primary objective of this study was to examine the association between serum 25-hydroxyvitamin D (25(OH)D) concentration and ASD incidence. The secondary objective was to evaluate whether vitamin D supplementation was associated with ASD incidence. We conducted a prospective cohort study using data from healthy, urban, preschool-aged children participating in the TARGet Kids! primary care network (www.targetkids.ca). Children under 6 years of age without ASD diagnosis (n=3856) were recruited through primary healthcare in Toronto, Ontario between June 2008 and November 2014. Serum 25(OH)D and parent report of child's vitamin D supplement use were measured at baseline. Physician diagnosis of ASD was confirmed through review of medical records. Unadjusted and adjusted relative risks (RR) and 95% confidence intervals (CI) were estimated using Poisson regression with a robust error variance adjusted for age, sex, body mass index, maternal ethnicity, and neighbourhood income. 41 children were diagnosed with ASD (incidence=1.1%) over the observation period (average follow-up time=1.8 years). There was no statistically significant association between 25(OH)D concentration and ASD incidence in the unadjusted (RR=1.04; 95% CI:0.97-1.11) or adjusted models (adjusted RR=1.07; 95% CI:0.96-1.18). Vitamin D supplement use was also not associated with ASD incidence (adjusted RR=0.91; 95% CI:0.49-1.72). Vitamin D status may not be associated with ASD incidence. Future prospective studies with larger sample sizes and longer follow-up periods may be needed to confirm our findings.

0713-S/P

RELATIONSHIP OF BIRTH WEIGHT AND WEIGHT CHANGE DURING THE FIRST 96 HOURS OF LIFE WITH CHILDHOOD METABOLIC RISK – FINDINGS FROM A PROSPECTIVE COHORT STUDY

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Background: Newborn weight change (NWC) in the first 96 hours represents rapid adaptations of a newborn to external environment. It may be a key developmental period for future metabolic risk (MR), but this has not been explored. **Objective:** To determine the associations of birth weight (BW) and NWC during the first 96 hours of life with childhood MR. **Methods:** This study included 312 children, from a Portuguese birth cohort. BW was abstracted from clinical records and postnatal anthropometry was obtained by trained examiners during hospital stay. NWC was calculated as ((estimated minimum weight - BW) / BW) × 100. At age 4 and 7, children were measured and had a fasting blood sample collected. The MR factors analyzed were glucose, HDL-cholesterol, triglycerides, waist circumference, systolic and diastolic blood pressure. Path analysis was used to compute adjusted regression coefficients and respective 95% confidence intervals [(95%CI)]. **Results:** After adjustment for observed potential confounding factors, BW was inversely associated with HDL-cholesterol at 4 [-0.044 (-0.074; -0.014)] and 7 years [-0.051 (-0.080; -0.023)] and positively associated with waist circumference at 4 [0.072 (0.045; 0.100)] and 7 years [0.020 (0.004; 0.037)], but not with any of the other MR factors. NWC was not robustly associated with any of the MR factors. All of the MR factors at age 4 were positively correlated with the same factors at age 7. Associations of BW with HDL-cholesterol and waist circumference at age 7 were partially mediated by these MR factors at age 4. **Conclusions:** Our results suggest greater BW is associated with greater waist and lower HDL-cholesterol at age 4 and 7, but not with other MR factors. We found no evidence that weight change in the first 96 hours related to any MR factors in later childhood.

“S/P” indicates work done while a student/postdoc

0711

ADVERSE CHILDHOOD EXPERIENCES (ACES) AND EMOTIONAL DISTRESS AMONG ADOLESCENTS INVOLVED WITH THE JUVENILE JUSTICE SYSTEM: THE MODERATING EFFECTS OF INTERNAL RESILIENCE AND POSITIVE YOUTH ASSETS

Kristen Clements-Nolle*, Andrea Skewes, Rachel Wadlington, Irene Skewes (University of Nevada, Reno)

Background: There is strong evidence that adverse childhood experiences (ACEs) such as abuse, neglect, and household dysfunction are associated with emotional distress among adolescents, but few studies have investigated protective factors that may moderate this relationship. **Methods:** 429 male and female adolescents involved with the juvenile justice system completed audio computer-assisted self interviews. The ACEs module from the Behavioral Risk Factor Surveillance System (BRFSS) was adapted for adolescent recall (range 0-8). The Brief Symptom Inventory-18 was used to measure emotional distress (range 0-44). Potential effect modifiers included internal resiliency (Conner-Davidson Resilience Scale) and positive youth assets including school connectedness, family communication, positive peer influence, and non-parental role models (Youth Assets Survey). Multiple linear regression was used to test the relationship between ACEs and emotional distress and to evaluate effect modification by internal resilience and youth assets after controlling for sociodemographics. Standardized coefficients were calculated to allow for comparison. **Results:** Over half of the sample reported 4-8 ACEs. Higher emotional distress scores were found among females (standardized regression coefficient [β] =0.22; $p<.001$), adolescents on formal probation (β =0.09; $p=.05$) and those with 4-8 ACEs (β =0.51; $p<.001$). Internal resilience (β =-0.16; $p=.04$) and school connectedness (β =-0.16; $p=.03$) moderated the relationship between ACEs and emotional distress. There was no evidence of effect modification by family communication, positive peer influence, or non-parental role models. **Conclusions:** Screening adolescents referred to the juvenile justice system for ACEs may be an effective method for identifying youth at risk for emotional distress. Interventions aimed at building internal resilience and developing positive youth assets such as school connectedness may decrease the impact of ACEs on emotional distress.

0714-S/P

PREBIOTIC AND PROBIOTIC CONSUMPTION DURING PREGNANCY AND AUTISM OBSERVATIONAL SCALE FOR INFANTS (AOSI) SCORE AT 12-MONTHS IN THE EARLY AUTISM RISK LONGITUDINAL INVESTIGATION (EARLI)

Calliope Holingue*, Lisa Croen, Juhi Pandey, Craig Newschaffer, M. Daniele Fallin, Irva Hertz-Picciotto (Wendy Klag Center for Autism and Developmental Disabilities, Department of Mental Health, Johns Hopkins Bloomberg School of Public Health)

Children with Autism Spectrum Disorder often have co-occurring gastrointestinal symptoms and abnormalities. A prebiotic/probiotic rich diet is theorized to improve gastrointestinal and behavioral symptoms, however, little research has yet examined the association between prebiotic/probiotic consumption and development of behavioral symptoms in an autism cohort. Our objective was to test the association between maternal prebiotic/probiotic consumption during pregnancy and child development performance at 12 months. In an ASD-enriched birth cohort, the Early Autism Risk Longitudinal Investigation (EARLI), pregnant mothers were interviewed about the frequency and amounts of eating certain foods during their pregnancy. Dietary questions regarding the following prebiotic/probiotic-rich foods were extracted: oatmeal, bran, bananas, strawberries, cooked/raw greens, cabbage, beans, asparagus, onions, fresh tomatoes, cooked grains, whole-wheat bread, sourdough bread, tofu, soy products, yogurt, kefir, miso soup, pickles and pickled vegetables/fruit. Missing dietary data was imputed across 106 variables using predictive mean matching in R. For each of the 214 mothers, and for each of 10 imputations per mother, a score was created by taking the product of the frequency and amount of each food and summing across all foods (possible range: 0-2448). The mean score across 10 imputations was kept as the predictor. Child development was measured at 12 months via the Autism Observational Scale for Infants (AOSI), a measure shown to be correlated with later diagnosis of ASD. Linear regression was used to predict the effect of the prebiotic/probiotic score on 12-month AOSI score on the log scale. Maternal pregnancy prebiotic/probiotic scores ranged from 38 to 493 (median: 280). The prebiotic/probiotic score was not significantly associated with child 12-month log AOSI score (estimate=-0.0006, $p=0.353$). Further analyses would benefit from a larger sample and a more refined prebiotic/probiotic variable.

0715

PREVALENCE OF AUTISM SPECTRUM DISORDERS- A POPULATION BASED STUDY IN URBAN, RURAL AND TRIBAL AREAS OF HIMACHAL PRADESH STATE OF INDIA Sunil Raina*, (Deptt. of Community Medicine, Dr. RP Govt. Medical College, Tanda (HP), India)

Background: India is the second most populous country of the world. A large portion of the population of this country is below twenty years of age, but still there is a paucity of information about the prevalence and incidence of many developmental disorders. This study was conducted on 28,078 children in the age group of 1-10 years (largest population based study in India as per review of literature) was planned to estimate the prevalence of autism spectrum disorders in the selected areas (tribal, rural and urban) of a northern state of Himachal Pradesh in India. **Methodology:** A cross-sectional two phase study was conducted covering all the children between 1 to 10 years of age. Phase one (screening phase) included screening of all the children in the age group of 1-10 years by trained field investigators utilizing the Hindi version of the Indian Scale for Assessment of Autism (ISAA). Screening also included an assessment of the sociodemographic profile of the participants using a socioeconomic status (SES) pro forma and a behavioral checklist. Phase two involved clinical evaluation (by clinical psychologist, paediatrician, Neurologist, psychiatrist and public health specialist) of individuals who were suspected of autism on screening. Further 10% (randomly selected) of children labelled as non-suspect for autism in screening phase was also subjected to clinical evaluation. **Results:** A total of 43 children out of 28,070 children were confirmed as cases of autism spectrum disorders (ASD). The results show a prevalence rate of 1.5/1000. The prevalence was found to be highest in the rural area (26/10,961; 2.3/1000) followed by the tribal area (10/9167; 1/1000). The prevalence was found to be lowest in the urban area (7/7950; 0.9/1000). **Conclusions:** The prevalence of ASD in India competes with the prevalence of ASD in developed countries. However, the lower prevalence in tribal areas needs to be read with caution given the higher rates of Infant and child mortality in this population.

0716- S/P

HOUSEHOLD FOOD INSECURITY AND OVERWEIGHT IN CANADIAN SCHOOL-AGED CHILDREN Mariane Sentenac*, Geneviève Gariépy, Britt McKinnon, Frank Elgar (Institute for Health and Social Policy, McGill University)

Overweight in childhood has risen continuously during the last two decades around the world and was declared as a major public health problem in 2011 by the WHO. A large amount of literature has investigated causes and consequences of childhood overweight. In adult population, evidence about a paradoxical association between household food insecurity and overweight starts to emerge. The most common hypothesis advanced says that in low-income household, the quantity and the quality of the food intake might vary throughout the month. Given the association between household food insecurity and childhood overweight is much less documented, we have investigated this association using the data from the Canadian 2010 Health Behaviours in School-aged Children survey. As most of the published literature on the topic, we have examined the association between perception of hunger, a proxy measure of food insecurity, and children overweight using a logistic regression analysis controlling for various confounding variables. Because children reporting being hungry and the others may have different characteristics we also used a propensity scores (PS) analysis for a better balance between groups. Results are shown as Adjusted Odds Ratio (AOR) and 95% confidence interval (95% CI). On the 20,206 students in Grade 6 to 10 participating, 20.2% was classified as overweight (BMI 85th percentile). The sample matched on the PS was obtained by implemented a 1:1 nearest neighbour matching algorithm within caliper 0.03 without replacement. The logistic regression analysis conducted on the total sample (n=17,750) and on the matched sample (n=7980) showed that students that report going to bed hungry were more likely to be overweight (respectively, AOR: 1.23, 95%CI: 1.08 – 1.40; p<0.01; AOR: 1.25; 95%CI: 1.08 – 1.45; p<0.01). After controlling for imbalance across groups using propensity scores, the association between food insecurity and overweight in Canadian students remained significant.

0720-S/P

A DIFFERENCE-IN-DIFFERENCES APPROACH TO ASSESS THE EFFECT OF A HEAT ACTION PLAN ON HEAT-RELATED MORTALITY AND EQUITY IN MONTREAL, QUEBEC Tarik Benmarhnia* (McGill University)

Background: The impact of heat waves on mortality and health inequalities is well documented. Very few studies have assessed the effectiveness of heat action plans (HAPs) on health, and none has used quasi-experimental methods to estimate causal effects of such programs. **Objectives:** To develop a quasi-experimental method to estimate the causal effects associated with HAPs that allows the identification of heterogeneity across sub-populations, and to apply this method specifically to the case of the Montreal HAP. **Methods:** A difference-in-differences approach was undertaken using Montreal death registry data for the summers of 2000-2007 to assess the effectiveness of the Montreal HAP, implemented in 2004, on mortality. To study equity in the effect of HAP implementation, we assessed whether the program effects were heterogeneous across sex (male vs. female), age (≥ 65 years vs. <65 years) and neighborhood education levels (first vs. third tertile). We conducted sensitivity analyses to assess the validity of the estimated causal effect of the HAP program. **Results:** We found evidence that the HAP contributed to reducing mortality on hot days, and that the mortality reduction attributable to the program was greater for elderly people and people living in low education neighborhoods. **Conclusion:** These findings show promise for programs aimed at reducing the impact of extreme temperatures and health inequities. We propose a new quasi experimental approach that can be easily applied to evaluate the impact of any program or intervention triggered when daily thresholds are reached.

0721-S/P

EFFECTS OF THE CALIFORNIA DROUGHT ON POPULATION HEALTH Dana Goin*, Jennifer Ahern (UC Berkeley)

Severe drought conditions can increase respiratory, vector-based, and water quality related illnesses. These issues have primarily been studied in Africa and Southeast Asia, and the impact of drought on health in the United States is less understood. As the drought in California continues through its fifth year, the consequences of the drought on health are important to understand. This project uses data from the North America Drought Monitor and statewide primary clinic utilization records to assess the impact of drought on diagnoses of respiratory illness, infectious disease, and mental health conditions in California. We leverage variation in the extent of drought temporally and geographically to examine drought effects. Generalized Estimating Equations (GEE) were used to examine the relation between drought and rates of illness over the years 2011-2014, controlling for factors that influence the propensity of living in a county with high risk of drought, including wealth, education, affordable housing, access to health and financial services, insurance coverage and civic participation. Drought severity was related to an increase in the rate of respiratory illnesses in counties with less than 50% of the population living in urban areas (0.007, 95% CI 0.002,0.011). Our findings suggest that health outcomes may have been affected by the drought in California. In future work we will stratify by demographic characteristics, and consider a longer timeframe to allow for a more detailed and comprehensive study.

0730-S/P

COMPARATIVE EFFECTIVENESS OF SHORT-COURSE AZITHROMYCIN VERSUS LONG-COURSE ANTIBIOTICS FOR TREATMENT OF TYPICAL PEDIATRIC COMMUNITY-ACQUIRED PNEUMONIA: A META-ANALYSIS Licelot Eralte Mercer*, Stephen Morse (Columbia University Mailman School of Public Health)

Background. Although current treatment guidelines recommend amoxicillin as a first-line therapy for pediatric community-acquired pneumonia (CAP) in outpatient settings, many clinicians prescribe azithromycin (AZT) instead — contending that the empirical evidence corroborates AZT's superior effectiveness despite reports of rising pneumococcal resistance to macrolides. Do the evidence support claims of AZT's superior effectiveness? **Objective.** To conduct a meta-analysis that synthesizes the existing evidence from randomized controlled trials (RCTs), and assess the comparative effectiveness of short-course AZT (5-days) monotherapy versus long-course antibiotics (5-days) used in conventional treatment of non-severe typical pediatric CAP. **Methods** Following the PRISMA-Protocol Guidelines, we identified non-placebo-controlled RCTs measuring the association between clinical cure rates of CAP symptoms in patients treated with AZT versus a long-course antibiotic. **Results** From nine studies that treated CAP patients from 15-37days, a total of 1409cases (<18yrs) were collected. In a random-effects model, the ORpooled of clinical cure from CAP was -1.32 (95%CI: 0.99-1.75; P= 0.79) times more likely among cases treated with AZT than those treated with either erythromycin, amoxicillin (AMOX) or amoxicillin-clavulanate (AMOX-CLAV). The RCTs that defined CAP broadly to include bronchitis and bronchiolitis diagnosis, detected a meaningful association between the likelihood of experiencing complete clinical cure with AZT treatment (p 0.05). Among CAP cases treated with AZT, those from studies with broader CAP definitions appeared to be 1.55 (95%CI: 1.08-2.22; P= 0.59) more likely to recover compared to CAP cases from studies only using the traditional and narrow definition of pneumonia. **Conclusions** Our findings support indicate that AZT is as effective to standard first-line CAP antibiotic used. However, this evidence is circumstantial and results should be interpreted with caution.

0740-S/P

APPLYING EPIDEMIOLOGIC METHODS TO HUMANITARIAN CRISES: ETHIOPIA, IRAQ, JORDAN, AND UGANDA; PSYCHOSOCIAL BENEFIT OF HUMANITARIAN RESPONSE

Sabrina Hermosilla*, Janna Metzler, Miriam Gofine, Alastair Ager (Columbia University)

Child friendly spaces (CFS) are a common intervention that aims to provide psychosocial support and protection in humanitarian emergencies. There is little evidence applying rigorous epidemiologic methods to humanitarian settings, and less on implementation science around CFS. We conducted a three-year (2012-2014), longitudinal population-based cluster randomized survey among refugee populations in Ethiopia, Iraq, Jordan, and Uganda to document the mental health outcomes of CFS and develop capacity for rigorous evaluation. For this analysis we included children (n=893, age 6-12) with complete information on psychosocial outcomes from four countries: Somalian refugees in Buramino Refugee Camp, Ethiopia (n = 106); Syrian refugees in Domiz Refugee Camp, Iraq (n = 80); Syrian refugees in Zarqa, Jordan (n = 131); and Democratic Republic of Congo refugees in Rwamwanja Resettlement Centre, Uganda (n = 576). We measured psychosocial well-being with locally validated quantitative instruments and compared weighted mean improvement, by intervention arm, across sites with Cohen's d and random effect meta-analyses. Across all study sites we found an overall adjusted positive effect of attending the intervention on psychosocial well-being of 0.252 (95% CI:0.143,0.323), with insignificant Cochrane Q (p=0.251), and low I² 14.74% (95% CI:0.00,46.98%), suggesting low heterogeneity across study sites. Subanalyses found a stronger positive attendance effect among girls (0.306; 95% CI:0.117,0.427; Cochrane Q p=0.151; I²=29.29%; 95% CI:0.00,63.43%) as compared to boys (0.198; 95% CI:-0.008,0.266; Cochrane Q p=0.601; I²=0.00%; 95% CI:0.00,56.59%). This suggests that attending CFS had a small but robust positive effect on psychosocial wellbeing. With advances in statistical methodology, decreasing costs of electronic data collection, and increasing reliance on data-driven programming, rigorous epidemiologic studies in humanitarian settings are not only feasible, but morally imperative.

0742-S/P

ESTIMATING THE BURDEN OF INJURIES AMONG THE MÉTIS NATION OF ALBERTA, CANADA

Diana Carolina Sanchez Ramirez*, Sara Parker, Aaron Barner, Yan Chen, Don Voaklander, Lawrence Svenson (Injury Prevention Centre, School of Public Health, University of Alberta, Edmonton, Canada)

Background: The Métis represent one of three recognized Aboriginal groups within Canada. The term Métis is used to describe people with mixed First Nations and European heritage, who have their own distinct culture and traditions. Little information exists on the burden of injuries in this population. The present study examined injury-related health services use (hospital admissions and emergency department visits) and mortality among members of the Métis Nation of Alberta comparing results with the whole Alberta population. **Methods:** This population-based descriptive study used administrative data maintained by the Alberta Ministry of Health (AH), for the year 2013. Hospital inpatient and emergency department data as well as Alberta Vital Statistics mortality data were linked using a unique personal health number. To identify injury and mortality cases among the Métis Nation of Alberta people, administrative databases were deterministically linked to the Métis Nation of Alberta Identification Registry. Age-standardized rates of injury-related health services usage were analyzed. **Results:** Age-standardized incidence rates (ASIR) for all causes of injury combined were significantly higher with emergency department (ED) and hospital admissions being 35% (p<0.01) and 26% (p=0.05) higher, respectively than the non-Métis population. ASIRs for health services use were also higher among the Métis living in rural areas (p<0.01) and among men (p<0.01). Injury-related mortality did not differ between the Métis and non-Métis populations. However, among the Métis, Males had significantly higher injury mortality rates than females (p<0.05). **Conclusions:** Results from the present study suggest that injuries are important aspects to be addressed with Métis people. Health planners should design and implement strategies directed to reduce the burden of injury and associated complications for Métis people, especially in the rural area and among Métis males.

0741-S/P

FOOD INSECURITY AND BREASTFEEDING DURATION IN INUIT IN CANADA: A POPULATION BASED SURVEY

Kathryn-McIsaac*, David Stock (Dalla Lana School of Public Health, University of Toronto)

Background: There have been few studies investigating the association between food security and breastfeeding duration, and none have been conducted among Canadian Inuit, a population disproportionately burdened with food insecurity. We aimed to evaluate the association between household food security and breastfeeding duration in Canadian Inuit children. **Methods:** Data for this study were obtained from the Nunavut Inuit Child Health Survey, population-based cross-sectional survey. The survey was conducted in the Canadian territory Nunavut in the summer and fall months of 2007 and 2008. These analyses include caregivers of Inuit children who were aged 3 to 5 years at the time of data collection. Participating children were randomly sampled from community medical centre lists. We used restricted mean survival time models to examine the association between food insecurity and breastfeeding duration. **Results:** Out of 215 children, 147 were food insecure (68.4%). Using restricted mean survival time models, we estimated that food secure children were breastfed for 16.8 months (95% CI: 12.5-21.2) and food insecure children were breastfed for 21.4 months (95% CI: 17.9-24.8). In models adjusting for social class, traditional knowledge, and child health, food security was not associated with breastfeeding duration (HR=0.82, 95% CI: 0.58-1.14). **Conclusions:** Our research does not support the hypothesis that children living in food insecure households were breastfed for a longer duration than children living in food secure households. However, we found that many food insecure mothers continued breastfeeding well beyond one year. Given the high prevalence of food insecurity in Inuit communities, we need to ensure infants and their caregivers are being adequately nourished to support growth and breastfeeding, respectively.

0750

AWARENESS ON DIABETIC RETINOPATHY AMONG PATIENTS OF DIABETES MELLITUS: FINDINGS FROM A TERTIARY LEVEL HOSPITAL MSA Mansur Ahmed*, Shahanaz Chowdhury, Mohammad Moniruzzaman, Palash Banik, Sabrina Ahmed (Professor, Dept. of Public Health, Daffodil International University, Dhaka, Bangladesh)

Introduction: Diabetic retinopathy (DR) is one of the major micro vascular complications of diabetes. A diabetic is 25 times more likely to go blind than a non diabetic. The aim of the study was to find out the level of awareness on diabetic retinopathy among the patients with diabetes mellitus. **Method:** A cross-sectional study was done among 300 diabetic patients from BIHS hospital, Dhaka in 2013. Data were collected by face to face interview. **Results:** Mean age of the respondents was 50.8(\pm 10.6) yrs. Half (49%) had diabetes for 1-5 years and among them, 98% said that diabetes mellitus causes eye problem and 83% stated diabetic retinopathy was the common eye problems. Most respondents (78.7%) thought that not following doctor advice is the cause of developing diabetic eye disease Regular eye checkup to an ophthalmologist after diagnosis was reported by 77% of respondents. About one fifth (21.8%) of the respondents had diabetic retinopathy which was told by health care provider and majority (92%) did not have any eye operation. About the source of information about treatment and management of diabetic retinopathy, majority (98.8%) informed that they knew it through discussion with the doctors. In case of relationship of awareness regarding diabetic retinopathy with different socio-economic and demographic variables significant differences were found for sex ($p=0.05$), religion ($p<0.001$) and area of residence ($p<0.001$). **Conclusion:** Level of awareness among diabetics on retinopathy was found to be fairly good. Significant differences in awareness were found for sex, religion, area of residence of the respondents.

0753

THE ROLE OF INFLAMMATION ON TYPE-2 DIABETES MELLITUS OCCURRENCE: FINDINGS FROM A US NATIONAL STUDY Sharon Jackson*, Anna Bellatorre, Kelvin Choi (HHS/NIH/NIMHD)

Increasingly, reports associate chronic medical conditions with systemic low-grade inflammation. However, there is limited data on the relationship between inflammatory risk factors and type-2 diabetes mellitus (T2DM). We examined the prospective effects of inflammation correlates (IC) on T2DM occurrence. We examined data from the Coronary Artery Risk Development in Young Adults Study, which followed a cohort of adults from 1985-2010. The data used came from 3194 non-diabetic respondents at waves 7 (aged 38-50) followed into Wave 8 (aged 43-55 years). Four IC (C-reactive protein, gender-adjusted uric acid and fibrinogen, and age-adjusted gamma-glutamyltransferase), 6 measures of allostatic load (AL; cholesterol, blood pressure, and waist circumference), demographics, alcohol and tobacco use were measured in Wave 7. Occurrence of T2DM was assessed based on hemoglobin A1c and a latent class model we previously developed. Multiple logistic regressions were used to assess overall and race-specific associations. At Wave 8, 251 new cases of T2DM were identified. We found that IC at Wave 7 predicted occurrence of T2DM at Wave 8 independent of demographics, alcohol and tobacco use, and AL measures. When modeled as a group, the number of abnormal IC measures was associated with occurrence of T2DM (AOR=1.53, $p<0.01$). When modeled separately, high gender-adjusted fibrinogen was associated with occurrence of T2DM (AOR=1.62, $p<0.01$). Race-based differences were observed. Gender-adjusted uric acid and fibrinogen predicted occurrence of T2DM only among African Americans ($p<0.05$) but not among Caucasians. Collectively this data reveals that IC fibrinogen and uric acid are associated with development of T2DM independent of AL measures. The effect of IC on development of T2DM may be more prominent among African Americans than Caucasians. Future longitudinal studies need to confirm our findings and examine if controlling systemic inflammation can reduce the risk of developing T2DM.

0751

NEIGHBORHOOD PHYSICAL AND SOCIAL ENVIRONMENT AND UNCONTROLLED TYPE 2 DIABETES MELLITUS: RESULTS FROM JAGES 2010 STUDY Takeo Fujiwara*, Masamichi Hanazato, Airi Amemiya, Naoki Kondo, Katsunori Kondo (National Research Institute for Child Health and Development)

OBJECTIVE: The purpose of this study is to investigate the impact of neighborhood physical and social environment on uncontrolled diabetes mellitus among older people. **METHODS:** We used data from the Japan Gerontological Evaluation Study (JAGES), a population-based cross-sectional study of older people aged 65 or older without nursing care in Japan. A total of 8007 participants responded questionnaire and underwent health checkup including HbA1c, restricted those who living in the same place more than 10 years were used for analysis. Neighborhood physical and social environments were aggregated based on questionnaire responses (for physical, access to park and glossary, perception of barriers such as slopes, for social, social capital and safety) and GIS data were also used (area of park, number of glossary stores, and mean slope) (neighborhood $n=46$). Uncontrolled diabetes mellitus was defined as HbA1c is 8.0 or higher. Multilevel analysis was performed for analysis, adjusted for individual level risk factors (age, sex, BMI, walking duration, vegetable consumption, meeting with friends, etc). Further, sensitivity analysis was conducted limited to sample with undertreat on diabetes mellitus ($n=884$). **RESULTS:** GIS-based slope showed significant protective association with uncontrolled diabetes mellitus, that is, 1 SD increase (1.82 degree) of slope in neighborhood decreased the risk of uncontrolled diabetes mellitus for 29% (OR: 0.71, 95% CI: 0.51-0.99), although perception of barriers were marginally associated (OR: 1.24, 95% CI: 0.96-1.59). Both perception and GIS-based measure, perception of safety, and social capital were not associated. Sensitivity analysis confirmed that higher slope and amount of park or sidewalk showed protective effect on uncontrolled diabetes mellitus. **CONCLUSION:** Neighborhood with steeper or hilly physical environment showed protective effect on uncontrolled diabetes mellitus. Further studies revealing the mechanism are needed.

0754

PREVALENCE OF TYPE 2 DIABETES MELLITUS AND ITS SOCIO DEMOGRAPHIC DETERMINANTS IN A RURAL AREA IN INDIA Charu Kohli*, Jugal Kishore, Neeru Gupta Prakash, Chandra Ray (Department of Community Medicine, Maulana Azad Medical College, New Delhi, India)

Background Diabetes Mellitus type 2 is a progressive, long-term, non-communicable disease which places a significant burden not only on healthcare providers and health system but also on individual and family. Its prevalence is increasing at epidemic proportions in India. **Objectives** To find out prevalence of diabetes mellitus type 2 in a rural population of India with its socio demographic determinants. **Methods** It was a community based cross-sectional study conducted in two adjacent rural areas, Barwala and Poothkhurd village in outskirts of Delhi. From population of 18800 residing in these two rural areas of Delhi, a systematic random sample of 1005 adult subjects aged 18 years and more were screened for diabetes by using fasting Plasma glucose and postprandial plasma glucose levels. A pre-tested, semi-structured questionnaire was used containing items to assess identification data and socio-economic status like age, sex, religion, marital status etc. besides risks factors like family history, smoking etc. Data analysis was done using SPSS version 16. Association was found using chi square test with p value less than 0.05 was considered significant. **Results** A total of 1005 adults were included in the study, out of which 614 (61.1%) were females and 391 (38.9%) were males. Less than half (449/1005 or 44.7%) subjects were in range of 18- 35 years and 556 (55.3%) were aged more than 35 years. The prevalence of diabetes determined by both fasting and post prandial plasma glucose was 4.6% for the population. The prevalence was 1.1% in less than 35 years and 7.4% in more than 35 years. Diabetes was significantly more in age more than 35 years (p value=0.01) and married and widow subjects (p value=0.02). There was no significant difference seen in religion, education status, per capita income and gender. **Conclusion** Prevalence of diabetes was 4.6% in rural areas in India. There is need to screen individuals who are at risk of diabetes like more than 35 years and married and widows.

0755

DIABETES MELLITUS: THE CONFRONTATION OF THE DISEASE ON DAILY LIFE Liliam Mendes de Araujo*, Klicia Rufino, Ramos Brito, Isadora Lima Porto Matos (Brasil)

Introduction: Diabetes has become a public health problem due to the high number of people who have the disease, the increased incidence of the disease is a global trend. Objective: to know the confrontation of Diabetes Mellitus in the daily lives of people living with the disease. **Methodology:** this is a qualitative study, carried out in the Centro Integrado de UNINOVAFAP University Center's health. The data were collected in the months of October and November 2013, after approval by the ethics and Research Committee, by means of semi-structured interviews. The study subjects were patients with Diabetes of both sexes, over 18 years, being accompanied by nutritionists and endocrinologists, totaling nine patients ranging from 35 to 63 years, most unmarried, literate, and retirees with time to diagnosis ranged from 1 to 16 years. **Results:** For better understanding after the analysis the results are presented for two categories: difficulties and daily life of research participants. More difficulties were reported regarding the change in diet and physical activity, as well as maintain a routine follow up with healthcare provider. The daily was described through the efforts of these people to live with the changes required for the control of the disease and better quality of life. **Conclusion:** patients are aware of the importance and following a healthy diet and regular physical activity, but most of the respondents still are resistant to treatment adherence, not following correctly, for this reason we highlight the importance of nurses to participate actively in the follow-up of the patient, intervened, advising and guiding, considering the needs of each individual. Thus, assisting in improving the quality of life of diabetics

0757- S/P

STRENGTH TRAINING AND THE RISK OF TYPE 2 DIABETES AND CARDIOVASCULAR DISEASE Eric Shiroma*, Nancy Cook, JoAnn Manson, MV Moorthy, Julie Buring, Eric Rimm, I-Min Lee (National Institute on Aging; Brigham & Women's Hospital)

Muscle-strengthening exercises have been associated with reductions in risk factors for type 2 diabetes and cardiovascular disease. However, there is little research directly examining the longitudinal associations of strength training with incident type 2 diabetes and cardiovascular disease risk. The aim of this study was to examine the association of strength training with incident type 2 diabetes and cardiovascular disease risk. We followed 35,754 healthy women (mean age, 62.6 years) from the Women's Health Study, who responded to a health questionnaire that included physical activity questions in 2000; assessing health outcomes through annual health questionnaire through 2014 (average (SD) follow-up = 10.7 (3.7) years). Women were classified based on self-reported time spent strength training. Over the study period, we observed 2512 cases of type 2 diabetes and 1748 cases of cardiovascular disease. Compared to women who reported no strength training, women engaging in any strength training experienced a reduced rate of type 2 diabetes of 27% (hazard ratio: 0.73, 95% confidence interval: 0.65, 0.82) when controlling for time spent in other activities and other confounders. A risk reduction of 17% was observed for cardiovascular disease among women engaging in strength training (HR: 0.83, 95% CI: 0.71, 0.96). Participation in both strength training and aerobic activity was associated with additional risk reductions for both type 2 diabetes and cardiovascular disease compared to participation in aerobic activity only. These data support the inclusion of muscle-strengthening exercises in physical activity regimens for reduced risk of type 2 diabetes and cardiovascular disease, independent of aerobic exercise. Further research is needed to determine the optimum dose and intensity of muscle-strengthening exercises.

0758- S/P

PREDICTING 10-YEAR DIABETES INCIDENCE AND ESTIMATING INTERVENTION EFFECTIVENESS IN THE UNITED STATES: A MODELLING STUDY Christopher Tait*, Douglas Manuel, Laura Rosella (Dalla Lana School of Public Health, University of Toronto)

Objective: To provide population and subgroup specific estimates of the future burden of type 2 diabetes and to estimate the effectiveness of prevention strategies with a population-based risk tool using regularly available nationally-representative data on risk factors in the US. **Methods:** We used data from respondents to the 2013 National Health Interview Survey (N=44,870) and the validated Diabetes Population Risk Tool (DPoRT) to estimate 10-year diabetes risk to 2023 in the US. We then calculated the population benefit resulting from targeting various population groups using a weight loss and a lifestyle intervention scenario. The population benefit was defined as the absolute number of diabetes cases prevented and the absolute risk reduction. **Results:** The US will have an estimated 27,342,819 new diabetes cases between 2013 and 2023 representing average baseline risk of 10.7%. A population-based intervention resulting in a 5% weight loss would result in an absolute risk reduction of 1.6% corresponding to 2.3 million diabetes cases prevented. A targeted high-risk strategy (RR reduction of 0.6), such as pharmacotherapy, applied to only those in the top decile of baseline risk, would result in 4.7 million diabetes cases prevented over 10 years. **Conclusions:** Given that diabetes risk is high in the US population, this study provides empirical evidence to suggest that prioritizing prevention strategies to the entire population as well as those targeted at high risk groups can result in a significant population benefit. For the first time, it also demonstrates the utility of a validated population-based risk tool to estimate the population benefit of diabetes prevention strategies using self-reported risk factor data in the US population.

0760-S/P

MATERNAL LEVELS OF PERFLUOROALKYL AND POLYFLUOROALKYL SUBSTANCES DURING PREGNANCY AND ATTENTION IN THE OFFSPRING Cathrine Carlsen Bach*, Zeyan Liew, Niels Bjerregård Matthiesen, Tine Brink Henriksen, Ellen Aagaard Nohr, Bodil Hammer Bech, Beate Ritz, Jørn Olsen (Perinatal Epidemiology Research Unit, Aarhus University Hospital, Aarhus, Denmark)

Background: Perfluoroalkyl and polyfluoroalkyl substances (PFASs) have been used in a wide range of products since the 1950s and are measurable in the blood of humans all over the world. A few studies have suggested that PFAS exposure may affect the neuropsychological function of children, but only few studies have estimated the association between in utero PFAS exposure and attention difficulties in childhood. **Methods:** We included 1425 children from the Danish National Birth Cohort, born 1996 - 2003. The levels of 16 PFASs were measured in maternal plasma obtained during pregnancy. At 5 years of age, the attention of the children was assessed by the Test of Everyday Attention for Children at Five (TEACH-5). We included seven PFAAs with quantifiable levels in at least 50 % of the samples and examined the associations between PFASs and TEACH-5 scores by multivariable linear regression adjusted for potential confounders, including the maternal intelligence quotient. **Results:** Most PFASs were not associated with impaired selective attention, however perfluorooctane sulfonamide (PFOSA) was associated with impaired selective attention [compared to the lowest quartile standardized mean differences (95 % confidence intervals) were -0.3 (-0.5, 0.0) for the second quartile, -0.4 (-0.6, -0.2) for the third quartile, and -0.5 (-0.7, -0.3) for the fourth quartile]. We found no clear associations between PFAS exposure and sustained attention. **Conclusions:** Intrauterine exposure to PFOSA was associated with an increase in selective attention difficulties in a large sample of Danish children. The exposure to six other PFAAs was not associated with either impaired selective or sustained attention.

0762

EFFECTS OF EARLY LIFE EXPOSURE TO TETRACHLOROETHYLENE AND ALCOHOL ON RISKY BEHAVIORS AMONG TEENAGERS Lisa Gallagher*, Thomas Webster Ann Aschengrau (Boston University School of Public Health)

Background: A retrospective cohort study of residents of Cape Cod, Massachusetts was conducted to examine the impact of prenatal and early childhood exposure to tetrachloroethylene (PCE)-contaminated drinking water on the occurrence of risky behaviors as a teenager. Residents were exposed to PCE when it leached into the drinking water from improperly lined distribution system pipes. Highly exposed individuals were found to have an increased risk of risky behaviors such as illicit drug use. Prenatal alcohol exposure did not confound these associations, but given its similar neurotoxic effects, we hypothesized that prenatal alcohol exposure might modify the previously observed associations between PCE and risky behaviors. **Methods:** The current analysis included 242 subjects with no early life exposure to PCE or alcohol, 201 subjects with only alcohol exposure, 361 subjects with only PCE exposure, and 302 subjects with exposure to both PCE and alcohol. Prenatal alcohol exposure was determined by a questionnaire completed by the subject's mother. PCE exposure was modeled using a leaching and transport algorithm embedded in water distribution system modeling software that estimated the amount of PCE delivered to a subject's residence. **Results:** Compared to subjects with neither PCE nor alcohol exposure, subjects with both exposures had an increased risk of using two or more major drugs as a teen (RR=1.9 (95% CI 1.2, 3.0)). Subjects with only PCE exposure (RR=1.6 (95% CI 1.0, 2.4) or only alcohol exposure (RR=1.3 (95% CI 0.7, 2.1)) had smaller increases in risk. Similar results were observed for use of individual drugs such as cocaine. **Conclusions:** The results of this study suggest that there is an additive effect of early life exposure to PCE and alcohol on the risk of illicit drug use as a teenager.

0761

CHILDHOOD CANCERS AND WATER CONTAMINATION BY ARSENIC IN MIDWESTERN UNITED STATES: AN ECOLOGICAL STUDY Danielle Chun*, Benjamin Booth, Mary Turyk, Leslie Stayner (University of Utah)

Background: Elevated arsenic levels in drinking water have been linked to several adult cancers, yet few studies have assessed its risk with childhood cancers. In this ecologic study, we evaluated the relationship between prenatal and/or early childhood exposure to arsenic contaminated drinking water and specific childhood cancers. **Methods:** We linked 2000-2008 state drinking water data with state cancer registry incidence data for children aged 0-4 diagnosed between 2004 and 2008 in five Midwestern states. Generalized estimating equation Poisson regression models adjusted for race, sex, year of diagnosis, state, median household income, education, and population density were used to obtain incidence rate ratios (IRRs) and 95% confidence intervals (CIs). Sub-analyses were performed to assess potential exposure misclassification. **Results:** We identified 1,022 leukemia cases and 1,011 CNS tumor cases. Our results showed a significant protective effect of exposure to arsenic (1 µg/mL) for leukemia among males (IRR: 0.89, CI: 0.82, 0.98), yet no association among females (IRR: 1.01; CI: 0.98, 1.05). Sub-analyses restricting population density supported these findings; however, restriction to <25%, <20%, <15%, <10%, and <5% well usage showed no association in males or females. Arsenic exposure showed no association with CNS tumors (IRR: 1.00, CI: 0.97, 1.04). However, analyses restricting to <15% and <10% well usage showed significant inverse associations. **Conclusion:** Overall, we observed an inverse association between exposure to arsenic contaminated drinking water and risk of childhood leukemia and no association with childhood CNS tumors. The decreased rate of leukemia with exposure to arsenic was evident in male children. Given the limitations inherent to an ecological study, the potential for residual confounding, and the unanticipated observation of a protective effect, more rigorous studies with individual level information are needed to verify our findings.

0763-S/P

RELIABILITY TESTING ACROSS THE ENVIRONMENTAL QUALITY INDEX AND NATIONAL ENVIRONMENTAL INDICES. Kristen Rappazzo*, Shannon Grabich, Chris Gray, Jyotsna Jagai, Yun Jian, Lynne Messer, Danelle Lobdell (US Environmental Protection Agency)

One challenge in environmental epidemiology is the exploration of cumulative environmental exposure across multiple domains (e.g. air, water, land). The Environmental Quality Index (EQI), created by the U.S. EPA, uses principle component analyses combining environmental domains (air, water, land, social, and built environment) to construct a county-level environmental metric for the United States. Although challenging, it is important to assess consistency across indexes to verify appropriate exposure measurement. Since there is no similar total index covering the full U.S., we compared the EQI's air, water, and land domains to the California Communities Environmental Health Screening Tool (CES). We first assessed the Pearson correlation coefficient (rho) between county index values. Then, we used generalized linear models to estimate the county low birth weight (LBW) rate difference per 1000 births (RD [95%CI]) available through CES with continuous index scores. In preliminary analysis comparing the EQI to the CES, moderate correlations were observed across all comparable domains (rho=air 0.6, land 0.5, and water 0.4). Results of regression analysis showed that the CES was associated with LBW (216.8 [100.1, 333.6]), and the EQI water domain was associated with LBW (114.3 [64.2, 164.5]), but the EQI air and land domains were not associated with LBW. Overall the moderate correlation between county indices provides some validity between these environmental measures, although differences could be due to differing number of data sources included in the CES (e.g. EQI air domain n=87 data sources and CES air variables n=3). We plan to examine consistency further by comparing the EQI's sociodemographic domain to the Neighborhood Deprivation Index in future analyses. The EQI gives a more total picture of the U.S. county environmental exposure by including more domains and sources of exposure than other similar indices. This abstract does not necessarily reflect EPA policy.

0764

THE ASSOCIATION BETWEEN GREEN SPACE ACCESS AND PHYSICAL ACTIVITY: AN EXAMINATION USING THE NDVI AND THE NATIONAL LAND COVER DATABASE Diana Grigsby-Toussaint*, Jong Cheol Shin (University of Illinois-Urbana Champaign)

BACKGROUND: Although access to green space is considered a key environmental support for recreational physical activity (PA), the literature remains mixed. **PURPOSE:** To examine the association between green space access and PA using two United States Geological Survey databases, namely the Normalized Difference Vegetation Index (NDVI) and the National Land Cover Database (NLCD). **METHOD:** An ecologic analysis was performed using three primary data sources. PA information for 102 Illinois counties (rural, N=83; urban, N=19) was derived from the 2004-2006 Illinois Behavior Risk Factor Surveillance System (BRFSS). Demographic variables used as controls included age, income level, race/ethnicity and education. Green-space access was measured using the NDVI 2006 Moderate-Resolution Imaging Spectroradiometer (MODIS) database. Green space scores were based on the geographically weighted centroid of each county. The 2006 NLCD was used to determine the proportion of greenspace in each county. The two outcome variables examined using linear regression models were the proportion of individuals meeting the recommended PA guidelines, as well as the moderate physical activity standard. Models were further stratified by examining urban and rural counties. **RESULTS:** There were no significant associations observed between access to greenspace and physical activity level using the NDVI, but results were found to be moderately significant for the NLCD ($\beta = .061$, $p=0.055$). No significant associations were found in the stratified analyses. Interestingly, an inverse relationship was observed between greenspace access and PA for non-whites residing in rural counties ($p=0.10$). **CONCLUSION:** The NLCD may be better than the NDVI for examining the relationship between access to greenspace and PA.

0767S/P

THE COMPARISON OF PESTICIDE EXPOSURE ASSESSMENT USING EXACT ADDRESSES VERSUS ZIP CODE TABULATION AREA (ZCTA) CENTROIDS IN THE PARKINSON'S ENVIRONMENT GENE (PEG) STUDY Chenxiao Ling*, Beate Ritz (Department of Epidemiology, UCLA)

In environmental epidemiology, one of the most common practices is to geo-code addresses for the purpose of assessing environmental exposures (e.g., pesticides). While some addresses involve partial missing information such as street number and name, pinpointing such locations is usually hampered. In order to assess exposures for such addresses, researchers usually consider the ZIP Code Tabulation Area (ZCTA) centroids as a substitute for the exact addresses. Created by the U.S. Census Bureau, ZCTAs are generalized areal representations of USPS ZIP Code service areas. However, the quality of assessing exposures on individuals with ambiguous addresses using ZCTA centroids remains unclear, especially in rural areas where the centers of population cluster are not necessarily close to the ZCTA centroids. The objective of this study is to compare pesticide exposure estimates by using exact locations and ZCTA centroids. Subjects in the Parkinson's Environment Gene (PEG) study are residents in the central valley area of California. Pesticides exposures within 500 meter buffer of the subjects are identified using GIS-Based Residential Ambient Pesticide Estimation System (GRAPES). We will consider the geocoded exact addresses with latitude and longitude the "Gold Standard" for comparison against exposures based on three types of ZCTA centroids. First the geometric centroid of the ZCTA, most used by researchers for convenience; second the population-weighted centroid, using census tracts as basic areal units (using White residents 50+ years of age to represent our PEG study participants). Third, we will use census blocks as the basic areal units. By comparing the Odds Ratios for Parkinson's disease associated with pesticides using exact addresses versus three alternate address types based on ZCTA centroids, we examine whether these are reasonable alternative proxies for exact addresses that can justifiably be used for pesticide exposure assessment in future studies.

0765

TRIMESTER-SPECIFIC URINARY PHTHALATE METABOLITE CONCENTRATIONS AND GLUCOSE TOLERANCE IN PREGNANT WOMEN Tamarra James-Todd*, Yu-Han Chiu, Carmen Messerlian, Lidia Mínguez-Alarcón, Jennifer Ford, Myra Keller, John Petrozza, Paige Williams, Russ Hauser (Harvard Chan School of Public Health)

Background: Phthalates are endocrine-disrupting chemicals associated with diabetes in non-pregnant populations. Studies have not evaluated trimester-specific urinary phthalate metabolite concentrations and pregnancy glucose levels—an indicator of gestational diabetes risk. Little is known about these associations in higher risk groups, such as women at a fertility clinic. **Methods:** A total of 259 women seeking treatment at a fertility clinic and enrolled in the Environment and Reproductive Health (EARTH) Study delivered live births and had data on pregnancy phthalate metabolite concentrations and glucose levels. For urinary phthalate metabolites, a single urine sample from the 1st and 2nd trimesters was evaluated, as well as geometric mean of these two pregnancy urine samples. Blood glucose data was abstracted from medical records for non-fasting 50-gram glucose challenge test at 24-28 weeks gestation. We used generalized linear models to evaluate associations between phthalate metabolite concentrations in quartiles and mean glucose adjusted for maternal age, race/ethnicity, education, pre-pregnancy body mass index, and smoking. **Results:** 18% of women had glucose $>140\text{mg/dL}$. No association was seen for average phthalate metabolite concentrations and glucose levels. However, women with higher 1st trimester concentrations of monocarboxyoctyl phthalate (MCOP) had significantly lower glucose levels than women in the lower quartiles (p -for trend: 0.04). Women with the highest 2nd trimester concentrations of monoethyl phthalate (MEP) had significantly higher glucose levels (adj. mean glucose levels for Q4: 115; 95% CI: 106, 126 versus Q1: 105; 95% CI: 96, 115). Women with higher 2nd trimester mono-isobutyl phthalate (MiBP) concentrations had significantly lower glucose ($p=0.02$). **Conclusion:** Higher trimester-specific concentrations of MCOP and MiBP concentrations were associated with lower pregnancy glucose levels, while higher MEP was associated with higher glucose levels.

0768-S/P

ANOGENITAL DISTANCE: REFERENCE STANDARDS AND NORMALIZATION OF DIFFERENT MEASUREMENTS. A LONGITUDINAL STUDY OF INFANTS FROM SONORA, MEXICO Carmen E. Loreto*, Paulina Farias-Serra, Hortencia Moreno-Macías, Carolina Guzman, Horacio Riojas-Rodríguez (Instituto Nacional de Salud Pública de México)

The anogenital distance (AGD) is a type of anthropometric measure, which has been employed in animal research in order to evaluate association between the exposure of persistent organic pollutants (POPs) and their effects as endocrine disruptors on sexual development. In recent epidemiological studies the AGD has been used as a retrospective measurement of fetal exposure to endocrine disruptors and their effects on the abnormal development of the external genitalia. The aims of this study are to contribute to the standardization of measurements of the AGD, in order to maximize the comparability, the reproducibility and the quality of data generated from related studies, and propose the best index using the AGD as a marker of endocrine disruption from the analysis of different types of measures and different settings. A longitudinal study was carried out during the years 2012 and 2013, in healthy children who were born in the Yaqui and Mayo valleys, Son. Mexico. They were measured at birth and at 1, 3, 6 and 12 months of age. Their mothers were recruited in medical units of the Ministry of Health during the third trimester of pregnancy. In this study the population ranged from birth to 12 months of age, the centiles are followed 5, 25, 50, 75 and 95%. Significant correlations were found between the AGD and the weight and height ($p < 0.005$), but not for head circumference. We estimated the associations between measures of the AGD and other anthropometric measurements, adjusting for potential confounding variables (weight at birth, gestational age, weight at the time of measurement and length), those variables were used to normalize the anogenital distance. Indexes including body weight, the cube root of body weight and other functions of the body weight and height were built. The effectiveness of the normalization of AGD measurements were evaluated by simple linear regression.

0769-S/P

INTERACTIONS BETWEEN DIET AND EXPOSURE TO SECONDHAND SMOKE ON HbA1C LEVELS AMONG CHILDREN, NHANES, 2007-2010

Brianna Moore* (Colorado State University)

Background: Glycemic control in children is potentially influenced by a complex interaction between exposure to secondhand smoke (SHS) and diet but the joint effect of these risk factors has not yet been investigated. **Objectives:** We examined the interaction of exposure to SHS (assessed by 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol [NNAL]), cotinine, and self-report) and individual nutrients (dietary fiber, eicosapentaenoic acid [EPA], docosahexaenoic acid [DHA], vitamin C, and vitamin E) on glycated hemoglobin (HbA1c), fasting plasma glucose, and two-hour post-challenge glucose among 12-19 year olds who participated in the 2007-2010 National Health and Nutrition Examination Survey (NHANES). **Methods:** Weighted linear regression models were used to model the cross-sectional association between exposure to SHS and HbA1c and glucose levels in separate models. Additive interaction was assessed by introducing interaction terms (with SHS) of the individual nutrients. **Results:** Correlations between HbA1c and glucose measurements were weak. In linear regression analyses, we observed limited evidence that exposure to SHS was independently associated with HbA1c or glucose levels. Measures of additive interaction suggested that increases in mean HbA1c among children with both high NNAL levels and low levels of dietary fiber, DHA, or vitamin C were greater than would be expected due to the effects of the individual exposures alone. **Conclusions:** Diets high in dietary fiber, DHA, or vitamin C may attenuate the adverse metabolic responses potentially triggered by exposure to SHS. Strategies for maintaining normal HbA1c and glucose levels aimed at both reducing SHS exposures and improving diets may exceed the expected benefits based on targeting these risk factors separately. Additionally, the results highlight the need for further research to investigate the differences in HbA1c, fasting plasma glucose, and two-hour post-challenge glucose among children.

0772

A SYSTEMATIC REVIEW OF THE ASSOCIATION OF AIR POLLUTION EXPOSURE WITH COGNITION, DEMENTIA, AND DEMENTIA-RELATED NEUROIMAGING MARKERS

Melinda Power*, Sara D. Adar, Jeff Yanosky, Jennifer Weuve (George Washington University Milken Institute School of Public Health)

Dementia is a devastating condition that is preceded by a long prodromal phase characterized by accumulation of neuropathology and accelerated cognitive decline. Several epidemiologic studies have explored the association between air pollution and dementia-related outcomes. We undertook a systematic review, including quality assessment, to interpret the collective findings and discuss methodological challenges that may impact study validity. Adhering to a registered protocol, we identified 18 eligible published articles. For most reports, study quality was adequate to exemplary. Almost all studies reported an adverse association between at least one pollutant and one dementia-related outcome. However, relatively few studies considered within-person cognitive or pathologic changes or incident dementia diagnosis, which provide the strongest evidence for a causal effect. Reassuringly, selection bias would likely bias towards a protective effect in most studies, and so is unlikely to account for observed adverse associations. Likewise, according to a formal post hoc sensitivity analysis, unmeasured confounding is also unlikely to explain reported adverse associations. We also identified several common challenges. First, most studies of incident dementia identified cases from health system records. As dementia in the community is underdiagnosed, this could lead to either non-differential or differential misclassification bias. Second, almost all studies implicitly assumed that recent air pollution exposures were an adequate measure of long-term exposure. While this may be reasonable if the measured and etiologic exposure windows are separated by a few years, the validity of this assumption is unknown for longer periods. Third, comparing the magnitude of associations may not provide a clear picture of which, if any, pollutants are the likely causal agent given differences in the degree of misclassification in exposure estimates across pollutants.

0770

FACTORS ASSOCIATED WITH SERUM THYROGLOBULIN IN A UKRAINIAN COHORT EXPOSED TO IODINE-131 FROM THE ACCIDENT AT THE CHERNOBYL NUCLEAR PLANT

Kamau Peters*, Mykola Tronko, Maureen Hatch, Valeriy Oliynyk, Galyna, Terekhova Ruth Pfeiffer, Robert McConnell, Vladimir Drozdovitch, Mark Little, Lydia Zablotska, Kiyohiko Mabuchi, Alina Brenner, Elizabeth Ca-hoon (National Cancer Institute (NCI)/National Institutes of Health (NIH))

Serum thyroglobulin (Tg) is associated with the presence of thyroid disease and has been proposed as a biomarker of iodine status. Few studies have examined factors related to serum Tg in population-based cohorts with high prevalence of iodine deficiency that have been exposed to environmental doses of iodine-131. We evaluated the associations between socio-demographic factors, iodine-131 thyroid dose, and indicators of thyroid structure and function and serum Tg in a Ukrainian cohort exposed as children to radiation from the Chernobyl Nuclear Power Plant accident. The study population is comprised of 10,503 individuals who were <18 years of age at the time of the accident on April 26, 1986. We performed descriptive and multivariate linear regression analyses for the second screening cycle (2001-2003). We also stratified our population by an indicator of structural or functional thyroid abnormality and examined interactions between predictors of serum Tg and normal/abnormal thyroid status. Elevated serum Tg concentration was independently and significantly associated with female sex, higher attained age (p-trend<0.01), cigarette smoking and the presence of thyroid nodules. Serum Tg concentration showed significant positive relationships with thyroid volume, serum thyroid-stimulating hormone and iodine-131 thyroid dose, and inverse relationships with urinary iodine concentration and serum antibodies to thyroid peroxidase (all p-trend values<0.01). Elevated serum Tg is associated with abnormal thyroid structure and function, and may be a useful indicator of population iodine status and thyroid dysfunction.

0773

ACUTE EFFECTS OF AMBIENT AIR POLLUTION ON DAILY OUTPATIENTS OF CHILDREN RESPIRATORY DISEASES IN THE HEAVIER POLLUTION CITY IN NORTH CHINA

Jie Song*, Dongqun Xu, Fengge Chen (Shijiazhuang center for diseases control and prevention)

Background: Associations between ambient air pollution and children health outcomes have been documented worldwide; however, prior findings about specific respiratory diseases outcomes of children are inconsistent, and there is limited studies conducted in developing country, especially lacking of the results of heavier air pollution city. **Objectives:** We explored the association between the concentration of ambient air pollutants (PM10, PM2.5, SO2, NO2 and O3) and the daily respiratory outpatients of children. **Methods:** Daily data including cause-specific respiratory outpatients of children and five air pollutants' concentrations between 1 January 2013 and 31 December 2014 were collected. Using a quasi-Poisson regression generalized additive model, we examined the effect estimates between air pollution concentrations and respiratory outpatients of children stratified by season and age. The modifying effect of season and age were also calculated. **Results:** The ambient air pollutants concentrations were associated with total and several specific respiratory outpatients of children in the heavier air pollution city in north China. An increase of 10µg/m3 in a 2-day average concentration of SO2, NO2 and PM2.5 corresponds to increases in total non-pathogen respiratory outpatients of 0.33% (95% CI: 0.10 - 0.56), 0.66% (95%CI: 0.30 - 1.03) and 0.13% (95%CI: 0.02 - 0.24), respectively. The effects of air pollutant concentrations were more evident in transition season (April, May, September and October) than in hot (June to August) and cool season (November to March), the elderly children were more vulnerable to ambient air pollution. **Conclusions:** Our findings provide new information about the effects of season and age on the relationship between daily outpatients and air pollution concentration in developing countries. Season and age may modify the health effects of ambient air pollution on children. The results can provide reference for children protection measures in different seasons.

0774

SHORT-TERM EFFECTS OF PARTICULATE MATTER EXPOSURE ON DAILY MORTALITY IN THAILAND: A CASE-CROSSOVER STUDY

Nutta Taneepanichskul*, Bizu Gelaye, Diana Grigsby-Toussaint, Michelle Williams (College of Public Health Sciences, Chulalongkorn University, Bangkok, Thailand)

Background: Epidemiological studies have shown seasonal variations between particulate matter exposure and daily mortality. However, few studies have focused on age differences in the risk of mortality from particulate matter less than 10 μm in aerodynamic diameter (PM10), in addition to seasonal effects. **Method:** We used a time-stratified case-crossover design to estimate the association between PM10 and daily mortality in non-accidental causes, cardiovascular causes, and respiratory causes in Thailand between 2010 and 2014. Conditional logistic regression was employed to determine whether the risk of mortality differed by seasons and age groups. **Results:** We found an association between cumulative exposure to PM10 and increased risk of mortality in non-accidental causes, cardiovascular disease and respiratory disease. During the study period, cold months (1.71% (95%CI: 1.22, 2.20)) had a stronger effect of increased PM10 on non-accidental mortality than hot (0.29% (95%CI: 0.09, 0.68)) and wet (-1.38% (95%CI: -2.28, -0.46)) months. Increasing age was also associated with an increased risk of mortality in non-accidental causes during the cold months. **Conclusions:** An association between PM10 exposure and daily mortality was observed. The effect of increased risk of mortality on increased PM10 was greater in cold and hot months than wet months. Age was not significantly associated with the risk of mortality.

0776-S/P

COMMUNITY-DRIVEN RESEARCH ON ENVIRONMENTAL DETERMINANTS OF GASTRITIS SEVERITY: USING FISH INTAKE AS A PROXY FOR MERCURY EXPOSURE IN CANADIAN ARCTIC COMMUNITIES

Emily V. Walker*, Safwat Girgis, Karen J. Goodman (The CANHelp Working Group-University of Alberta)

Gastritis is characterized by inflammation of the gastric mucosa, induced by *H. pylori* infection or chemical irritants; chronic gastritis is theorized to initiate gastric carcinogenesis. Gastritis severity falls on a spectrum, with greater severity corresponding to greater mucosal injury. Causes of gastritis severity are not well known. Community-driven projects conducted by the CANHelp Working Group in the Canadian Arctic reveal a higher-than-expected prevalence of severe gastritis among *H. pylori*-positive (HP+) participants. Community input highlighted concern about the environmental contaminant mercury affecting digestive health. We present preliminary analysis of the effect of dietary exposure to mercury on severe gastritis prevalence among HP+ residents of Arctic Canada. We used fish consumption as a proxy for mercury exposure because eating contaminated fish is a major exposure pathway. Mercury concentration increases with fish size, so we used fish size to indicate dose. We collected data on diet and covariates from structured interviews. We offered upper endoscopy with gastric biopsy in Aklavik (2008) and Fort McPherson (2012), Northwest Territories and Old Crow (2011) Yukon. A pathologist graded gastritis as none, mild, moderate or severe. Logistic regression estimated ORs(95%CI) for the effect of fish consumption on severe gastritis prevalence, adjusting for other dietary factors, age, sex, ethnicity, NSAIDs, alcohol, smoking and community of residence. Among 161 HP+ people with complete data, severe gastritis prevalence was 45%. The odds of severe gastritis increased with fish consumption (OR=3.1(1.1,8.9) for consuming >3 v. <1 servings/week) The OR for consuming large fish (average length $>60\text{cm}$) v. not was 3.6(1.0,13). This preliminary analysis shows servings per week and size of fish consumed to be positively associated with gastritis severity in Arctic Canada. Further analysis will include estimates of the degree of mercury concentration in consumed fish.

0775

PRENATAL EXPOSURE TO POLYFLUOROALKYL COMPOUNDS AND COMMUNICATION DEVELOPMENT IN BRITISH GIRLS

Zuha Jeddy*, Ethel Taylor, Katarzyna Kordas, Terry Hartman, Cayla Poteete (CDC)

Polyfluoroalkyl compounds (PFCs) are used to make protective coatings on common household products. PFCs can be transferred through a penetrable placenta and have been associated with multiple developmental outcomes in offspring. Using data from the Avon Longitudinal Study of Parents and Children, we investigated the association between intrauterine exposure to PFCs and early communication development in girls at 15 months. Concentrations of four common PFCs, perfluorooctane sulfonate (PFOS), perfluorooctanoate (PFOA), perfluorohexane sulfonate (PFHxS), and perfluorononanoate (PFNA), were measured in maternal serum samples collected during pregnancy. Early communication development was measured based on a total communication score and 4 sub scores using a variation of the MacArthur-Bates Communicative Development Inventories. Multivariable linear regression was used to explore associations between each PFC exposure with communication outcomes with adjustment for confounders including maternal education, maternal smoking, breastfeeding, parity, sample gestation, home score, and birthweight. Among 417 mother-daughter dyads, mean (standard deviation) concentration for PFOS was 21.5 (10.3) ng/mL and mean total communication score was 138.8 (51.5). Preliminary results indicated effect modification based on maternal age: in mothers less than 25 years of age, a unit change in PFOS was associated with a 4.9 unit (95% confidence interval: -7.7– -2.0) decrease in total communication score compared to a 0.1 unit (95% CI: -0.6–0.69) increase for mothers 25 to 30 years and a 0.6 unit (95% CI: -0.1–1.3) increase for mothers greater than 30 years. Similar trends were observed for PFOA, PFHxS, and PFNA. Our findings suggest that prenatal PFC exposure is associated with decreased total communication among daughters of younger mothers. Future analyses will assess whether these decreases persist through childhood.

0777

ASSOCIATION OF INDIVIDUAL AND LIFESTYLE CHARACTERISTICS WITH METABOLISM OF DI-2-ETHYLHEXYL PHTHALATE

Lusine Yaghjian*, Nils Carlsson, Gabriella Ghita, Su-Hsin Chang (University of Florida)

Background: We examined differences in metabolism of the most common phthalate, di-2-ethylhexyl phthalate (DEHP) by selected individual characteristics and lifestyle factors. **Methods:** This cross-sectional study used the data from the National Health and Nutrition Examination Survey (1999-2012) and was restricted to individuals aged 18 years with body mass index (BMI) <30 and no history of diabetes. Additionally, pregnant women were also excluded. We examined the associations of age, race, gender, BMI, smoking, caffeine and alcohol consumption, medication use in the past month, cancer history, and menopausal status and postmenopausal hormone use in women with the ratio of mono-2-ethylhexyl phthalate to mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHP:MEHHP) and %MEHP (the ratio of MEHP to the sum of the secondary metabolites). %MEHP values were log-transformed. The risk estimates were mutually adjusted for all the listed individual and lifestyle factors. **Results:** In multivariable analysis, non-Caucasian individuals had higher %MEHP ($p<0.01$) as compared to Caucasian. Age and BMI were inversely associated with MEHP:MEHHP ($p=0.03$ and $p=0.01$, respectively) and %MEHP ($p<0.0001$ and $p<0.01$, respectively). Current smokers had higher %MEHP compared to non-smokers ($p=0.03$). Alcohol consumption was inversely associated with MEHP:MEHHP ($p=0.03$). Cancer history and caffeine consumption were inversely associated with %MEHP ($p<0.001$ and 0.01 , respectively). Prescription medication use and, in women, menopausal status and postmenopausal hormone use, were not associated with either %MEHP or MEHP:MEHHP. These association patterns were similar when the analysis was restricted to the individuals without medication use in the past month. **Conclusion:** Several individual and lifestyle characteristics are associated with different metabolism of DEHP which could result in differences in individual susceptibility to the adverse effects of phthalates.

0780

SURVIVAL ANALYSIS OF TEETH WITH ENDODONTIC TREATMENT CARRIED OUT FOR DENTISTRY STUDENTS AND ASSOCIATED FACTORS. MEDELLÍN (COLOMBIA)

Andres A. Agudelo-Suarez*, Luis M. Madrid-Gutierrez, Mario A. Cumplido-Mendoza, Eliana Pineda-Velez (Faculty of Dentistry, University of Antioquia, Medellin (Colombia))

Background: Prognostic of the endodontic treatments depends on clinical and demographic conditions that are important to study to improve the quality of dental care. **Objective:** To determine the sociodemographic and clinical factors associated to teeth survival with endodontic treatment in charge of dentistry students in the Faculty of Dentistry of the University of Antioquia (Medellín, Colombia) during the period 2007- 2011. **Methods:** A retrospective cohort study was conducted using survival analysis by means of the clinical records according to inclusion criteria and subsequently the patients were examined. Global survival was measured using Kaplan-Meier analysis and the curves were compared through Long Rank Test. For multivariate analysis, Cox's proportional hazards models and adjusted Hazard Ratios (HR) were obtained, with their respective 95% confidence intervals. **Results:** The study population was 228 teeth in 188 patients. The total of lost teeth was 40.8%. Statistically significant associations ($p < 0.05$) were found for educative level, insurance, initial diagnosis and type of restorative treatment. In the survival analysis, 78% of teeth continue in the mouth in the three years after endodontic treatment and the proportion of teeth that survived after 6 and more years is 57%. The median survival of the teeth in the treated patients is 1959 days (standard error of 66.9 days). Multivariate Cox regression model showed that the rate of tooth loss was higher in multiradicular teeth (HR 2.38; 95%CI 1.23- 4.60) and in case of teeth with initial diagnosis of acute apical abscess (HR 27.96; 95%CI 1.84- 423.09). **Conclusion:** Sociodemographic and clinical factors associated to the survival of teeth with endodontic treatment were found. It seems so important to establish epidemiological surveillance systems in order to evaluate the quality of the different treatments received for the patients.

0782-S/P

WHY BOTHER WITH TMLE (TARGETED MAXIMUM LIKELIHOOD ESTIMATION)? Laura Balzer* (Harvard T.H. Chan School of Public Health)

Parametric models are often used to estimate the conditional mean of the outcome, given the exposure and confounding variables. While we may know the relevant variables, it is difficult, if not impossible, to a priori correctly specify the exact functional form. If the assumed parametric model is incorrect, the point estimates will often be biased and inference misleading. To avoid unsubstantiated assumptions, it is sometimes possible to estimate the mean outcome within all covariate-exposure strata. Unfortunately, non-parametric maximum likelihood estimators quickly become ill-defined due to the curse of dimensionality; the number of possible exposure-covariate combinations far exceed the number of observations. Various model selection routines can help alleviate these problems. Data-adaptive methods, based on cross-validation, involve splitting the data into training and validation sets. Each possible algorithm is fit on the training set and its performance assessed on the validation set. Super-Learner, for example, uses cross-validation to select the candidate algorithm with the best performance or to build the optimal combination of candidate algorithms. While these data-adaptive methods avoid betting on one a priori specified algorithm, there is no reliable way to obtain statistical inference. Treating the final algorithm as if it were pre-specified ignores the selection process. The selected estimator is also tailored to maximize some criterion and will not necessarily be the best algorithm for assessing the exposure effect. We introduce Targeted Maximum Likelihood Estimation (TMLE) as a way forward. TMLE is a general algorithm for the construction of double robust, semi-parametric, efficient substitution estimators. TMLE allows for data-adaptive estimation while obtaining valid statistical inference. The advantages of TMLE are demonstrated in the Sustainable East Africa Research in Community Health (SEARCH) trial for HIV prevention and treatment (NCT01864603).

0781-S/P

TRANSPARENCY OF OUTCOME REPORTING AND TRIAL REGISTRATION OF RANDOMIZED CONTROLLED TRIALS PUBLISHED IN THE JOURNAL OF CONSULTING AND CLINICAL PSYCHOLOGY Marleine Azar * (McGill University)

Confidence that randomized controlled trial (RCT) results accurately reflect intervention effectiveness depends on proper trial conduct and the accuracy and completeness of published trial reports. The Journal of Consulting and Clinical Psychology (JCCP) is the primary trials journal amongst American Psychological Association (APA) journals. The objectives of this study were to review RCTs recently published in JCCP to evaluate the adequacy of primary outcome analysis definitions; registration status; and, among registered trials, adequacy of outcome registrations. We also compared results from JCCP to findings from a recent study of top psychosomatic and behavioral medicine journals. Eligible RCTs were published in JCCP in 2013-2014. For each RCT, two investigators independently extracted data on adequacy of outcome analysis definitions in the published report, whether the RCT was registered prior to enrolling patients, and adequacy of outcome registration. Of 70 RCTs reviewed, 12 (17.1%) adequately defined primary or secondary outcome analyses whereas 58 (82.3%) had multiple primary outcome analyses without statistical adjustment or undefined outcome analyses. There were 39 (55.7%) registered trials. Only two trials registered prior to patient enrollment with a single primary outcome variable and time point of assessment. In one of the two trials, registered and published outcomes were discrepant. No studies were adequately registered as per Standard Protocol Items: Recommendation for Interventional Trials guidelines. Compared to psychosomatic and behavioral medicine journals, the proportion of published trials with adequate outcome analysis declarations was significantly lower in JCCP (17.1% versus 32.9%; $p = 0.029$). The proportion of registered trials in JCCP (55.7%) was comparable to behavioral medicine journals (52.6%; $p = 0.709$). Given our results, greater attention to proper trial registration and outcome analysis definition in published reports is needed.

0783

IMPROVING TRANSGENDER HEALTH DATA: MIXED-METHODS ASSESSMENT OF SURVEY MEASURES OF SEX/GENDER FOR POPULATION HEALTH SURVEYS Greta Bauer *, Ayden Scheim, Jessica Braimoh, Christoffer Dharma (Epidemiology & Biostatistics, Western University)

To promote health equity for transgender (trans) communities, population health surveys are beginning to incorporate measures to identify trans respondents. Limited cognitive testing in select populations has been undertaken to assess appropriateness of sex/gender measures that identify trans participants, but broad population testing has not been conducted for any measure. Design considerations include minimizing number of required items, minimizing misclassification of the larger group of cisgender (non-trans) participants, accurate identification of trans participants, ensuring measures function well across age and ethnocultural groups, dimensions of sex/gender assessed (trans status broadly, gender identity, lived gender, hormonal milieu, anatomy), and avoidance of subsequent need to exclude trans participants from analysis. Language must be clear for participants across linguistic backgrounds and time periods, difficult given the rapid changes in trans-specific terminology. We present data from a mixed methods evaluation of two English-language questionnaire items sets. Items tested include the two-step method developed in the U.S., which consists of items on sex assigned at birth and current gender identity, and a multi-dimensional series developed in Canada, which consists of gender identity and trans status, with additional sex/gender dimensions collected from trans respondents to allow grouping on varying dimensions in analysis. Survey data are from a national internet sample of Canadian residents age 14+, with follow-up at 1-3 weeks; analyses include agreement between items, and analysis of missingness. Qualitative data from cognitive interviews ($n = 90$) come from a maximum-diversity subsample, to assess clarity, conceptualization, and acceptability of items across a diverse range of participant language, ethnoracial background, age, sexuality, gender, trans status, region, and religion. We will provide preliminary recommendations for researchers.

0784-S/P

EVALUATING SURVIVAL PERCENTILES Andrea Bellavia*, Nicola Orsini (Karolinska Institutet)

Introduction: In prospective cohort studies, survival percentiles can be defined as the time points by which specific proportions of the study population have experienced the event of interest. For example, the time by which the first 50% of the individuals have experienced the event is defined as 50th survival percentile, or median survival. The most common approach to survival outcomes is to fix a specific time – usually the end of follow-up – and to estimate survival probabilities, or rates, of the event of interest within the observed time-interval, possibly according to levels of specific exposures or risk factors. Evaluating survival percentiles represents a possible alternative, as it fixes the incidence proportion and evaluates the time points by which different strata of the study population reach that specific proportion of cases. **Aims:** This presentation will introduce the concept and evaluation of survival percentiles and present the advantages that this approach can accrue to epidemiology. **Methods:** Statistical modeling of survival percentiles can be accomplished with the Kaplan-Meier method, at the univariable level, and with methods for conditional quantiles of possibly censored outcomes, such as Laplace regression, at the multivariable level. **Results:** Evaluating survival percentiles allows directly focusing on the time variable. Results are presented in terms of time (i.e. months, years) and measures of associations are interpreted as differences in survival. This approach provides many other advantages that make it appealing to the epidemiologists, such as the possibility of focusing on specific percentiles of interest, evaluating how the association of interest is changing over time, deriving adjusted survival curves, and evaluating interaction in the metric of time on both the additive and multiplicative scale. **Conclusions:** Evaluating survival percentiles might provide considerable advantages in the evaluation of time-to-event outcomes and should be considered as a pos

0786

DIFFERENCE OF PREVALENCE IN HEARING IMPAIRMENT: SELF-REPORT VERSUS PROXY Bárbara Niegia Garcia de Goulart*, André Luis Alves de Quevedo, Vanessa B. Leotti Torman (Universidade Federal do Rio Grande do Sul)

OBJECTIVE: To assess whether there is difference between the prevalence of self-reported hearing loss and associated factors when treated separately the primary informant and proxy informant answers in Distúrbios da Comunicação Humana Populacional Study (DCH-POP). **METHODS:** Cross-sectional household survey, with a probabilistic multistage stratified sample of 1,248 individuals held in a neighborhood of the city of Porto Alegre, Brazil. Measurement of proportions, medians and interquartile range were performed, for the whole population studied, and primary informant and proxy informant. To verify the existence of differences in sociodemographic characteristics and self-reported prevalence of primary informants and proxy informant we used the chi-squared test and Fisher's exact test for categorical variables, and the Mann-Whitney nonparametric test for continuous variables with non-symmetrical distribution. Logistic regression was performed using the hearing loss as dependent variable and considering the information of the entire sample studied, only the responses of primary informants, and only the responses of proxy informant. The magnitude of the association was determined by odds ratio (OR) and 95% CI. **RESULTS:** Considering self-reported answers by the primary informants (479 individuals) and proxy informants (769 individuals), only the variables ear infection in the last 12 months, ear surgery, rhinitis and sinusitis showed no difference between the prevalence reported by primary informants and proxy informants. It is observed that for all variables which differ significantly, the prevalence declared by proxy informants underestimated the study outcomes. In the final model only independent variables age and dizziness were associated with the outcome of hearing loss. For dizziness the biggest OR was found in the model with only data from proxy informant; while the model with only the responses of primary informants found a lower OR than the model for the whole sample, and the model with on

0785-S/P

CHECKING INVERSE PROBABILITY WEIGHTS FOR TIME-VARYING TREATMENTS VIA BALANCE OF BASELINE CO-VARIATES Ellen C. Caniglia*, Miguel A. Hernán, James M. Robins (Harvard T.H. Chan School of Public Health)

Inverse probability (IP) weighting is commonly used to adjust for measured confounding in observational studies. Informally, each individual's IP weight is the inverse of the conditional probability of receiving the treatment that they received. In the absence of model misspecification, IP weighting creates a pseudo-population in which the association between the confounding variables and treatment is removed. However, if the model for the IP weights is misspecified, an association between confounders and treatment may exist in the pseudo-population. Misspecification may arise from the use of an incomplete history of the time-varying covariates or incorrect assumptions about the functional form of each covariate. In the setting of time-varying treatment strategies where models for the treatment are fit over many time points, model misspecification is likely and could be substantial. Yet many applications of IP weighting do not check whether model misspecification may have interfered with the removal of the association between confounders and treatment. In particular, the balance of baseline covariates has not been checked in analyses of time-varying dynamic strategies. We propose a method to improve the estimation of IP weights. The key idea is to verify whether, in the pseudo-population created by the estimated IP weights, the association between the measured confounders at baseline and treatment has been eliminated. To do so, we propose to compare the distribution of baseline confounders among the treated and the untreated in the pseudo-population. The results of this check can be used to revise the model for the weights. In this presentation, we will describe the process of performing IP weighting checks via balance of baseline covariates and results in the setting of dynamic strategies for monitoring CD4 cell count and HIV RNA, using data from cohorts participating in the HIV-CAUSAL collaboration.

0787

FEASIBILITY OF LINKING LONG-TERM COHORT DATA TO OFFSPRING BIRTH RECORDS: THE BOGALUSA HEART STUDY Emily Harville*, Marni Jacobs, Tian Shu, Dorothy Breckner, Maeve Wallace (Tulane University School of Public Health)

Background: Researchers in perinatal health, as well as other areas, may be interested in linking existing datasets to vital records data. We are unaware of other U.S.-based studies that have attempted to link vital records data for offspring information when the timing of the births was unknown. **Methods:** 5914 women who participated in the Bogalusa Heart Study (1973-2009), a long-running study of cardiovascular health in childhood, adolescence, and adulthood, were linked to vital statistics birth data from Louisiana, Mississippi, and Texas (1982-2010). Deterministic and probabilistic linkages based on social security number, race, maternal date of birth, first name, last name, and Soundex codes for name were conducted. Characteristics of the linked and unlinked women were compared using t-tests, chi-square tests, and multiple regression with adjustment for age and year of examinations. **Results:** The Louisiana linkage linked 4876 births for 2770 women; Mississippi linked 791 births to 487 women; Texas linked 223 births to 153 women, for a total of 6007 births to 3263 women. This represents a successful linkage of 55% of all women ever seen in the larger study, and an estimated 65% of all women expected to have given birth. Those linked had more study visits, were more likely to be black, and had statistically lower BMIs than unlinked participants. **Conclusions:** This study demonstrates the feasibility, to some degree, of linking unrelated study data to vital records data. The linked group had a somewhat more favorable health profile and was less mobile than the overall study population.

0788

HEALTHY WORKER BIASES IN STUDIES OF OCCUPATIONAL EXPOSURES AND PREGNANCY OUTCOMES Candice Johnson*, Carissa Rocheleau, Christina Lawson, Barbara Grajewski, Penelope Howards (National Institute for Occupational Safety and Health, CDC)

Background. The literature on healthy hire bias and healthy worker survivor bias has focused mainly on studies of chronic disease and mortality. The effects of these biases might differ in studies of pregnancy outcomes because of social and cultural reasons causing healthy women to leave the workforce to care for children or family (affecting healthy hire bias) and because of the relatively short risk period for adverse pregnancy outcomes (affecting healthy worker survivor bias). **Methods.** We used directed acyclic graphs (DAGs) to illustrate structures of healthy hire bias and healthy worker survivor bias in studies of occupational exposures and adverse pregnancy outcomes. We also examined structures of other healthy worker biases previously described in pregnancy studies: reproductively unhealthy worker effect (women with live births leave the workforce to care for children, women with non-live births return to work), insecure pregnancy effect (women with prior adverse pregnancy outcomes reduce or eliminate exposures in subsequent pregnancies), and desperation/privilege effect (choice of returning to work after pregnancy depends on financial situation). **Results.** Given our study design and exposure and outcome definitions, healthy hire bias, reproductively unhealthy worker effect, and desperation/privilege effect created open backdoor paths (confounding) between occupational exposure and outcome that can be closed by conditioning on measured confounders. Insecure pregnancy effect was most easily addressed by limiting the study to first pregnancies. Existence of healthy worker survivor bias depended on study design and definitions of exposure and outcome. **Conclusions.** The occurrence of healthy worker biases in studies of occupational exposures and pregnancy outcomes depends on characteristics of the study. Many of these biases have the structure of open backdoor paths and can be addressed analytically using standard techniques such as restriction or regression modeling.

0790-S/P

INTERVENTIONAL APPROACH FOR PATH-SPECIFIC EFFECTS Sheng-Hsuan Lin*, Tyler VanderWeele (Harvard TH Chen School of Public Health)

Standard causal mediation analysis decomposes the total effect into a direct effect and an indirect effect in settings with only one single mediator. Under the settings with multiple mediators, all mediators are often treated as one single block of mediators. The effect mediated by a certain combination of mediators, i.e. path-specific effect (PSE), is not always identifiable without making strong assumptions. In this paper, the authors propose a method, defining a randomly identified interventional analogue of PSE (rPSE), which can always be non-parametrically identified under assumptions of no unmeasured confounding. This method also allows settings with mediators dependent on each other, interaction, and mediator-outcome confounders which are affected by exposure. In addition, under linearity and no-interaction, our method has the same form of traditional path analysis for PSE. Furthermore, under single mediator without a mediator-outcome confounder affected by exposure, it also has the same form of the results of causal mediation analysis. We also provide SAS code for settings of linear regression with exposure-mediator interaction and perform analysis in Framingham Heart Study dataset, investigating the mechanism of smoking on systolic blood pressure mediated by both cholesterol and body weight. Allowing decomposition of total effect into several rPSEs, our method contributes to investigation of complicated causal mechanisms in settings with multiple mediators.

0789

CONSTRUCTING A PROXY MEASURE FOR THE METABOLIC SYNDROME USING CROSS-SECTIONAL, POPULATION-BASED SURVEY DATA Tammie Johnson*, James Churilla (University of North Florida)

Background: Metabolic syndrome (METS) is a risk factor for cardiovascular disease and diabetes. Conducting population-based studies of METS is possible using the National Health and Nutrition Examination Survey (NHANES) study methods, where participants complete health questionnaires and undergo physical exams and laboratory testing. With cross-sectional study designs such as the Behavioral Risk Factor Surveillance System (BRFSS), where participants only complete health questionnaires, identifying participants with METS is problematic. Two peer-reviewed papers have used questionnaire-based METS proxy measures. The purpose of this study was to construct a METS proxy measure suitable for use with BRFSS data that achieves better internal consistency and sensitivity than proxy measures already in use in published literature. **Methods:** The NHANES (1999-2006) data were used to construct and test the internal consistency of METS proxy measure. The NHANES is suitable for this purpose because health questionnaire data are available for participants who undergo physical exams and laboratory testing; therefore, internal consistency and sensitivity can be measured. Questionnaire responses related to diabetes, high cholesterol, hypertension, and obesity were used and tested as suitable proxy measures for the physical exam- and laboratory test-based METS criteria. **Results:** Numerous METS proxy variables were constructed and evaluated. The final METS proxy variable had a Cronbach's alpha=0.62 and sensitivity=50.9%. The proxy measures used the published literature had Cronbach's alpha=0.45 and sensitivity=17%. **Conclusion:** The METS proxy variable constructed for this study is an improvement compared to proxy measures already in use. Work still needs to be done to increase the sensitivity.

0791

CARDIOVASCULAR DISEASE RISK FACTORS AND SOCIAL DETERMINANTS IN CHILE: BIPLLOT ANALYSIS FOR MULTIVARIATE ASSOCIATION Sergio Munoz*, Claudia Chavez (Universidad de La Frontera)

Association between cardiovascular risk factors and social determinants is traditionally study by using generalized linear models. These models allow for the study of univariate outcomes as function of multiple factors, but do not allow to study the association between multivariate outcomes with multivariate covariates. In this study, we proposed to evaluate the association between multiple risk factors for cardiovascular disease with a number of social determinants. The method provides a joint representation of all identified risk factors and social determinants based on the correlated structure of each set of variables. To illustrate the methodology we used data coming from the Chilean National Health Survey (for health variables) and data provided by the Chilean socioeconomic survey which allow for a multidimensional measure of poverty. Results show the correlation among cardiovascular risk factors (CVRF) and simultaneously the correlation among their social determinants (SD) for the 15 Regions of Chile. BiPlot show to be a powerful tool to graphically presents joint association between these two sets of variables, including the relative position of each region according to the magnitude of CVRF and of the SD.

0792- S/P

CALIBRATION OF AGENT-BASED MODELS FOR CAUSAL INFERENCE Eleanor Murray*, James M. Robins, George R. Seage, III, Kenneth A. Freedberg, Miguel A. Hernan (Department of Epidemiology, Harvard TH Chan School of Public Health, Boston, MA; Department of Biostatistics, Harvard TH Chan School of Public Health, Boston, MA)

Objective: Agent-based models are useful for comparing outcomes under different treatment strategies. A key challenge is calibrating model inputs because up-to-date calibration targets may not exist for most strategies. Observational data can provide information on a wider range of calibration targets if appropriate analyses are conducted. We propose using the parametric g-formula for estimating calibration targets under a range of strategies. **Methods:** To update calibration of the Cost-Effectiveness of Preventing AIDS Complications (CEPAC) agent-based model, we parameterized the model to reproduce the baseline distributions of CD4 count, HIV viral load, age, and gender among HIV-positive individuals in the HIV-CAUSAL Collaboration. We then modified the model parameters to concur with the 7-year mortality risks estimated via the parametric g-formula from the HIV-CAUSAL Collaboration under three strategies for anti-retroviral therapy (ART) initiation: immediate universal initiation, initiation at CD4 <500/mm³, and initiation at CD4 <350/mm³. We varied monthly probabilities of death and opportunistic infections (OIs) in CEPAC to improve agreement with HIV-CAUSAL. **Results:** The estimated 7-year mortality in HIV-CAUSAL under universal initiation and initiation at CD4 <500/mm³ was 4.0%, and 4.2% under initiation at CD4 <350/mm³. Initially, the 7-year mortality from CEPAC was 7.7% for universal initiation; 7.8% for CD4 <500/mm³; and 8.2% for CD4 <350/mm³. The best fit with HIV-CAUSAL occurred when monthly probabilities of OIs and chronic AIDS mortality in CEPAC were set to zero when on ART (mortality: 5.0% for universal initiation, 5.3% for CD4 <500/mm³, 5.9% for CD4 <350/mm³). **Conclusion:** CEPAC and the g-formula estimates from HIV-CAUSAL yield the same ranking of treatment initiation strategies, but CEPAC requires updating of monthly probabilities of death and OIs, especially for those on treatment.

0794-S/P

FORECASTING VACCINE DEMAND WITH ARIMA AND DYNAMIC REGRESSION MODELS Renan Moritz Varnier Rodrigues de Almeida*, Mario Lucio de Oliveira, Novaes, Ronaldo Rocha Bastos, Fernando Luiz Cyrino Oliveira (Federal University of Rio de Janeiro)

Background: The use of mathematical models to forecast vaccine demand in developing countries is still uncommon; vaccine estimates are usually based on crude procedures. **Objective:** The Box-Jenkins model (ARIMA) and the Dynamic Regression model (DR) were used to forecast the demand of Diphtheria and tetanus toxoids and pertussis vaccine, in combination with the Haemophilus influenzae type-b conjugate vaccine (DTP-Hib). **Methods:** The widely used ARIMA is based on the assumption that future values of a series can be explained by past values; the less known DR combines a time series-oriented approach and the impact of explanatory variables in the forecast. The Mean absolute percentage error (MAPE) and the Mean Squared Error (MSE) were used for the models evaluation. Data were collected from a Brazilian information system (federal government) and from 46 vaccination rooms of Juiz de Fora, MG, a typical southeastern Brazilian city. Variables used: Doses of DTP-Hib received by the vaccination rooms; DTP-Hib technical wastage; Other DTP-Hib wastage; Total DTP-Hib wastage; Current stock of DTP-Hib; DTP-Hib reported demand-NIP/Datasus; Hepatitis B vaccine (HepB) demand; HepB drop-out rate; Birth cohort; Infant mortality; DTP-Hib drop-out rate; Third doses of DTP-Hib administered. ARIMA and DR models were used for vaccine demand forecast (6 months prediction horizon). **Results:** In the analyzed period, 111674 DTP-Hib doses were administered and 54133 doses were lost. The resulting models were ARIMA (1,0,0)*(1,0,1) and the DR expression was $D=453.113+0.759*A1-5.123*A2$ (D =Vaccine demand forecast; $A1$ =DTP-Hib reported demand; $A2$ =HepB drop-out rate). The MAPE and MSE statistics for ARIMA and DR were 10.21%; 0.434 and 5.3%; 0.849, respectively. **Conclusion:** DR applied to a DTP-Hib vaccine demand time series resulted in a very good fit and in a small error (MAPE). The model is a clear improvement over cruder and empirical models, and could contribute to improve vaccination rates.

0793

COMPARING DOUBLY- AND SINGLY-ROBUST DIRECT EFFECT ESTIMATORS: A SIMULATION STUDY Ashley Naimi*, Mireille Schnitzer (University of Pittsburgh)

Several approaches are available to estimate direct effects, but researchers often rely on relatively simple methods, including inverse probability weighted marginal structural models. While this approach can account for mediator-outcome confounders affected by the exposure, it still requires correct specification of the exposure and mediator models. Here, we compare several approaches to estimate controlled direct effects, including standard approaches [the difference method (DF), the generalized product method (GP)], singly robust approaches [inverse probability weighted marginal structural models (MSM), the structural transformation method (ST)], and doubly robust approaches (g-estimation of a direct effect structural nested model (GE), and targeted minimum loss-based estimation (TMLE)). We generated 5,000 Monte Carlo samples from the parametric g-formula with a true risk difference of 0.05 under strong exposure-induced mediator-outcome confounding and moderate exposure-outcome confounding. For a base-case scenario with 500 observations per sample in which all models were correctly specified, the best-to-worst performers in terms of bias and mean squared error were: (bias) ST, MSM, TMLE, GE, DF, GP; (MSE) ST, TMLE, GE, DF, MSM, GP. Under a scenario with 500 observations per sample in which the exposure-outcome confounder was excluded from all outcome models, best-to-worst performers were: (bias) MSM, TMLE, GE, ST, DF, GP; (MSE) DF, TMLE, ST, GE, MSM, GP. However, these rank orderings were dependent upon the size of each Monte Carlo sample. Our results confirm that doubly-robust approaches are better options under model uncertainty, but singly robust approaches perform best when the model form is known.

0795-S/P

MULTIPLE IMPUTATION OF COGNITIVE PERFORMANCE AS AN OUTCOME: THE ATHEROSCLEROSIS RISK IN COMMUNITIES (ARIC) STUDY Andreea Rawlings*, Yingying Sang, A. Richey, Sharrett Josef Coresh, Michael Griswold, Anna Kucharska-Newton, Priya Palta, Lisa Wruck, Alden Gross, Jennifer Deal, Melinda Power, Karen Bandeen-Roche (Johns Hopkins University)

Background: Longitudinal studies of cognitive performance are sensitive to the effects of dropout, as participants experiencing cognitive deficits are less likely to attend study visits. This may bias estimated associations between exposures of interest and cognitive decline. Multiple imputation is a powerful tool for handling missing data but its use for missing cognitive outcomes remains limited. **Methods:** We used multiple imputation by chained equations (MICE) to impute cognitive scores of participants who did not attend the 2011-2013 exam of the ARIC study. We imputed scores at the median visit date for living participants or 6 months prior to death for those deceased by the time of the exam. To impute missing cognitive scores, we used data collected during and outside of study visits, including annual follow-up phone calls, community surveillance, and retrospective dementia ascertainment. We examined the validity of imputed scores by setting to missing cognitive scores of a subset of participants and comparing observed and imputed values, and by using data simulated under varying assumptions about the missingness mechanism. Finally, we examined differences in the association between diabetes at baseline and 20-year cognitive decline with and without imputed values. **Results:** Validation using observed data showed MICE produced unbiased imputations of cognitive scores for participants alive at the start of the 2011-2013 exam and for those deceased prior to the exam. Simulations showed a reduction in the bias of the 20-year association between diabetes and cognitive decline comparing MICE (3% bias) to analysis of available data (23% bias). Associations between diabetes and 20-year cognitive decline were markedly stronger with MICE than in available-case analyses. **Conclusion:** Our study suggests when informative data are available for non-examined participants, MICE can be an effective tool for imputing cognitive performance and improving assessment of cognitive decline.

“-S/P” indicates work done while a student/postdoc

0796

ON THE GENERALIZABILITY OF A STATISTICAL NATURAL LANGUAGE PROCESSING MODEL FOR PNEUMONIA SURVEILLANCE IN ACUTE CARE HOSPITALS Christian Rochefort*, Aman Verma, Tewodros Eguale, David Buckeridge, Alan Forster (University of Sherbrooke)

Objective: Natural language processing (NLP) models are increasingly used for disease surveillance, but limited information is available on their generalizability. We examined the generalizability of a statistical NLP model for identifying pneumonia from electronic health record (EHR) data. **Methods:** We randomly sampled 4,000 narrative reports of chest radiological examinations performed at a university health network (UHN) in Quebec (Canada) between 2008 and 2012. We manually identified pneumonia within each report, which served as our reference standard. We used a nested cross-validation approach to train and validate a support vector machine (SVM) model predicting pneumonia. This model was then applied to a random sample of 2,281 narrative radiology reports from another UHN in Ontario (Canada), and accuracy was measured. The accuracy of the Quebec model, as applied to Ontario data, was compared to that of two alternative models: 1) a model recalibrated on Ontario data and; 2) a model trained and validated using all available data (pooled Quebec-Ontario model). **Results:** On manual review 640 (16.0%) and 303 (13.3%) reports were pneumonia-positive in Quebec and Ontario data, respectively. The SVM model predicting pneumonia on Quebec data achieved 83% sensitivity (95%CI: 78%-88%), 98% specificity (95%CI: 97%-99%) and 88% PPV (95%CI: 83%-94%). When applied to Ontario data, this model achieved 57% sensitivity (95%CI: 51%-63%), 99% specificity (95%CI: 98%-99%) and 86% PPV (95%CI: 80%-90%). In comparison, the model retrained on Ontario data achieved 76% sensitivity (95%CI: 70%-82%), 98% specificity (95%CI: 97%-99%) and 86% PPV (95%CI: 82%-91%), while the pooled Quebec-Ontario model performed worse than the Quebec model, but better than the Ontario one. **Conclusion:** A statistical NLP model predicting pneumonia has limited generalizability when it is directly applied to EHR data from another institution but good prediction performances can be achieved after model recalibration on local data.

0798-S/P

A CONSTRUAL LEVEL THEORY BASED METHOD TO IMPROVE THE RELIABILITY OF SELF-REPORTED DATA IN EPIDEMIOLOGY RESEARCH: AN EMPIRICAL TEST Yan Wang*, Xinguang Chen (University of Florida)

Self-reported data is a major resource of information for epidemiological research and errors from self-report are a big concern for epidemiologists who rely on survey method. There is a lack of methods to efficiently prevent and/or control errors from self-report despite many prior efforts. In this study, we reported a method we developed to address this challenge. The method was supported by the construal level theory (CLT) to “triangulate” reliable data with information obtained from participants’ self-assessment and their assessment of others. Data were collected from a random sample of 1143 participants (18-45 years old, 49.3% female) in rural areas of Wuhan, China. The Brief Sexual Openness Scale (BSOS, 5 items) was used to test the method. A CLT-based scale was created by integrating participants’ assessments of four targets with increased social distance (i.e., self, rural-to-urban migrants, urban residents and foreigners). A trifactor model was constructed to evaluate the reported data on the four targets with a common factor representing the latent “sexual openness”. The trifactor measurement model fit the data well (CFI=.93, TLI=.91, RSMEA=.08), supporting the CLT-based approach we developed. The reliability (i.e., Cronbach alpha) of the BSOS increased from 0.78 to 0.96 when the CLT-based method is used. The “triangulated” BSOS scores significantly predicted ever sex, premarital sex, multiple sexual partners, and history of sexually transmitted diseases (STDs). Research findings demonstrate the function of CLT-based method in improving reliability of a valid measure in survey studies. It achieves the goal by separating the “true data” as a latent factor in the reported data by participants for themselves and socially distant others from errors related to over- and underreport. Additional studies are needed to further test this novel method in improving reliability of other survey questions in different populations with different settings.

0797-S/P

“THEY’LL BE HOME BY THEIR DUE DATE”: AN APPLICATION OF MULTISTATE MODELLING FOR NEONATAL LENGTH OF STAY Sarah Seaton*, Lisa Barker, Elizabeth Draper, Keith Abrams, Bradley Manktelow (Department of Health Sciences, University of Leicester, UK)

In the UK, 1 in 10 babies need specialist neonatal care after birth. For those born very preterm who survive, this care may last several months. Neonatal care is broadly defined as intensive (e.g. ventilation); high dependency (e.g. drug infusion) or special care (e.g. phototherapy). A preterm baby is likely to need a combination of these levels of care. Historically, there has been little research into the prediction of length of stay in neonatal care, and the research which does exist has never considered the levels of care received. Additionally, most work has excluded babies that die during their time in neonatal care, who contribute workload to the health service during the time they are alive and therefore should be included in estimates. Conventional statistical approaches are unable to capture the complexity of the nature of neonatal care. Multistate modelling can be utilised to allow prediction of time until any one of a number of events occur (i.e. death or discharge). However, prior to these events it can also include “intermediate steps” such as the different levels of care received by the baby. Approximately 21,100 singleton babies were born at 24-31 weeks gestation and discharged from a neonatal unit in England between 2011 and 2014. These babies required over 1,200,000 days of specialist neonatal care. Using this data, multistate modelling methods were used to describe the probability of receiving each level of neonatal care, or of being discharged home or dying. Unadjusted analyses and analyses adjusted for gestational age will be presented graphically. On the first day of life, 82% of babies were receiving intensive care; 13.3% were receiving high dependency and 4.7% were receiving special care. For healthcare systems increasingly focussed on costs, it is important to consider everything that happens during the care pathway, and not just overall length of stay. These methods provide important estimates for planning services and counselling parents.

0801

THE RELATIONSHIP BETWEEN MRI BACKGROUND PARENCHYMAL ENHANCEMENT (MRI-BPE) AND BREAST CANCER RISK FACTORS IN PRE- AND POST-MENOPAUSAL WOMEN

Jennifer D. Brooks*, Frank Stanczyk, Irene Orlow, Malcolm C. Pike, Jonine L. Bernstein, Elizabeth A. Morris, Janice S. Sung (Dalla Lana School of Public Health, University of Toronto)

Background Histologically normal breast fibroglandular tissue seen on a breast MRI (MRI-FGT) enhances after contrast is administered (termed background parenchymal enhancement; MRI-BPE) and the degree to which this tissue enhances has been associated with breast cancer risk. The objective of this study was to examine the relationship between MRI-BPE and breast cancer risk factors. **Methods** This was a cross-sectional study of 419 pre- and post-menopausal women undergoing contrast-enhanced MRI. All women completed a questionnaire and blood samples were collected from 159 postmenopausal women for hormone analyses. Odds ratios (ORs) and 95% confidence intervals (CIs) describing the relationship between breast cancer risk factors and MRI-BPE and MRI-FGT were generated using ordinal logistic regression stratified by menopausal status. **Results** Premenopausal women were more likely to have higher MRI-BPE than postmenopausal women (OR=3.8, 95% CI 2.2, 6.4). A significant positive association between MRI-BPE and BMI at the time of MRI was also observed, with an approximately 10% increased odds of having higher than Minimal MRI-BPE per unit increase of BMI. Notably, BRCA mutation carriers were less likely to have higher than Minimal MRI-BPE in both pre- (OR=0.4, 95% CI 0.2, 0.9) and post-menopausal (OR=0.4, 95% CI 0.2, 1.0) women. Among postmenopausal women, significant associations between MRI-BPE and serum estrogens were observed. Compared to women with Minimal MRI-BPE, a per quartile increase in estradiol was strongly positively associated with having Marked MRI-BPE (OR=6.9, 95% CI 1.0, 49.0). **Conclusion** Together these results provide further support for the hormonally responsive nature of MRI-BPE. **Impact** This is the first study to examine the relationship between MRI-BPE and BMI, BRCA status and serum hormone concentrations. These results provide crucial information for the design and analysis of future studies examining the association between MRI-BPE and breast cancer risk.

0803

TREND IN MORTALITY FROM CERVICAL CANCER IN THE STATE OF SANTA CATARINA, BRAZIL, BY AGE-SPECIFIC GROUPS AND ITS MACRO-REGIONS, 2000 TO 2013

Patrícia Santos*, Marcia Kretzer, Nazare Nazario, João Guizzo Filho (Universidade do Sul de Santa Catarina- Brazil)

Introduction: Cervical cancer is a public health problem in Brazil and worldwide, due to the high mortality rates observed mainly in less developed regions. Being the most preventable cancer, is of great importance it's early diagnosis and treatment. **Objective:** To analyze time trends in mortality from cervical cancer in the state of Santa Catarina, Brazil, by age-specific groups and its macro-regions. **Methods:** An ecological study of time series was conducted using data from the National Information System on Mortality (SIM). Data on deaths from 2000 to 2013 trends were estimated using linear regression. Crude and specific mortality rates were calculated according to age group and region. **Results:** There was little variability in mortality trends from Cervical Cancer in the State, ranging between 1.80 and 2.66/100 thousand, without statistical significance. There was an increasing trend in the age group 0-29 years, with a mean annual increase of 0.01% ($p = 0.02$), and a declining trend from 40 to 49 years, with a mean annual increase of 0.16% ($p = 0.004$), both with statistical significance. Analyzing the health macro-regions, the only one with significant increasing trend was Vale do Itajaí, with 0.04% ($p = 0.02$). **Conclusion:** In the period of 2000 to 2013 the mortality trend of Cervical Cancer in Santa Catarina State is stationary, the mortality trend is increasing at the age range from 0 to 29 years, and decreasing at the age range from 40 to 49 years. The only health macro-region of Santa Catarina which registers significant rising mortality trend is the Itajaí Valley.

0802

RADIOFREQUENCY SPECTROSCOPY FOR INTRAOPERATIVE MARGIN ASSESSMENT DURING LUMPECTOMY

Rebecca Guth*, Madison Riethman, Liana Merz (BJC HealthCare)

Background: A handheld radiofrequency spectroscopy (RS) device designed for intraoperative assessment of tumor margins in lumpectomy may reduce re-excision rates. The focus of this systematic review is to evaluate the impact of RS in reducing repeat procedures. **Methods:** Medline, Google, and the manufacturer website were systematically searched for randomized trials (RCTs) comparing RS to standard methods of intraoperative margin assessment. Primary outcomes were re-excision and reoperation (includes re-excision or conversion to mastectomy) rates. Secondary outcomes were identification of positive margins, volume of excised tissue, and cosmetic evaluation. Study quality was assessed using standardized criteria. When feasible, random effects meta-analysis was conducted. Heterogeneity was assessed using the I2 statistic. **Results:** 2 RCTs (889 patients) with moderate risk of bias were identified. Meta analysis demonstrated a non significant decrease in both re-excision [relative risk (RR) 0.66; 95% confidence interval (CI) 0.41-1.07; I2=39%] and reoperation rates (RR 0.80; 95% CI 0.63-1.02; I2=0%). The remaining outcomes were not reported by all studies or could not be combined in meta-analysis. The presence of positive margins was significantly lower in the RS group as reported by one study. Both RCTs reported similar or slightly larger volumes of excised tissue for RS. One study reported no difference in cosmetic appearance rated good or excellent between RS and standard methods. **Conclusions:** Findings from a limited number of RCTs demonstrate that identification of positive margins may be improved with RS, but meta-analysis of re excision and reoperation rates failed to achieve a significant effect. This may be due in part to additional factors impacting the decision for re-excision and reoperation beyond the presence of a positive margin. Additional high-quality RCTs are needed to determine whether lumpectomy with RS reduces repeat procedures.

0805-S/P

ALCOHOL INTAKE AND BREAST CANCER RISK IN AFRICAN AMERICAN WOMEN FROM THE AMBER CONSORTIUM

Lindsay Williams*, Andrew Olshan, Chi-Chen Hong, Elisa Bandera, Lynn Rosenberg, Ting-Yuan, David Cheng, Kathryn Lunetta, Laurence Kolonel, Julie Palmer, Christine Ambrosone, Melissa Troester (Department of Epidemiology, University of North Carolina at Chapel Hill, 135 Dauer Drive, Chapel Hill, NC 27599, USA)

Purpose: Alcohol has been associated with an increased risk of invasive breast cancer, largely from studies among whites. Alcohol intake tends to be lower in African American women and the relationship between alcohol drinking and breast cancer risk has not been well studied in this group. **Methods:** The present analysis includes invasive breast cancer cases (n=5,108) and controls (n=17,230) from the African American Breast Cancer Epidemiology and Risk (AMBER) consortium. Odds ratios (ORs) and 95% confidence intervals (CIs) for drinks per week and breast cancer risk, overall and according to hormone receptor status, were estimated using logistic regression. Exposure categories were, nondrinkers (Never and Past Drinkers), >0 to <4 drinks per week (referent), 4 to <7 drinks per week, and 7 drinks per week for stratified analyses. We added a category for 14 drinks per week where stratification by other variables was not performed. Models were adjusted for time period of the study, geographic location, parent study, age at diagnosis/index age, education level, menopausal status, age at menarche, parity, menopausal hormone therapy, Body Mass Index, oral contraceptive use and smoking status. **Results:** Among controls, approximately 35% were current drinkers. The multivariate OR for 7 drinks per week was 1.07 (95% CI 0.88-1.32); however, the OR for 14 drinks per week was 1.33 (95% CI 1.07-1.64). Results were similar for ER+ and ER-breast cancer. There was no evidence of effect measure modification by age at exposure (<30 years, 30-49, 50+ years), oral contraceptive use, or smoking status. **Conclusions:** African American women who reported drinking 14 or more drinks per week showed an increased risk of invasive breast cancer, with no suggestion that the alcohol-breast cancer association varies according to breast cancer subtype.

0810-S/P

EPIGENOME-WIDE ASSOCIATION STUDY OF MOTOR SYMPTOM PROGRESSION IN PARKINSON DISEASE Yu-Hsuan Chuang*, Steve Horvath, Jeff Bronstein, Yvette Bordelon, Beate Ritz (UCLA Epidemiology)

BACKGROUND Parkinson's disease (PD) is progressive and motor and non-motor function decline; current treatments focusing on symptoms do not prevent disease progression. Although age at onset is a predictor of faster decline, there is still not much known about what drives PD progression. Epigenetic DNA methylation is believed to mediate the influence of environmental exposures on genes that may contribute to disease. Here, we aim to identify epigenome-wide DNA methylation markers (CpGs) associated with faster PD motor symptom progression that may provide targets for treatment and prevention of progression. **METHODS** This study followed 219 idiopathic PD patients from a population-based study of PD repeatedly assessing motor symptoms using the UPDRS over 5 years. To identify fast progressors we used the 3rd quartile of annual rate change in UPDRS i.e. 5 points per year as the cutoff. DNA methylation data were obtained from Illumina Infinium 450k microarray using DNA samples drawn early in disease (at baseline) and extracted from peripheral blood cell. We used, bi-weighted mid-correlation adjusting for age and cell composition to examine associations between CpGs and fats progression. Top-ranked CpGs were selected for further functional enrichment analysis via the online bioinformatics resource DAVID. **RESULTS/CONCLUSION** CpGs near six genes were significant at a threshold of $p < 10^{-5}$. Of that, Hephaestin (HEPH) plays a role in brain iron metabolism, while Chemokine (C-X-C Motif) Receptor1 (CXCR1) is a cell surface marker on M2a microglia. Functional enrichment analysis showed that progression-associated CpGs are located near genes that relate to adhesion (4×10^{-7}), extracellular matrix (ECM)-receptor interaction (2×10^{-6}), axonogenesis (6×10^{-5}), and transmission of nerve impulse (4×10^{-4}). None of the CpGs in the SNCA gene intron1, that has previously been reported to be associated with methylation changes in PD patients, was significantly correlated with PD motor progression.

0812

INTEGRATIVE MENDELIAN RANDOMIZATION - MOLECULAR PATHOLOGICAL EPIDEMIOLOGY APPROACH Shuji Ogino*, Reiko Nishihara, Andrew Chan, Edward Giovannucci, Yin Cao, Molin Wang, Ulrike Peters, Peter Kraft, Tyler VanderWeele (Harvard T.H. Chan School of Public Health)

Background on Mendelian randomization (MR): The MR approach is based on use of a genetic marker that affects a particular exposure of interest, and affects an outcome of interest only through the exposure. The MR approach can assess the exposure-outcome association theoretically independent of confounding provided that all assumptions are met. In many observational settings, confounding in exposure-outcome associations cannot be completely resolved or disentangled. Moreover, it is impossible or unethical to conduct randomized trials for many exposures. **Background on Molecular Pathological Epidemiology (MPE):** The evolving transdisciplinary MPE field can link exposures to molecular pathologic changes, and refine effect sizes for specific disease subtypes, and hence contribute to causal inference. **Methods and Results:** We propose an integrative approach of MR-MPE, where we can examine the relationship between a germline genotype (instrumental variable) and molecular pathology of disease. In the literature, MPE research has successfully shown the associations between germline genetic variants and specific molecular pathologic signatures. As examples, studies have consistently linked the rs16906252 MGMT variant to MGMT promoter hypermethylation in various cancers and normal tissue, and MSH2 and MLH1 variants to microsatellite instability in various cancers. Therefore, at least some germline variants appear to influence the development of specific tumor (disease) subtypes, and the relationship can be detected in populations by epidemiologic research. Detected molecular pathologic signatures can provide insights on the effect of germline variants on the development of the tumor (disease). **Conclusion:** Based on available literature data, integrative MR-MPE is a feasible approach, and can provide new insights on exposure-disease subtype relationships. This MR-MPE approach is particularly useful when randomized trials are not ethical or feasible for exposures of interest.

0811-S/P

SPECIFIC ADIPOKINES MAY UNDERLIE THE ASSOCIATION BETWEEN OBESITY AND MULTIPLE SCLEROSIS SUSCEPTIBILITY Milena Gianfrancesco*, Rene Bell, Lily Hoang, Anna Barcellos, Xiaorong Shao, Brooke Rhead, Ling Shen, Hong Quach, Cathy Schaefer, Lisa F. Barcellos (School of Public Health, University of California, Berkeley, CA)

Multiple sclerosis (MS) is an autoimmune disease with both genetic and environmental risk factors. Recent studies indicate childhood and adolescent obesity double the risk of MS, but the biological mechanism underlying this relationship remains to be identified. Adipokines secreted by white adipose tissue have attracted much attention given their involvement in immunity and ability to produce a "low-grade inflammatory state" in obese individuals. We identified genome-wide significant variants associated with serum levels of three adipokines to measure their relationship with MS susceptibility: plasma soluble leptin receptor (sOB-r) (4 single nucleotide polymorphisms [SNPs]), adiponectin (12 SNPs), and resistin (5 SNPs). Logistic regression of MS status on each SNP was conducted controlling for sex, genetic ancestry, HLA-DRB1*15:01 (the strongest genetic predictor of MS) and a weighted genetic risk score of 110 non-HLA MS risk variants. Participants included non-Hispanic Caucasian members of Kaiser Permanente Northern California (1,104 MS cases, 10,536 controls). Results demonstrated a significant association for three sOB-r SNPs in the LEPR gene and MS susceptibility, including the strongest odds ratio (OR) for rs2767485 (OR=1.26, 95% CI 1.12, 1.42), and missense variant rs1137100 (OR=1.16, 95% CI 1.04, 1.29). Additionally, two adiponectin SNPs (rs2925979 and rs998584) were significantly associated with MS after adjusting for covariates (OR= 1.15, 95% CI 1.03, 1.28 and OR = 1.19, 95% CI 1.06, 1.34, respectively). An association between one resistin SNP (rs6068258) and MS was also found (OR = 1.14, 95% CI 1.03, 1.27). All associations remained significant after adjustment for self-reported body mass index (BMI) in young adulthood ($p < 0.05$). MS risk may involve predisposing genetic factors for adipokines independent of BMI, suggesting that specific biological mechanisms may mediate disease onset.

0813-S/P

RACIAL DIFFERENCES IDENTIFIED IN A GENOME-WIDE ANALYSIS FOR PROSTATE CANCER BIOCHEMICAL RECURRENCE Caroline Tai*, Thomas Hoffmann, Eric Jorgenson, Charles Quesenberry, Jun Shan, David Aaronson, Joseph Presti, Laurel Habel, Chun Chao, Nirupa Ghai, Dilrini Ranatunga, Catherine Schaefer, Neil Risch, Stephen Van Den Eeden, John Witte (University of California, San Francisco)

Background: Large disparities still exist in the U.S. for prostate cancer, particularly for African American (AA) men compared to white men. SEER data show a 1.6-fold difference in incidence for 2008 to 2012. This is alarming given the even greater 2.3-fold difference in prostate cancer mortality between AA and white men. Though this disparity could be due to healthcare access and socio-economic status, genetic factors may also play a role. **Methods:** Using data from the Kaiser Permanente Research Program on Genes, Environment, and Health, the ProHealth study, and the California Men's Health study in which men were genotyped genome-wide on race-specific arrays, we performed a genome-wide analysis using Cox regression for time to biochemical recurrence (BCR), adjusting for genetic ancestry using principal components, age, and BMI at treatment. We used clinical data to define BCR separately for men who underwent radiation therapy or radical prostatectomy as the first course of treatment. We also evaluated whether the 105 known loci for overall prostate cancer were associated with BCR. **Results:** We identified a variant (rs35098745) at ($p = 4.2 \times 10^{-8}$) significantly associated with BCR, only for men with African ancestry. When imputed in the European ancestry population, it was not significant for post-radiation BCR ($p = 0.43$) or post-surgery BCR ($p = 0.18$). This could be due to inherent differences in allele frequencies for this polymorphism. In the 1000 Genomes population, the risk allele frequency is 6.1% in the AFR population but only 2.3% in the EUR population. None of the 105 previous prostate cancer variants were associated with BCR after correction for multiple testing. **Conclusions:** Ancestry population differences in allele frequencies among white and AAs may explain why known loci for overall prostate cancer, which were discovered in mostly European-ancestry populations, are not associated with more aggressive forms of prostate cancer that may be more common in AA men.

0814-S/P

EPIGENETIC CHANGES IN NEWBORNS EXPOSED TO ANTI-DEPRESSANT MEDICATION DURING PREGNANCY - A GENOME WIDE APPROACH Tine Brink Henriksen*, Anne-Cathrine Viuff (Aarhus University Hospital Skejby)

Background Depression is a very common disease among pregnant women. In Denmark some 5% of all pregnant women are treated with antidepressants. The short term adverse effects on the newborn children are well described. Long term adverse outcomes, however, are suspected, but not well characterized. Epigenetic changes could be one of the key mechanisms through which exposure to maternal depression, anxiety or antidepressant medication may have long-term health consequences for the child. The epigenetic pattern is important for the translation of DNA to proteins and the process is influenced by external factors, e.g. antidepressant medication. **Methods** In this study we use a whole genome approach: Methylated DNA immunoprecipitation sequencing (MeDIP-sequencing) to establish the methylation patterns in cord blood from new born children exposed to antidepressant medication during pregnancy compared to those exposed to non-medicated depression and a group of children exposed to neither. Data on the births and the blood samples are from the Aarhus Birth Cohort and Biobank. This technique has to our knowledge not yet been used to investigate this issue. 100 blood samples from children exposed to antidepressant medication, 30 samples from children exposed to non-medicated depression and 50 control samples are being sequenced. **Results** Epigenetic results pending. **Perspectives** High quality epidemiological data and evaluation of epigenetic pathways provide unique ways to potentially link maternal exposure to monoaminergic drugs to adverse outcomes such as neonatal adaptations symptoms and later adverse neurodevelopmental outcomes. In the future these methods could also be used in evaluating the effects of other types of medication given to women during pregnancy and lactation.

0820

PROSTATE CANCER MORTALITY IN BRAZIL IN 1996-2011: IMPACT OF DATA CORRECTION IN TREND ANALYSIS Elisabeth França*, Daisy M.X. Abreu, Mark D. C. Guimarães, Glaura C. Franco, Gustavo C. Lana, Lenice H. Ishitani, Elisabeth B. França (Universidade Federal de Minas Gerais-UFMG, Brazil)

Background: Quality of information in order to minimize bias due to underreporting of deaths and misclassification should be taken into consideration in mortality analysis in Brazil. The present study examines recent trends in adjusted mortality rates for premature deaths due to prostate cancer in Brazil. **Methods:** Data from the Brazilian Mortality Information System for adults aged 30-69 for prostate cancer (ICD-10 codes C61, D07.5, D40.0) were selected from 1996 to 2011. After reallocating the small fraction of deaths with missing information for sex and age, we redistributed garbage codes-ill-defined causes of death (GC-IDCD) from Chapter XVIII, using methods of recent Brazilian investigations of similar cases, and other GC according to procedures of the Global Burden of Disease Study 2010; and corrected for under counting using official estimates of all-cause mortality. Time series for each region and country were analyzed by linear regression with autoregressive errors and state space models. **Results:** A reduction in the age-adjusted mortality rates in 1996-2011 and also in the regional differences for 2011 were observed; the Northeast and Southeast regions presented the highest and lowest mortality rates due to prostate cancer for both 1996 and 2011, respectively. The larger contribution of corrections was observed by the redistribution of GC-IDCD, especially in 1996 (21.4%); other GC had limited impact on the total of adjusted deaths. The correction for underreporting increased the prostate cancer mortality by 22.2% in 1996, and 6.2% in 2011. **Conclusion:** A more specific picture regarding mortality due to prostate cancer in Brazil emerged after applying data correction procedures and this can be used for a better planning of public health actions.

0822-S/P

LESBIAN WOMEN IN THE CONTEXT OF HIV / AIDS : AN INTEGRATIVE REVIEW Adelia Dalva da Silva Oliveira*, Adelia Inez Sampaio Nery, Eduardo Cairo Oliveira Cordeiro, Rayron Alves Carvalho, Luisa Nakayama Madeira, Cristina Maria Miranda de Sousa, Caroline Kilcia Carvalho Sena Damasceno, Isabela Bastos Jácome de Souza (Centro Universitário Uninovafapi)

Objective: To describe the scientific knowledge produced about lesbians in the context of HIV / AIDS. **Methods:** Integrative review of literature held in the databases of the Latin American and Caribbean Health Sciences (LILACS), Medical Literature Analysis and Retrieval System Online (PubMed), Scientific Electronic Library Online (SciELO), Cumulative Index to Nursing and Allied Health Literature (CINHAL) and ScienceDirect. Controlled descriptors were used: lesbians, HIV and AIDS, to search LILACS and SciELO databases; and Lesbians, HIV and AIDS, included in the Medical Subject Headings (MESH), for the other databases. The search was conducted in July 2015. There were obtained 45 studies in CINHAL database, SciELO 2, 2121 in PubMed, LILACS and 8 in 1267 in Science Direct, totaling 3443 publications. After applying the inclusion and exclusion criteria, 12 articles were included in the study sample. The results were grouped by similarity into three thematic categories. **Results:** Data on transmission and infection of HIV / AIDS in lesbian women, lesbian women vulnerable to HIV / AIDS and health care aimed at prevention and transmission of HIV / AIDS in lesbian women. **Conclusions:** The lesbians are routinely neglected by the state, researchers, health professionals and society in general regarding the prevention of HIV / AIDS. **Descriptors:** Lesbians. HIV. AIDS

0821-S/P

A DYNAMICAL MODELING TECHNIQUE FOR ESTIMATING ADULT FEMALE MORTALITY FROM OVARIAN DISSECTION DATA FOR THE TSETSE FLY G. PALLIDIPES AUSTEN SAMPLED IN ZIMBABWE Sarah Ackley* (UCSF)

Human and animal trypanosomiasis, which is spread by tsetse flies, is a major public health concern in parts of sub-Saharan Africa. The basic reproduction number of vector borne diseases is a function of mortality rate of the vector. Robust methods for estimating tsetse mortality are thus of interest for understanding population and disease dynamics and for optimal control. Previously developed methods for estimating mortality in adult tsetse make several assumptions that are not always valid, the most important of which is the assumption that the tsetse population has a stable age distribution. We develop a dynamical modeling technique to estimate tsetse mortality in populations that may not have a stable age distribution. We fit our models to ovarian-dissection data collected at Rekomitjie Research Station in the Zambezi Valley in Zimbabwe between 1989 and 1992. We developed a set of dynamical models that incorporated combinations of five biologically known facts about tsetse flies at Rekomitjie Research Station. We compare models to determine the most probable model given the data by calculating the maximum log-likelihood and Akaike Information Criterion (AIC) for each model. The highest-AIC model produces mortality estimates consistent with those of mark-recapture studies performed in other settings. In addition, we do see that mortality increases with temperature, a result consistent with field findings.

0823

INCREASING EDUCATION LEVELS FUEL INCREASING LIFE EXPECTANCY AND OPTIMISM FOR THE FUTURE Marc Luy*, Marina Zannella, Yuka Sugawara, Christian Wegner-Siegmundt, Graziella Caselli (Vienna Institute of Demography)

Drastic reductions in mortality, which started in the middle of the 18th century, led to tremendous increases in life expectancy (LE) particularly in industrialized countries. Most of these changes were due to the shift in cause-specific-mortality patterns from communicable diseases at younger ages to non-communicable conditions more prevalent at advanced ages, as aptly described in the 'epidemiologic transition theory'. Recently, the potentials of human LE were further extended by the 'cardiovascular revolution' that started in the 1970s and launched a new period of decreasing mortality. Evidence relates these improvements to new medical advancements, such as developments in screening, prevention, and treatment of cardiovascular disease. Moreover, advances in healthy lifestyles reduced mortality and have been leading to further improvements of LE. Coinciding with these trends, the populations experienced significant increases in education level. These compositional shifts in the populations are also relevant for understanding the observed trends in LE because a great deal of research revealed the strong influences of socioeconomic resources on various health outcomes. We demonstrate that the increase in education level itself was in fact a strong contributor to the rising levels of LE, in addition to the direct effect of decreasing mortality. This finding is in line with the theoretical heterogeneity approach, which states that mortality levels are strongly influenced by the specific risk group composition of populations. Ultimately, it fuels the expectation of continuing increases of LE which caused intensive debates and split the scientific community into optimists and pessimists. Obviously, these results have important policy implications for all populations of the world, in particular for today's threshold countries and several populations of the global south where education levels are projected to increase even stronger than in the industrialized world.

0824

BIRTH OUTCOMES AMONG HIV INFECTED PREGNANT WOMEN IN RURAL MYSORE DISTRICT OF INDIA

Purnima Madhivanan*, Meredith Wilcox, Bhavana NirjanKumar, Kavitha Ravi, Poornima Jaykrishna, Anjali Arun, Karl Krupp (Robert Stempel College of Public Health & Social Work, Florida International University)

Background: Vertical transmission of HIV is a major public health problem in India. This study examined the feasibility and acceptability of delivering integrated HIV testing and antenatal care services using mobile medical vans in rural Mysore to pregnant women for prevention of vertical transmission of HIV. **Methods:** Between January 2009 and 2011, 1,675 rural pregnant women attended the mobile medical care facilities. After consent, all were offered group pre-test counseling, followed by an interviewer-administered questionnaire in Kannada. Integrated Antenatal check-up followed by HIV testing was provided in the same location at the same time. The women received their HIV results within 48 hours of testing. **Results:** Seroprevalence of HIV was 0.6% (10/1673; 95% CI, 0.2-1.0). The median age of HIV-positive women was 21 years (range 18-27). A majority of these women (70%) and their husbands (80%) had some education, were low-income (80%), uninsured (90%), and had at least one prior pregnancy (60%). High-risk sexual behaviors reported included ever having anal sex (20%), ever having sex while husband was under the influence of alcohol (40%), being unaware of husband's other sex partners (40%), and never (50%) or rarely (20%) using a condom. Fewer multiparous women with HIV had 4 or more antenatal checkups during current pregnancy (80% vs. 93%) and all were anemic (100% vs. 70%). History of abortion (33% vs. 17%), death of a child (50% vs. 30%), and low birth weight child (33% vs. 23%) was more prevalent among HIV positive, multiparous women. The prevalence of Syphilis (10% vs. 0.1%) and Hepatitis B (10% vs. 0.3%) was greater among HIV-positive women. **Conclusions:** While prevalence of HIV was low, community based integrated programs helped identify HIV infected women who would otherwise have missed the opportunity to prevent vertical transmission of HIV to their infants. HIV infected women continue to have more comorbidities and poor birth outcomes which need more attention and support.

0826-S/P

WORK BURDEN AND MENTAL DISTRESS AMONG MOTHERS IN RURAL INDIA

Robin Richardson*, Arijit Nandi, Sam Harper (McGill University)

The burden of work experienced by women, especially in settings where they are primarily responsible for domestic work and childcare, may affect their mental health. We estimated the relation between work burden and mental distress using baseline survey data from a cluster-randomized control trial being conducted in rural communities in southern Rajasthan, India. Between January and April 2015, 3177 women with young children living in 155 village hamlets completed comprehensive structured interviews administered in their homes by trained interviewers. Work burden was measured using a structured questionnaire that asked respondents how much time they spent on specific activities (e.g., gathering firewood) in the last 24 hours. Mental distress was measured with the Hindi version of the General Health Questionnaire-12, and scores were tabulated using a binary scoring method (score range: 0-12). We estimated the relation between work burden and mental distress using linear regression models with standard errors clustered at the hamlet level. Women reported a mean distress score of 2.1 (SD=2.5) and spent more than 9 hours a day on unpaid work activities. The largest source of unpaid work was due to caregiving (2.5 hours). In regression models adjusted for age, education, and household wealth, overall work burden was not associated with distress, although specific unpaid activities were associated with modest differences in distress scores. Each additional hour spent gathering firewood was associated with a 4.4% (95% CI: 0.1, 8.2) increase in distress score, caring for children was associated with a 2.0% increase (95% CI: 0.0, 3.9), and working in agricultural fields was associated with a 5.1% decrease (95% CI: -7.8, -2.5). Our results suggest that specific work activities in lower-income countries may be associated with women's mental health, which deserves closer evaluation using experimental study designs.

0825

DRAWING THE STARTING LINE: ASSESSING PRE-INTERVENTION MATERNAL AND CHILD HEALTH INDICATORS IN IFANADIANA, MADAGASCAR

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PIVOT, a new healthcare NGO in Ifanadiana District, Madagascar, conducted a baseline population survey of community health and economic well-being prior to initiation of a health system strengthening intervention. We report baseline prevalences of maternal and child health indicators for the district & comparisons by initial and future catchment areas. **Methods:** A representative household survey based on the Demographic Health Survey used two-stage cluster sampling in 2 strata: PIVOT's initial catchment area in 2014 & the control areas of the district, to which PIVOT will expand in 2016. 2x2 tables & t-tests were used to compare data by stratum, using appropriate sampling weights. Comparison data for all of Madagascar are from a separate 2013 study. **Results:** 1522 households were surveyed, representing 8310 individuals including 1635 women ages 15-49, 1685 men ages 15-59 & 1251 children under 5. Overall, Ifanadiana's maternal and child health indicators are low. 81% of women's last deliveries were at home; only 20% of deliveries were attended by a trained professional (not different by stratum). 9.3% of women had their first birth by age 15, and 29.5% by age 18. Maternal mortality rates in the district are 1044/100,000. Child health indicators in Ifanadiana are troubling: under 5 mortality rate is 161/1000 live births (158/1000 in catchment area vs. 163/1000 in control area). 34.6% of children received all recommended vaccines by 12 months (vs 51.5% in Madagascar overall); no difference between strata (39.9% catchment vs. 29.5% control). In the 2 weeks prior to the interview, 28% of children under 5 had acute respiratory infections of whom 34.7% were taken for care, and 14% of children had diarrhea of whom 56.6% were taken for care (no difference between strata). **Conclusions:** Maternal and child health indicators and health care-seeking are concerning & are areas that could benefit from health system strengthening in Ifanadiana. Data from this study can be used by PIVOT & the MOH to target needed interventions.

0827

MATERNAL POSTPARTUM ILLNESS AND SUBSEQUENT DEPRESSIVE SYMPTOMS IN RURAL BANGLADESH

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Background: The nature of maternal postpartum health conditions and their relation to later depressive symptoms has not been determined, especially in low resource settings such as rural Bangladesh. **Objective:** We used data from a population-based, community trial of married rural Bangladeshi women aged 13-44 between 2001 and 2007. We examined types of maternal morbidity occurring between childbirth until three months postpartum as risk factors for maternal depressive symptoms at six months postpartum in approximately 39,000 women. We calculated crude and adjusted risk ratios for depressive symptoms by maternal morbidities (including reproductive, urinary, neurologic, nutritional and other conditions). **Results:** In models adjusted for socio-demographic factors and morbidities, virtually all maternal postpartum illnesses during the first three months postpartum were related to depressive symptoms at 6 months postpartum. Specifically, uterine prolapse (RR=1.20, 95% CI: 1.04-1.39), urinary tract infection (RR=1.24, 95% CI: 1.11-1.38), stress related incontinence (SRI) (RR=1.49, 95% CI: 1.33-1.67), simultaneous SRI and continuously dripping urine (RR=1.60-2.96), headache (RR=1.20 (95% CI: 1.12-1.28), convulsions (RR=1.67, 95% CI: 1.36-2.06), night blindness (RR=1.33, 95% CI: 1.19-1.49), anemia (RR=1.38, 95% CI: 1.31-1.46), pneumonia (RR=1.24, 95% CI: 1.12-1.37), gastroenteritis (RR=1.24, 95% CI: 1.17-1.31) and hepatobiliary disease (RR=2.10, 96% CI: 1.69-2.60) during the first three months after delivery were related to depressive symptoms at 6 months postpartum. **Conclusions:** Maternal morbidities during the first three postpartum months were risk factors for depressive symptoms, with the strongest associations were for convulsions and hepatobiliary disease. Symptoms of depression among these women may be of concern among women suffering from other illnesses.

0830- S/P

DISPARITY IN COLORECTAL SCREENING BETWEEN ABORIGINAL AND NON-ABORIGINAL ADULTS IN CANADA: MAGNITUDE AND MEDITATIONAL ROLE OF SOCIOECONOMIC, HEALTH CARE ACCESS, AND PSYCHOLOGICAL FACTORS Alexandra Blair*, Marie-Pierre Sylvestre, Maida Sewitch, Lise Gauvin, Marie-Hélène Mayrand, Geetanjali D. Datta (Université de Montréal, CRCHUM)

Colorectal cancer (CRC) screening is lower among Canadian Aboriginal in comparison to non-Aboriginal persons. Little is known about mediating factors that may explain this disparity. We used the Vanderweele and Vansteelandt (2010) method of mediation analysis, allowing exposure-mediator interaction, to the association between Aboriginal identity and CRC screening. The outcome, screening non-adherence (SNA) was defined as not receiving either fecal blood testing in the past 2 years or endoscopy in the past 5 years. Mediators tested were income (CAD), education (less than high school graduation vs. more), access to a regular medical doctor (MD) (no vs. yes), and mental health status (poor/fair vs. good/excellent). Logistic regression models adjusted for sex, age, marital status and all mediators. After pooling 8 waves of the Canadian Community Health Survey data (2003-2012), there were 169,043 respondents aged 50-75 living off-reserve (n=7742 Aboriginal respondents). Aboriginal respondents (81% SNA) had 1.24 times greater odds of SNA (95%CI: 1.13, 1.36) in comparison to non-Aboriginal respondents (78% SNA). Income, access to an MD, and education but not mental health mediated the disparity. The largest natural indirect effects (OR[NIE]) for the Aboriginal/Non-Aboriginal disparity in SNA were due to low income (OR[NIE]=1.13, 95%CI: 1.06, 1.19) and lack of access to an MD (OR[NIE]=1.07, 95%CI: 1.05, 1.09), indicating that the odds of SNA among Aboriginals are elevated by 13% because of low income and 7% because of no access to an MD. Low education increased the disparity by 1% (OR[NIE]=1.01, 95%CI 1.00, 1.02). Thus, eliminating inequalities in income and access to MDs between Aboriginal and non-Aboriginal persons could reduce disparities in CRC screening. Nevertheless, SNA is high in both groups and requires public health attention.

0832-S/P

EARLY MORTALITY FROM EXTERNAL CAUSES IN AUSTRALIAN ABORIGINAL MOTHERS Jenny Fairthorne* (Telethon Kids Institute)

Background Apart from the loss of young women, a less obvious consequence of the lower life expectancy of Aboriginal women, compared to other Australian women, is that more Aboriginal children lose their primary caregiver. This affects the child's health and that of future generations. Yet we found no research which investigated mortality in Aboriginal mothers. We aimed to examine the elevated mortality risk from external causes in these mothers. **Methods** We linked data from four WA administrative datasets to identify all women who had a child from 1983-2010 in WA and ascertained their Aboriginality, socio-demographic details, and dates and causes of death of all mothers who had died prior to 2011. For Aboriginal mothers and compared to other mothers, we calculated the risk of death by any external cause and each of the sub-categories of accident, suicide and homicide. **Results** After adjustment, Aboriginal mothers were more likely to die from external cause [HR=4.61(95% CI: 3.7, 5.7)], accident [HR=4.74(95% CI: 3.2, 7.0)], suicide [HR=2.48(95% CI: 1.5, 4.0)] or homicide [HR=11.72(95% CI: 6.5, 21.0)]. Furthermore, for Aboriginal mothers experiencing death, the median age of the youngest child was 4.8 years. **Conclusion** During the study period, Aboriginal mothers were more likely to die than other mothers and they usually left young children. Our increased adjusted hazard ratios only partly explained by socio-demographic circumstances. Further research is required to fully examine the risk factors associated with these potentially preventable deaths and to enable the development of informed health promotion to increase the longevity of Aboriginal mothers

0831-S/P

THE ASSOCIATION BETWEEN NATIVITY AND HYPERTENSION IN YOUNG ADULthood Danielle Crookes*, Shakira Sugla (Mailman School of Public Health, Columbia University)

Background: The association between nativity and hypertension has been observed in adult and older adult populations, but has not been examined among young adults using an object measure of blood pressure. **Methods:** The association between nativity and hypertension in young adulthood was examined in The National Longitudinal Study of Adolescent to Adult Health (Add Health) (n = 13,722). Adolescents (mean age = 16) reported their nativity (born in U.S. or other country) during wave 1 (1994-1995). At wave 4 (2007-2008, mean age = 29), blood pressure was measured during an in-home visit and participants were asked to present all medications taken within the previous six months; interviewers identified antihypertensive medications from the presented medications. Hypertension was defined as having a systolic blood pressure of at least 140mmHg or diastolic blood pressure of at least 90mmHg measured in adulthood (according to CDC guidelines), or use of antihypertensive medications. **Results:** The prevalence of hypertension in the analytic sample was 21% (15% among foreign-born and 21% among US-born). Foreign-born status was associated with decreased odds of hypertension (OR: 0.63, 95%CI: 0.47, 0.85) in models adjusted for sex, age, educational level and race. Differences were observed by country of origin. Caribbean-born Blacks (OR: 0.09, 95%CI: 0.03, 0.23) had lower odds of hypertension compared to U.S.-born Whites in models adjusted for demographic characteristics. No significant differences were observed for Blacks born in other geographic regions (Africa, Europe, other) compared to U.S.-born Whites. **Conclusions:** In this nationally representative sample of adolescents and young adults, foreign-born status was associated with lower odds of hypertension. This finding demonstrates that lower hypertension prevalence is observed not only in foreign born adults, but also among young adults.

0833

THE ASSOCIATION BETWEEN SUBJECTIVE SOCIAL CLASS AND DENTAL HEALTH BEHAVIOR IN JAPAN Kanade Ito*, Chihiro Wakabayashi, Yuki Noguchi, Yoshinori Kitabatake, Hiromichi Sakai Hiroaki Nobuhara, Hiroshi Yanagawa (Saitama Prefectural University)

Backgrounds Subjective Social Class (SSC) has been reported to have effects on general health and health behaviors. This study investigated the association between SSC and dental health behaviors in Japan. **Methods** We used the 2014 data from the International Comparative Study of Health and Life Style (HEALS) in Japan. Information obtained from the adults aged 20-69 years was used for this study. Dental health behaviors (frequency of toothbrushing [1 and less time / 2 and more times per day] and frequency of dental checkup on dental clinics [more than a year / within a year]) were used as outcomes. SSC (Low, Middle, and High) was used as an explanatory variable. Multivariate logistic regression analyses were applied to determine the independent association between SSC and outcomes (frequency of toothbrushing and frequency of dental checkup on dental clinics) after controlling for the effects from sex, age, marital status, and occupation of the participants. **Results** Of 1,640 valid Japanese participants (42.8 % for men and 57.2 % for women), the prevalence of having good dental health behaviors (2 or more times toothbrushing per day and dental checkup within a year) increased linearly with the higher level of SSC (p<0.001). After considering sex, age, marital status, and occupation, having good dental health behaviors were significantly and independently associated with higher levels of SSC; Odds ratios of 1 and less time toothbrushing per day and dental checkup within a year for the low group of SSC (ref: the high group of SSC) were = 1.92 (95% confidential interval [CI] [1.37-2.69] and 0.40 (95% CI [0.28-0.58]), respectively. **Conclusions** This study showed that SSC was associated with dental health behaviors even accounting for covariates. Good dental health behaviors tended to be related to higher level of SSC.

0834- S/P

INEQUALITIES IN THE COVERAGE OF SKILLED BIRTH ATTENDANCE IN LOW AND MIDDLE-INCOME COUNTRIES

Gary Joseph*, Inácio Da Silva, Luís P. Vidaletti, Aluisio Barros, Cesar Victoria (Federal University of Pelotas, Post Graduate Programme in Epidemiology)

Background: Having a health worker with midwifery skills present at delivery is one of the key interventions to reduce maternal and newborn mortality. We sought to estimate the frequencies of (a) skilled birth attendant coverage (SBA), (b) institutional delivery, and (c) the combination of place of delivery and type of attendant in low and middle-income countries (LMICs). **Methods:** National surveys (Demographic Health Surveys and Multiple Indicator Cluster Surveys) performed in 80 middle and low-income countries since 2005 were analyzed to estimate the coverages of (a) skilled birth attendant, (b) institutional delivery, and (c) the combination of place of delivery and type of attendant. Results were stratified by wealth quintile based on asset indices, and by urban/rural residence. Unweighted means of the combination of place of delivery and type of attendant were calculated for the seven UNICEF world region. **Results:** The proportion of institutional SBA deliveries was above 90% in 25 of the 80 countries, and below 40% in 11 countries. A strong positive correlation between SBA and institutional delivery coverage (ρ : 0.97, $p < 0.001$) was observed. Eight countries had more than 10% of home SBA deliveries, and two countries had over 10% of institutional non-SA deliveries. Except for South Asia, all regions had over 80% of urban deliveries in the institutional SBA category, but in rural areas, only two regions (CEE & CIS, Middle East & North Africa) presented average coverage above 80%. In all regions, institutional SBA deliveries were over 80% in the richest quintile. Home SBA deliveries were more common in rural than in urban areas, and in the poorest quintiles in all regions. Facility non-SBA deliveries also tended to be more common in rural areas and among the poorest. **Conclusion:** Four different categories of delivery assistance were identified worldwide. Pro-urban and pro-rich inequalities were observed for coverage of institutional SBA deliveries.

0836

DISCREPANCIES IN PATIENT-PROVIDER COMMUNICATION AND HEALTH LITERACY COMPETENCY

Claudia Leiras* (Grand Valley State University)

A pilot study was undertaken to identify gaps in communication between patients and providers in the underserved community of Muskegon, MI where residents have identified limited health literacy as a barrier to overall health. A comprehensive assessment of a primary care office that functions as a patient-centered medical home was used to identify gaps in health literacy competency. Individuals with hypertension and diabetes mellitus (chronic care respondents, $n=28$) were selected due to the frequency of office visits (every 3 months) and caregivers of children less than 2 years (well-child respondents, $n=11$) were selected due to the frequency of early childhood well-child visits – both groups represent a patient population that has consistent interaction with all personnel functioning under the patient-centered medical home model. A series of quantitative assessment tools were utilized, including the CAPHIS Item Set for Health Literacy. The qualitative component of the assessment consisted of observations of office visits by trained personnel to evaluate the communication/health literacy competency on the part of the provider. Chronic care visit respondents were less likely to have their doctors always explain possible side effects of their medicines (46% vs. 64%); always explain possible side effects of their medicines in a way that was easy to understand (54% vs. 82%); always explain what to do if their illness or health condition got worse or came back (72% vs. 90%); and that they were always explained the purpose of a form before signing it (64% vs. 90%) when compared with the well-child visit respondents. Discrepancies were observed between the chronic care respondents and the well-child respondents indicating a lack of consistency in communication. This may have a significant impact of a patient's ability to perform preventive health behaviors and disease self-management.

0835

PERCEIVED NEIGHBORHOOD FACTORS AND MEETING PHYSICAL ACTIVITY GUIDELINES AMONG KOREAN AMERICANS IN NEW YORK CITY

Simona Kwon*, Stella Yi, Catlin Rideout, Chau Trihn-Shevrin (NYU School of Medicine, Section for Health Equity)

While Asian Americans represent the fastest growing US race/ethnic group; they remain poorly understood and understudied. NYC is home to the largest population of Korean Americans. Over two-thirds of the NYC Korean population resides in Queens and over half are concentrated in three neighborhoods in eastern Queens. Neighborhood social environments have been recognized as important contexts in which health is shaped. Neighborhood social cohesion is associated with physical activity (PA), but studies have presented results in aggregate across racial/ethnic groups. The study objective was to assess the association between perceived neighborhood factors (neighborhood social cohesion, safe place to exercise within walking distance, walking time to fresh produce) with meeting PA guidelines in a cross-sectional, community-based sample of NYC Korean immigrants. Data from the 2014-2015 NYU Center for the Study of Asian American Health community health needs assessment was conducted ($n=156$). Multivariable regression models for meeting PA guidelines outcomes were run, adjusting for age, sex, education, income, and years in the U.S. Median PA minutes was 145 min/week; the majority was due to moderate activity (90 min/week). After adjustment, having a safe place to exercise within a 10-15 minute walk was associated with a higher odds of meeting PA guidelines (OR: 3.43, 95% CI: 1.02, 11.6). Neither neighborhood cohesion nor walking time to fresh produce was associated with meeting PA guidelines. Results highlight the need for disaggregated data and for detailed information on neighborhood factors to inform health policies and interventions designed to improve physical activity behaviors for underserved, vulnerable populations.

0837- S/P

PREVENTABLE HOSPITALIZATIONS DUE TO TUBERCULOSIS AND QUALITY OF PRIMARY HEALTH CARE IN THE BRAZILIAN ENDEMIC MUNICIPALITY: AN ECOLOGIC STUDY

Ricardo Alexandre Arcêncio*, Marcela Paschoal Popolin, Michelle Mosna Touse, Mellina Yamamura, Ludmilla Barbosa Bandeira Rodrigues, Thaís Zamboni Berra, Ione Carvalho Pinto, Severina Alice da Costa Uchôa, Aylana de Souza Belchior, Ricardo Alexandre Arcêncio (Nursing School of Ribeirão Preto - University of São Paulo)

Evidence demonstrates that communities with poorer access to coordinated Primary Health Care (PHC) tend to have higher rates of potentially preventable hospitalizations due to tuberculosis (PPV-TB), thus, the study aimed to analyze the spatial distribution of potentially preventable hospitalizations from tuberculosis according to the catchment area of PHC and also evaluate that care coordination quality. **Methods:** An ecological study conducted in a priority municipality for TB control, located in southeastern Brazil, with a TB incidence of 37.1 per 100,000 inhabitants, in 2013. The TB hospitalizations, between 2006 and 2012, were identified through the Hospital Information System (HIS). There were Interviews conducted with the PHC health professionals through the implementation of a closed tool. The study's analysis unit was the PHC coverage areas. It was possible to estimate the gross rate of avoidable hospitalization for each coverage area, being smoothed by the local empirical Bayesian method. Every PHC was evaluated about care coordination under the following conditions: poor, regular, good and excellent. The authors elaborated thematic maps through of ArcGIS 10.2. **Results:** 169 cases of PPV-TB were identified (26.2 cases per 100,000 inhabitants). Most admissions were male ($n=134$; 79.3%). The maps of crude rates and local Bayesian of PPV-TB are showed in the study, the areas more critical for the occurrence of PPV-TB presented a range from 42.20 to 57.96 cases per 100,000 inhabitants. In relation to the PHC quality, 41 units (89.1%) were in good condition for care coordination. **Conclusion:** The research showed PPV-TB issues in a priority municipality for disease control, identifying areas with very high rates, which highlights PHC access fragility. Although PHC good capacity for care coordination, there are barriers preventing patients arrival to the health services.

“-S/P” indicates work done while a student/postdoc

0838- S/P

LEVELS AND TRENDS IN INEQUALITIES IN FULL IMMUNIZATION COVERAGE: FINDINGS FROM LOW- AND MIDDLE-INCOME COUNTRIES

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Background: Access to immunization is high globally (~80%) but disparities exist across and within countries and the proportions of children who are fully protected with basic vaccines (BCG, polio, DPT and measles) are unknown. **Methods:** DHS and MICS surveys were analyzed to assess socioeconomic and urban/rural inequalities in full immunization coverage (FIC) in 83 LMICs. Eight countries were selected to examine trends in FIC and in inequalities. **Results:** Regional mean FIC were very homogeneous, ranging from 63 to 68%. Yet, we found remarkable variations within every region. For example, in East and Southern Africa, FIC varied from 90% in Rwanda to 12% in Somalia. In terms of socioeconomic inequalities, significant pro-rich FIC patterns were present in 45 out of 83 countries, and FIC was higher in urban than in rural areas in 35 of them. The most unequal country was Nigeria, where coverage was 57 percentage points higher among the richest than the poorest. Other countries with marked inequality were Pakistan, India, Turkey, Madagascar, Yemen, Cameroon and Liberia. Results from time trends revealed that Mozambique and Madagascar made the fastest progress in improving national level FIC by achieving particularly rapid increases among the poorest. Central African Republic had a major decline in national levels of FIC over time with a marked reduction in coverage among the richest and increase in relative inequality. National FIC levels were very low and stable over time in Chad and increased in India, but inequalities remaining unchanged. Nigeria had substantial increases in FIC, but overall national coverage remained low. In Pakistan, all quintiles, except for the poorest, showed improvements over time, with a consequent increase in wealth inequality. Vietnam showed an unusual pattern, in which national FIC increased and then declined in all groups except for the poorest which showed no change. **Conclusion:** Large inequalities in FIC remain in most countries and at different points in time.

0840-S/P

HOW COMMUNITY-BASED PARTICIPATORY RESEARCH ACHIEVES EPIDEMIOLOGY GOALS AND BENEFITS THE COMMUNITY: LESSONS FROM THE AMERICAS AND BEYOND

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Community-based participatory research (CBPR) coproduces knowledge by emphasizing bidirectional exchanges between participants, communities, and researchers. We highlight three studies from historically marginalized communities (Richmond, CA, USA; Rio de Janeiro, Brazil; Marseille, France) to exemplify how CBPR improves research, offers tangible benefits to the population under study, and values residents as more than mere gatekeepers and data collectors. We also discuss how CBPR can lead to and stimulate dialogue around the complex challenges of race, class and application of the scientific method in these communities. The presentation will present nuanced evidence from each field site and explore these claims in more detail; in the abstract, we highlight key examples that demonstrate how CBPR led to eventual improvements in study quality. In both Rio and Richmond, CBPR partnerships helped overcome researcher and participant concerns about violence during collections. Stakeholders in Richmond identified a new data collection technique to complement a door-to-door survey by surveying in a safe, neutral location: a community center. In Marseille, residents' feedback prompted shifts in survey methodology to incorporate an online survey, in addition to previously designed in-person collections. Contrastingly, in Rio, engagement significantly slowed the pace of research by increasing the number of stakeholders. However, CBPR in this context also led to a patient-generated video used by stakeholders to improve diabetes care in the community, which helped facilitate greater uptake of the research upon completion. This also helped identify stakeholders interested in participating in data analysis, interpretation and dissemination of results within the community. In each of these communities, CBPR led to higher quality research that could help inform context-appropriate policies and programs to improve health.

0839-S/P

THE INTERACTION OF RACE, GENDER, AND COMMON MENTAL DISORDERS: AN ANALYSIS OF INTERSECTIONALITY Jenny Smolen*, Edna Maria de Araújo, Nelson Oliveira (Universidade Estadual de Feira de Santana)

Despite its relevance to public health, few studies have applied the perspective of intersectionality to quantitative health research. Intersectionality as applied to public health states that the intersection of our social categories interacts with structural societal factors to produce health inequities. This study aims to examine the interaction between race, gender, and Common Mental Disorders (CMD) in Feira de Santana, Bahia, Brazil using the perspective of intersectionality. The presence of CMD was assessed using the Self-Report Questionnaire (SRQ-20). The four race/gender groups represented the intersection of race and gender. We described the sample, using a Chi-square test to compare the distribution of sociodemographic covariates and other CMD-related factors between these four groups, and a Chi-square test was also used to compare the prevalence of CMD according to the covariates. A full analysis of statistical interaction was carried out, on both the additive and multiplicative scales. A Poisson regression was used to determine prevalence ratios, with white men as the reference group. All p-values less than or equal to 0.05 were considered significant. White men had the lowest prevalence of CMD (11.1%), and Black women had the highest prevalence (37.2%). After adjusting for covariates, Black women had a prevalence of CMD 2.43 times higher than White men, and this was the only group that was statistically significantly different. Interaction was found in the positive direction on both additive and multiplicative scales. This study found that Black women bear a high burden of CMD, and that the prevalence of CMD in Black women is significantly higher than would be expected from an analysis that treats race and gender as separate factors. This demonstrates the importance of the perspective of intersectionality, and how it adds dimension to our understanding of how social identities like race and gender are associated with mental health.

0850

THE ROLE OF THE PRACTICE IN PROLONGED NICOTINE REPLACEMENT THERAPY TREATMENT DURATION Dolly Baliunas*, Laurie Zawertailo, Peter Selby (Centre for Addiction and Mental Health)

Background: A recent Cochrane review concluded that nicotine replacement therapy (NRT) increases the probability of quitting smoking by 50-70%, and 8 weeks of patch therapy is as effective as longer courses of treatment. In a pragmatic and flexible smoking cessation treatment program up to 26 weeks of NRT is provided. Given this flexibility, and the Cochrane review, the aim of this study was to describe the variability in the duration of NRT treatment courses. **Methods:** The sample included practices that enrolled at least 20 patients between Jan 1, 2014 and Sep 30, 2014. Patients that received only short acting NRT were excluded. Funnel plots were used to determine whether variation in dispensing of long courses of NRT (>8 weeks) was greater than expected due to chance. Exact binomial control limits were set, standardized to the mean proportion of long courses of NRT. A mixed logistic model, with patient level covariates and a random effect for practice, was performed to evaluate the hypothesis that practice is a predictor of long treatment duration. **Results:** During the study period 155 practices enrolled 10,365 patients. On the patient level, treatment duration had a mean of 9.8 weeks, a mode of 4 weeks and 4,373 (42.2%) exceeded 8 weeks. On the practice level, all practices provided long treatment courses, from a low of 1%, to a high of 67% of treatment courses. The funnel plot displays the proportion of treatment courses that exceeded 8 weeks for each practice as a function of the total number of treatment courses by that practice. 8.4% of practices fell outside the 3 SD control limits (0.2% would be expected). Practice was significantly associated with the likelihood of a patient receiving a long treatment duration ($p<0.001$). **Conclusions:** The proportion of practices outside control limits was greater than expected. Treatment duration appears to be influenced by practice preference.

0852-S/P

TRENDS IN INFLUENZA VACCINE COVERAGE AND VACCINE HESITANCY IN CANADA, 2007 TO 2014 Sarah Buchan*, Jeff Kwong (Dalla Lana School of Public Health, University of Toronto)

Annual epidemics of influenza cause a substantial health burden. Although annual immunization is the best way to prevent infection, coverage levels remain suboptimal and fall short of national targets. Estimates of influenza vaccine coverage by various population characteristics are useful to identify groups for whom targeted efforts can be directed to increase immunization. Additionally, understanding reasons for vaccine hesitancy will facilitate increasing vaccine coverage. We pooled data from the 2007 to 2014 cycles of the Canadian Community Health Survey, a nationally representative cross-sectional survey that covers a range of questions related to health status, healthcare utilization, and health determinants. We examined self-reported seasonal influenza immunization in the last twelve months over time and by various population characteristics. Among those not immunized, we examined reasons for not receiving influenza immunization. We used sampling weights to account for unequal probabilities of sample selection and we calculated variance estimates using bootstrap survey weights. Over the eight years combined, 29% of respondents reported receiving their seasonal vaccine within the prior twelve months, with substantial provincial variation (range: 22%-42%). While levels were generally consistent over the study period, coverage in those aged 65 years, a group at high risk for complications from influenza infection, dropped from 69% to 60%. The most frequently cited reason for those who did not receive an influenza vaccine was that it is unnecessary (72%), followed by not getting around to it (15%), having a previous bad reaction (6%), and fear (4%). Those who had never received influenza immunization, those without chronic conditions, and those from Quebec or Newfoundland & Labrador were particularly likely to believe that influenza vaccines are unnecessary. Influenza vaccine coverage continue to fall short of the targets set in Canada, with notable decreases over time observed in older adults.

“-S/P” indicates work done while a student/postdoc

0851-S/P

PHYSICAL ACTIVITY COUNSELING BY PRIMARY HEALTHCARE PROFESSIONALS TO HYPERTENSIVE AND DIABETIC SUBJECTS IN BRAZIL - THE SERVIDIAH STUDY Jessyka Vasconcelos Barbosa*, Wayner Souza, Renan Ferreira, Eduarda Cesse, Eduardo Freese Carvalho, Annick Fontbonne (Department of Community Health, Aggeu Magalhaes Research Center, Fiocruz Pernambuco, Brazil)

Background: Physical activity (PA) counseling by health professionals has been identified as an important strategy to promote PA. Physical activity is an important part of treatment for persons with hypertension or diabetes. The purpose of the present study was to identify the frequency of PA counseling to hypertensive and diabetic subjects in primary healthcare in the State of Pernambuco, Brazil; the prevalence of leisure-time PA; and their associated factors. **Methods:** Patients with hypertension ($n=785$) or diabetes ($n=822$) were drawn from the SERVIDIAH study, a cross-sectional study conducted in 2010. Relationships between PA counseling and leisure-time PA and explanatory variables were sought with multiple logistic regression. Hypertensive and diabetic subjects were analyzed separately. **Results:** 59.4% of the diabetic and 53.0% of the hypertensive subjects had received PA counseling; 29.4% of the diabetic, and 31.0% of the hypertensive subjects had leisure-time PA. After adjustment, factors significantly associated with PA counseling among diabetic subjects were: female gender (OR: 1.53), formal schooling (1.78), associated hypertension (2.13), obesity (1.99); for hypertensive subjects: high waist circumference (1.48), being on a weight-loss diet (1.84), age between 60 and 75 (0.62) and over 75 (0.47). For both diabetic and hypertensive subjects, leisure-time PA was associated with living in a medium-sized municipality (OR, respectively: 0.61 and 0.59), being female (0.61 and 0.57), aged between 60 and 75 (1.67 and 2.06), and being on a weight-loss diet (1.63 and 1.54); and for diabetic subjects, alcohol consumption (1.83). **Conclusions:** Half of the patients had received PA counseling, the proportion varying with personal factors such as gender, age, anthropometrics, and diet. In order to improve care, healthcare professionals should provide counseling for all patients since a majority had no leisure-time PA.

0853

EVALUATION OF AN INTERVENTION DIRECTED AT PRIMARY HEALTHCARE SERVICES IN BRAZIL TO IMPROVE QUALITY OF CARE FOR DIABETIC PATIENTS - THE INTERDIA STUDY Eduarda AP Cesse*, Michelly GS Marinho, Jessyka MV Barbosa, Eduardo Freese de Carvalho Annick Fontbonne (Department of Community Health, Aggeu Magalhaes Research Center, Fiocruz Recife/PE, Brazil)

Background: The increasing prevalence of diabetes prompted the Brazilian Ministry of Health to implement the pilot QualiDia Project. The aim was to improve diabetes management in primary healthcare following the Chronic Care Model (CCM). We evaluated the results of this intervention using a non-randomized comparative cross-sectional survey (the INTERDIA Study). **Methods:** The QualiDia intervention took place in 2011 in two cities of the metropolitan region of Recife, capital of the state of Pernambuco. The INTERDIA Study was conducted in 2013 in these two cities and two matched control cities. Health workers' practices were collected by interviews in all primary care facilities. For analysis, answers were grouped according to three main components of the CCM, and compared between the intervention and control groups. **Results:** For the CCM component "Self-management support", the percentage of professionals who evaluated adherence to treatment ($p=0.023$), who developed educational actions to control risk situations ($p=0.016$) or prevent complications ($p=0.008$), or who declared "explaining" the disease more frequently ($p=0.028$) were higher in the control group. For "Support for clinical decisions", the intervention group had a higher proportion of nurses and Community Health Workers trained for diabetes management, with a significant difference only for the latter ($p=0.002$). For "Care system design", the professionals in the intervention group reported discussing cases of diabetic patients in team meetings more frequently ($p=0.003$); however, multidisciplinary involvement in diabetes management ($p=0.002$), requests for EKG ($p<0.001$) and referral to specialists (except endocrinologists) were significantly higher in the control group. **Conclusions:** These negative results raise questions about what makes actions that aim to improve management of diabetes and other chronic conditions in primary care effective, and reinforces the need for careful evaluation of their impact."

0854-S/P

A COMPARATIVE STUDY ON HOSPITAL CONSUMER ASSESSMENT OF HEALTHCARE PROVIDERS AND SYSTEMS OF TWO GENERAL HOSPITALS IN INDORE, INDIA

Deepti Joshi*, (University of North Texas Health Science Center)

Background: Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) is a survey instrument and data collection methodology for measuring patients' perceptions of their hospital experience. Two general hospitals in Indore, India show significant difference in the level of patients' perception and hence the quality of hospital services. This study aims to examine the extent of this difference. **Methods:** A questionnaire was used to compare the two hospitals over 15 parameters on Likert scale. Random sampling was used for primary data collection through direct contact with patients just before discharge. The parameters were classified as Single-Item measures, Composite Measures and Global-Rating Measure. Measures of Central Tendency, Variance, and t-test were used to compare the results. **Results:** 100 patients from each hospital were included. The values of t-test for all the parameters showed significant difference in the mean value of perceived quality of the two hospital services (all p values <0.05). Hospital A exceeded the Hospital B in terms of overall perceived quality by 54.02% and in terms of Single-Item measures, Composite Measures and Global-Rating Measure by 70.81%, 58.06%, and 27.27% respectively. **Conclusion:** In this study, considerable difference was found in the patients' perception of the service quality of the two general hospitals. Focus on patient-centered services, hygiene, communication, and promptness in providing services is recommended. Future research is needed to identify the factors underlying this difference.

0856

RISK FACTORS FOR INVOLUNTARY ADMISSIONS AND CHARACTERISTICS OF INVOLUNTARILY ADMITTED PATIENTS IN ONTARIO, CANADA

Michael Lebenbaum*, Maria Chiu, Paul Kurdyak (Institute for Clinical Evaluative Sciences)

Introduction: Most countries with mental health systems permit involuntary hospitalization when patients are at risk of harm due to a mental illness. Involuntary admissions to psychiatric hospitals are common; however, research examining risk factors for involuntary admission is limited. **Methods:** We conducted a population-level cross-sectional analysis of all patients admitted to a mental health bed from 2009-2013 from the Ontario Mental Health Reporting System. We developed a conceptual framework and included variables related to 4 domains including socio-demographic characteristics, illness severity factors, hospital-level characteristics, and variables describing the pathway to the psychiatric hospitalization. Our analyses included logistic regression with generalized estimating equations. **Results:** We found several variables were strong predictors of involuntary admissions (IA) within each domain except for hospital level characteristics. Most pathway variables were significant predictors of IA. Having contact with police in the week prior to hospitalization increased the odds of IA (OR = 4.13) as well as being brought to the emergency department (ED) by ambulance (OR = 1.47), while past week physician contact decreased the odds of IA including having mental health or additions outpatient contacts to family physicians (OR = 0.87) or psychiatrists (OR = 0.85) (all p < 0.002). All severity variables were significant predictors including having a high acuity ED visit (OR = 2.37), a diagnosis of psychosis (OR = 1.82), and rating scales of risk of self-harm, risk of harm to others, and self-care (all p < 0.0001). The association between area-level income and IA was null and homeless individuals were at lower odds. **Conclusions:** A large number of factors, including socio-demographic characteristics, illness severity factors and variables describing the pathway to care were significant predictors of involuntary admissions.

0855

USE OF DENTAL CARE SERVICES AMONG DENTATE ADULTS WITH ASTHMA IN MISSISSIPPI

Sai Kurmana*, (Mississippi State Department of Health)

Background: People with asthma are at a higher risk for oral diseases and a regular preventive dental care is essential. This study investigated use of dental utilization among dentate adults with asthma in Mississippi and identified factors affecting dental care use among this population. **Methods:** Data from 4,187 adults in Mississippi who participated in the 2014 Behavioral and Risk Factor Surveillance System were used to estimate the percentage of dentate adults with asthma who had at least one dental visit within the past year. **Results:** The proportion of respondents with asthma who had at least one dental visit within the past year compared with the general population was significantly lower (53.6 percent versus 57.8 percent, P < 0.001 for dental visit for any reason; 50.3 percent versus 55.86 percent, P < 0.001 for dental cleaning). The adjusted odds of a dental visit for any reason within the past year for those with asthma were 0.84 [95% confidence interval (CI), 0.79-0.89], and for dental cleaning 0.81 (95% CI, 0.77- 0.86) times that of those without asthma, respectively. Multivariable modeling showed dentate adults with asthma who are male, high school or less educated, unemployed, lower income, current smokers, and have lost more than six teeth were less likely to have a dental visit within the past year. **Conclusion:** Compared with non-asthmatic individuals, dentate adults with asthma had a lower frequency of dental visits in the past year. Given a higher risk of oral disease among this population, health care providers should focus more effort on educating certain subgroups of patients with asthma on the importance of regular dental care.

0857-S/P

DOES A POLICY OF EXEMPTION FROM MEDICAL CARE CO-PAYMENT INCREASE MEDICAL VISITS AND MEDICAL EXPENDITURE?: A SOCIAL EXPERIMENT STUDY

Yusuke Matsuyama*, Toru Tsuboya, Jun Aida, Ken Osaka (Department of International and Community Oral Health, Tohoku University Graduate School of Dentistry)

Co-payment of medical care is known as the one of barriers of access to care. Studies elucidated the effect in a real society are limited because large-scale intervention of free care is difficult to be conducted. In March 2011 in Japan, the government set a policy which ensured free care for survivors of the catastrophic earthquake. This policy might improve access to care of the survivors. Under this social experimental situation, we elucidated the effect of the policy on improvement of access to care. Using a database created by Japanese government, we analyzed the number of medical visits and total amount of medical expenditure per month between April 2008 and March 2014 in three damaged prefectures (Iwate, Miyagi, and Fukushima: "intervention" group) and in the other 44 prefectures ("control" group). To consider changes of trend of medical visits related to policy implementation, joinpoint regression analyses were applied. Analyses were stratified by age because co-payment before the policy were different (10% for people aged ≥75 years-old and 20-30% for aged <75 years-old). In the "intervention" group aged <75 years-old, the maximum number of medical visits after the policy was 1.15 million per month (6% higher comparing to average before the policy). The trends of the number of medical visits were significantly changed after the policy: it had decreased 1.32 thousand cases monthly before the policy whilst it had increased 4.73 thousand cases monthly after the policy (P-value for slope change <0.01). In addition, it had decreased -3.83 thousand cases monthly from 15 months after the policy (P -value for slope change <0.01). The trends in other groups were not significantly changed. Medical expenditures showed similar trends to that of medical visits in all groups. This study showed that a policy of free care of charge significantly increased medical visits and expenditure among people living in the earthquake hit area.

0858

“UPPING THE ANTENATAL NATAL CARE FOR SCALING UP THE REPRODUCTIVE MATERNAL NEONATAL CHILD AND ADOLESCENT HEALTH (RMNCH PLUS A) , PERSPECTIVE FROM ONE OF THE HIGH PRIORITY DISTRICTS IN INDIA” RishabhRana*, Gunjan Dr Taneja, Rajeev Dr Gera (IEA , IAPSM , IMA)

Background-Government of India (GoI) has identified 184 high priority districts (HPDs) with relatively weak performance indicators within each state, based on a composite index. These are the districts located in geographical regions where reproductive, maternal and child morbidity and mortality are high and there is a need for focused planning to maintain equity and improving access for vulnerable and poor sections of the society. Scaling Up Interventions in Reproductive, Maternal, Neonatal, Child, and Adolescent Health is the base of the Project RMNCH + A Scale Up . Working in Lohardga , one of the HPDs the Scale up team was looking for ways to up the project using local interventions , and ANC check up seemed to be the area where if focus is shifted we can address core issues at one go .Ante Natal check up in many instances is the first contact point for expectant mothers and it has been shown that quality health check up is the best way forward to safe birth .Along with safe birth , it also promotes institutional delivery and reduction in maternal mortality . Along sides it provides the opportunity for health workers to sensitize the mother about the immunization activities , Post natal check ups, complications and advice regarding child health and builds a trust in the beneficiary which she takes back to community for other referrals .Methodology - Base line assessment was done in the month of April- May 2015 in one of HPD in state of Jharkhand, about the various components of ANC being conducted .Capacity building of ANMs and MOICs was done and sustained advocacy each month is being done. A comparative analysis was done at the end of 6 month to see the effects. Data was collected by HMIS data sets. .Results -11% increase in the numbers of ANC registration , increase in full immunization status from 71% to 85% and similar increasing trends in Institutional delivery , Line listing of severe anemia,MCTS generation high risk pregnancy ,LBW and VLBW babies were noted.

0861-S/P

SCREENING PROGRAMS IN HYPERTENSIVE AND DIABETICS POPULATION: HEALTH SURVEYS IN SÃO PAULO-BRAZIL

Sheila Stopa*, Camila Monteiro, Neuber Segri, Marilisa Barros Moisés Goldbaum, Chester Cesar (School of Public Health, University of São Paulo)

Background: screening programs for breast, prostate and cervical cancer aims to reduce illness, promoting health and living conditions. Brazilian Unified Health System includes preventive screenings in way to identify and control risks especially in vulnerable populations, such as hypertensive and diabetics. **Methods:** data from two population-based health surveys in São Paulo, Brazil (ISA-Capital 2003 e ISA-Capital 2008), carried out by home interviews. Target population was from both sexes, 20 years old and greater, who reported suffering from diabetes mellitus and/or hypertension, which realized preventive screenings. Data analysis consisted in a comparison of prevalences and their 95% confidence intervals at two different periods of time. When there was no overlap between these periods, the difference was considered statistically significant. **Results:** It was found a significant increase in health services utilization for preventive screenings between 2003 and 2008. Mammography proportion for diabetic/hypertensive population was 70% in 2003 and, in 2008, 80% (p=0.022). In 2003, for prostate exam in hypertensive population, the proportion was 51% and 69% in 2008 (p=0.013). There was no significant difference in the period concerning to cervical cancer. **Conclusions:** the increase in screenings may be explained by awareness campaigns in the period. Also, an enlargement of Brazil's Family Health Program may have contributed as well. Although, there was no increase in Unified Health System coverage for screening costs, which elucidates a challenge to the universality of the health system.

0859-S/P

FLEXIBLE TIME-DEPENDENT ASSOCIATION BETWEEN OUTPATIENT FOLLOW-UP AND 30-DAY READMISSION Bruno D. Riverin*, Patricia Li, Ashley Naimi, Erin Strumpf (Department of Epidemiology, Biostatistics & Occupational Health, McGill University, Montreal, Quebec)

Background: Outpatient follow-up after discharge has been promoted as a transitional care strategy to reduce 30-day readmissions. The relationship between post-discharge follow-up and readmission is well documented but the optimal timing of follow-up is less clear. **Objective:** We characterized the time-dependent association between post-discharge follow-up and 30-day readmission among hospitalized elderly or chronically ill patients. **Methods:** We used administrative data on 351 113 patients representing 620 656 index admissions for any cause from 2002-2010 in Quebec, Canada. We considered the since hospital discharge to hospital readmission as our primary outcome. We used flexible parametric survival models to estimate conditional probabilities and stabilized inverse-probability-weights for the receipt of outpatient follow-up with any physician or with a primary care physician specifically at each day post-discharge. We estimated adjusted rates of readmission within specific time intervals after discharge and time-dependent curves for the difference in cumulative risk of readmission. We flexibly modeled continuous covariates, baseline hazards and time functions using restricted cubic splines. **Results:** Adjusted readmission rates were lower in patients who received outpatient follow-up within 7 days (16.0 vs. 22.9 per 1000 person-days) and between 8-14 days (12.8 vs. 13.4 per 1000 person-days) after discharge. We observed larger differences among patients who received follow-up by a primary care physician as compared to those who did not (7-days, 2.0 vs. 12.5 per 1000 person-days; 8-14 days, 3.3 vs. 9.3 per 1000 person-days; 15-21 d, 4.3 vs. 6.7 per 1000 person-days). Time-dependent differences in risk of readmission (shown in graphs) also suggest that the optimal timing of outpatient follow-up occurs within 2 weeks following discharge. **Conclusion:** Our findings suggest that outpatient follow-up is associated with lower readmissions particularly within the first two weeks following discharge.

0870

SEROPREVALENCE AND RISK FACTORS OF BRUCELLOSIS AMONG SLAUGHTERHOUSE WORKERS- CASABLANCA MOROCCO, 2014 Zakia Abadane*, Zakia Abadane, Mohamed Anouar Sadat, Bouchra Assarag, Imad Cherkaoui, Mohamed El Azhari, Naima El Mdaghri, Chakib Nejari, Abderahmane Maaroufi (Ministry of Health)

Background: Brucellosis is a one of the world's most widespread zoonoses. Transmission of brucellosis to humans occurs through the consumption of infected, unpasteurized dairy products or through direct contact with infected animal parts. Limited data exists on the prevalence of the disease in Morocco, although North Africa has been commonly considered endemic for brucellosis. **Purpose:** The objectives were to estimate the seroprevalence of brucellosis and the associated risk factors among slaughterhouse workers in Casablanca. **Methods:** A cross-sectional study was conducted from 1st January 2014 to 31st May 2014. A total of 184 slaughterhouse workers were blood sampled, with serum tested by Rose Bengal test (RBT) and Brucellacapt technique. Information on demographic characteristics, potential exposure within and outside the slaughterhouse depending on the nature of the work, the use of personal protective equipment (PPE) and general safety measures were recorded using a questionnaire. Findings: Among the 184 people sampled, one slaughterhouse worker was revealed positive to Rose Bengal test (RBT) and Brucellacapt technique. This sanitary worker, presents a risk of exposure to blood, viscera, abortion products, and dietary exposure to unpasteurized dairy products. He uses personal protective equipment (PPE) but no gloves. **Conclusion:** This study may suggest that slaughterhouse workers were at low risk of contracting brucellosis, despite frequent exposure to potential sources of infection. Further seroprevalence studies are needed especially among animal owners and rural slaughterhouse workers. **Key Words:** Brucellosis; Seroprevalence; Rose Bengal Test; Brucellacapt technique; Slaughterhouse workers

0872

HIV PREVALENCE AND ASSOCIATED RISK FACTORS AMONG CRACK USERS WHO ATTEND THE SOCIAL PROTECTION PROGRAM KNOWN AS PROGRAM ATTITUDE IN THE STATE OF PERNAMBUCO, BRAZIL Ana Brito*, Naide Teodosio, Santos Renata, Almeida Iracema, Jacques José, Gilmar Souza Jr, Daniela Chaba, Evaldo Oliveira (Centro de Pesquisas Aggeu Magalhães, Fundação Oswaldo Cruz)

In Brazil the HIV/AIDS epidemic is concentrated among vulnerable populations and the propagation of HIV among crack users has been a public health concern. Risk factors associated with higher prevalence of HIV among crack users include unprotected sex, the commercialization of sex to obtain drugs and lesions in the mouth. We aimed to estimate the prevalence of HIV infection and the associated risk factors among crack drug users in Pernambuco, Northeast of Brazil. A cross-sectional study was conducted between 2014 and August 2015 in the four counties where Program ATTITUDE is available. Those eligible to participate in the study met the following criteria: Drug users who were 18 years and older and had been using crack for more than 25 days in the last 6 months. Results: Of the 1,062 participants, 819 were men and 243 were women. About 65% were younger than 30 years old, 64.8% were single, 87% attended school for no more than seven years, 84% were not white and 62.6% had received less than minimum wage as a monthly salary; 42.1% have more than ten sexual partners and 75% did not consistently use condoms in the last year; 68% of women exchanged sex for drugs or money, while among the men, only 27%; 35% reported a wound or burn wound in the region of the mouth due to use of crack and half reported a history of previous STDs. The HIV prevalence was 6.9% [95%CI: 5.8 – 8.8], with a significantly higher prevalence for women than men at 11.7% and 5.7%, respectively. After testing the association of the selected variables and HIV prevalence, the variables which were shown to be significant in the bivariate analyses and which remained in the final logistic model were: "Exchange sex for money or drugs" (OR=2.02, $p<0.05$), "Beg to acquire crack" (OR=1.54 $p<0.01$), and "No use of a condom when having sex" (OR=2.31, $p<0.05$). Conclusion: These findings obtained in the study reveal high HIV prevalence among crack users under vulnerable situations, especially among women.

"S/P" indicates work done while a student/postdoc

0871

MODELLING ANNUAL MALARIA INCIDENCE RATES, ILLINOIS 1990 TO 2013 Kenneth Soyemi*, Oyinade Akinyede, Kenneth Soyemi (John H Stroger Hospital of Cook County)

Background: Malaria in humans is caused by infection with one or more of several species of Plasmodium and it can be fatal if not diagnosed and treated promptly. According to the Centers for Diseases Control and Prevention, 1,500 persons receive a diagnosis of malaria annually in the United States. Most of these persons are travelers and immigrants returning from countries where malaria transmission occurs (sub-Saharan Africa and South Asia). **Methods:** Malaria incidence data from 1990 through 2013 was obtained from the Illinois Department of Public Health website. We used Join point regression to analyze incidence rate trend from 1990 through 2013. Join point regression uses permutation tests to identify points (join points) where linear trends change significantly in direction or magnitude (e.g., zero join points indicate a straight line). The rate of change for each trend was tested to determine whether the change was significantly different from zero, and each trend in the final model was described by an annual percentage change (APC) with a 95% confidence interval (CI). **Results:** The highest rate of 0.7/100,000 population was recorded in 1996 and the lowest rate of 0.2/100,000 population was recorded in 1992. There was one join point during the study period 1996. A steady increase in malaria incidence rates was observed from 1990 to 1996 APC 10.6 (95% CI, = -0.4 to 22.8). From 1996 to 2013 there was a slight decrease in the incidence rates APC -1.5 (95% CI, -3.4 to 0.6). **Discussion:** There is year to year variability in incidence rate but overall incidence rates of Malaria in Illinois is low. Public health policies should promote ongoing malaria prompt diagnosis and surveillance because of its significant disease morbidity.

0873

RECENT INFECTIOUS DISEASE MORTALITY TRENDS IN THE UNITED STATES Victoria Hansen*, Heidi Brown, Eyal Oren, Leslie Dennis, Victoria Hansen (University of Arizona)

Infectious diseases present an ever-changing threat to public health. Infectious disease deaths for United States residents from Vital Statistic Reports (1900 to 1967) and the Centers for Disease Control and Prevention Wonder database (1968 to 2013) were used to describe shifts in infectious disease mortality trends with a focus on 1980 to 2013. Joinpoint regression was used to evaluate trends in crude and age-adjusted mortality rates among emerging diseases (human immunodeficiency virus and vector-borne diseases), reemerging diseases (vaccine-preventable diseases and pathogens with drug-resistant strains), and diseases reclassified as infectious (human papilloma virus/cervical cancer). While human immunodeficiency virus mortality is declining (annual percent change=6.0% from 1998-2013), recent years have seen an increase in vector-borne disease mortality, namely the emergence of West Nile virus in the United States (average number of deaths 1980- 2001=34.5 deaths per year, average deaths 2002-2013=141.7 deaths per year). Vaccine preventable disease mortality continues to decrease at an average annual percent change of 2.4% despite the increase in morbidity in recent years and mortality due to drug-resistant strains of infectious diseases is increasing at an average annual percent change of 1.5%. Finally, cervical cancer mortality has been decreasing at an average annual percent change of 1.4%. Infectious diseases still account for 40 per 100,000 deaths annually in the United States and with emerging, re-emerging, and reclassification of diseases, they remain a public health concern.

0874-S/P

IMPROVING IMMUNOLOGIC PROGNOSTIC APPROACH TO SERIOUS CLINICAL HIV OUTCOMES Thibaut Davy*, Sonia Napravnik, Laurence Brunet, Joseph Eron (University of North Carolina at Chapel Hill)

BACKGROUND: In spite of effective antiretroviral therapy (ART), HIV-infected individuals are more likely than the general population to experience negative clinical outcomes, including death, malignancies, and renal, liver and cardiovascular diseases. The role of immune activation and immunosenescence in this trend is not well known. **METHODS:** Study population consisted of patients from the UNC CFAR HIV Clinical Cohort who initiated combination ART between 1996 and 2014. Follow-up started one year after treatment initiation. We used abnormal CD4/CD8 ratio, defined as ratio <0.5, at one-year post-ART initiation as a marker of immune activation. We used Kaplan Meier survival curves and multivariable Cox proportional hazards methods to model time from one-year post-ART initiation to a composite endpoint of mortality and serious non-AIDS clinical events (cancer, stroke, myocardial infarction, and end-stage renal and liver disease). **RESULTS:** Among the 1053 patients included (6591 person-years), 26% were female and 69% non-white, with median age of 37 years (interquartile range [IQR]: 29-46). At 1 year of ART, 51% participants had a normal ratio and median CD4 was 426 (247-634). Adjusting for age, sex, and race, the hazard ratio (HR) for a major event among patients with a normal ratio was 0.62 (Confidence Interval [CI] 0.46, 0.85) compared to those with an abnormal ratio. When stratified by CD4 cell count ≥ 250 or <250 at 1 year, the adjusted HR were 0.82 (0.55, 1.22) and 1.02 (0.50, 2.10), respectively. **CONCLUSION:** A CD4/CD8 ratio greater than 0.5 after one year of combination ART was inversely associated with mortality and serious non-AIDS clinical events. In spite of wide confidence intervals, a similar association in immunocompetent subjects suggests that the CD4/CD8 may be useful as a prognostic tool in patients on effective therapy to target interventions that reduce immune activation and prevent non-AIDS outcomes.

0877- S/P

DIFFERENCES BETWEEN SOCIAL HEALTH DETERMINANTS INVOLVED IN TUBERCULOSIS IN MEXICO Stephanie Galvan-Hernandez*, Oscar Ovalle-Luna (Mexican Institute of the Social Security)

Aim: To determine the relationship between social health determinants with the prevalence and mortality by tuberculosis (TB). **Methods:** An ecological time series analysis was done with data about prevalence and mortality of pulmonary TB available for Mexico provided by the WHO, between 1990-2013. The outcome variables were prevalence and mortality by TB and the predictor variables were GINI coefficient, per capita income, education and availability of clean water in rural communities. Pearson's correlation coefficient was calculated to assess the relationship between all variables grouped by 5 year periods, a linear simple regression and beta value were calculated, negative binomial regression was performed to identify incidence rate ratio (IRR) of prevalence and mortality by TB. **Results:** TB had a percentual variation of 52% between 1990-2013, (beta -11.58), on the other hand mortality by TB had beta -1.3, availability of clean water in rural communities beta 7.4, per capita income beta -1.1 and GINI coefficient beta -1.3. In the multivariate analysis for mortality, per capita income had IRR 0.99 (CI95% 0.97-1.01), GINI coefficient IRR 1.06 (CI95% 0.75-1.5) low education IRR 1.79 (CI95% 0.10-31) $p=0.001$, when prevalence was analyzed the GINI coefficient had IRR 1.36 (CI95% 1.0-1.85) and low education IRR 1.79 (CI95% 0.3-10.6) $p<0.001$. **Conclusions:** There has been a reduction in the prevalence of TB in Mexico, however some social health determinants haven't changed since 1990, that's why we need to continue with preventive strategies to reduce TB.

0875-S/P

RISK AND PROTECTIVE EFFECTS FOR MYOCARDIAL INFARCTION FROM USE OF ANTI-RETROVIRAL AGENTS AMONG HIV-INFECTED INDIVIDUALS IN THE UNITED STATES Kunchok Dorjee*, Arthur Reingold (University of California Berkeley)

Background: Use of individual and combinations of antiretroviral (ARV) agents has been shown to be associated with an increased risk of developing cardiovascular disease (CVD) among HIV infected individuals. Results have varied across studies regarding exposure to which individual and ARV drug combinations lead to an increased risk of AMI among HIV infected individuals. **Methods:** We assessed the risk of AMI among 73071 individuals receiving ART, enrolled into the IMS Pharmetrics Claims database from October 1, 2009 to December 31, 2014 in the United States. We used marginal structural models using weights generated from the inverse of the probability of initiating and continuing treatment. We restricted our study population to greater than 17 years of age. Study outcome was defined as the first occurrence of an AMI. Risk of AMI among individuals currently exposed to 12 individual and 8 combinations of ARV agents was compared to patients not currently exposed to these agents. **Results:** Over an exposure period of 114417 person-years, 602 patients had developed AMI. Median age was 45 years, and 81.5% were males. Of the individual ARV agents, we found an elevated risk with abacavir (OR: 1.26; 95% CI: 1.01, 1.57), lamivudine (OR: 1.23; 95% CI: 1.01, 1.49), darunavir (OR: 1.59; 95% CI: 1.26, 1.99), didanosine (OR: 1.79; 95% CI: 1.10, 2.90), and lopinavir (OR: 1.61; 95% CI: 1.23, 2.11). Of the combinations, current exposure to abacavir, lamivudine, atazanavir (OR: 1.49; 95% CI: 1.03, 2.16), abacavir, lamivudine, darunavir (OR: 2.00; 95% CI: 1.34, 2.99), and tenofovir, emtricitabine, darunavir (OR: 1.31; 95% CI: 1.00, 1.72) was associated with an increased risk of developing AMI. We found a decreased risk from exposure to tenofovir, emtricitabine, and efavirenz, as individual agents, and as a combination. **Conclusion:** Physicians may need to carefully assess existing CVD risk factors while formulating ARV drug regimens in view of the demonstrated risk of AMI from use of ARV drugs.

0878- S/P

DENSITY OF DAY CARES IN RELATION TO REPORTED PERTUSSIS INCIDENCE IN PHILADELPHIA, 2001 – 2013 Neal Goldstein*, E. Claire Newbern, Loni Tabb, Seth Welles (Department of Epidemiology and Biostatistics, Drexel University School of Public Health, Philadelphia, PA)

Background: The reemergence of childhood pertussis has been partially attributed to waning vaccine effectiveness and an increase in vaccine exemptions. We hypothesize this reemergence may also be related to the more frequent use of childcare services by parents over the last few decades. **Methods:** We conducted a city-wide case-control study of children in Philadelphia aged birth through six years, between 2001 and 2013. Multilevel logistic regression was used to isolate the independent contributions of individual and neighborhood (city-defined aggregates of census tracts) risk factors and the corresponding relative odds of pertussis. Vaccination history was examined at both the individual level (up-to-date [UTD] on pertussis-antigen containing vaccines) and neighborhood (percent UTD). The density of day cares (number of day cares / area of neighborhood in square miles) in each neighborhood served as the primary exposure. **Results:** Between 2001 and 2013, 410 confirmed and probable cases of pertussis were reported to the Health Department. Reported pertussis occurred more frequently in certain neighborhoods (median odds ratio [OR] 1.3, 95% credible interval: 1.1, 1.6). The density of day cares in each neighborhood was unrelated to the distribution of pertussis cases (OR 1.0), as were other neighborhood factors. Individual-level correlates of pertussis included being white (OR 2.0 vs. black), Hispanic ethnicity (OR 1.8 vs. non-Hispanic), having a U.S. born mother (OR 3.3 vs. foreign born), and not being UTD (OR 2.5 vs. UTD). **Conclusion:** Pertussis clustering was observed at the neighborhood level in Philadelphia, but was unrelated to density of registered day care facilities. Being UTD on pertussis-antigen containing vaccinations markedly reduced risk for disease. From a Health Department perspective, high-risk neighborhoods should be targeted for vaccine campaigns and further research to identify the etiologic risk factors.

0879-S/P

DIABETES & TUBERCULOSIS CO-MORBIDITY – A COMPARATIVE ANALYSIS OF CLINICO-SOCIOLOGICAL VARIABLES IN GWALIOR DISTRICT, CENTRAL INDIA

Ginisha Gupta*, Ashok Mishra, Priyesh Marskole, Avadhesh Diwakar (G R Medical College, Gwalior (India))

Background – India is a high Tuberculosis-burdened country with a steeply rising prevalence of Diabetes too. Diabetes, particularly uncontrolled Diabetes, is known to affect the course, presentation & outcome of Tuberculosis due to its hyperglycemic & immunocompromising state. It is hampering the steps taken towards the control of Tuberculosis in the country. Revised National Tuberculosis Control Programme (RNTCP) in India does not warrant regular screening of TB patients for presence of glucose intolerance. With the objective to assess the prevalence of co-morbidity & compare the profile of Tuberculosis patients with & without diabetes, this study was conducted. **Methods** – A cross sectional study was conducted among the Tuberculosis patients registered under DOTS program. A sample size of 550 was calculated. A pretested predesigned structured questionnaire was used for data collection & capillary random glucose levels were estimated by using a glucometer. Data was compiled & analyzed using Epi Info version 7. **Results** – The prevalence of dysglycemia among TB patients was 15.45%. Mean age was higher among dysglycemic TB patients (43.44 ± 15.44 years) as compared to normoglycemic TB patients (33.10 ± 16.20 years) with male preponderance (77.65% versus 63.01%). There was higher proportion of TB patients with weight loss among dysglycemic TB patients as compared to normoglycemic TB patients (77.64% versus 63.87%) with higher rate of sputum positivity (90% versus 83%). The odds of developing DM with TB were 1.65 (95% CI - 1.01 – 2.68) times among smokers as compared to nonsmokers. **Conclusion** – Regular screening of patients is necessary for timely diagnosis & treatment of patients with DM-TB co-morbidity. Strict adherence to treatment regimens for both DM & TB is essential to improve the outcome & prognosis of such patients.

0881- S/P

RACIAL-ETHNIC DISPARITIES IN LINKAGE TO HIV CARE, FLORIDA, 2014

Daniel Mauck*, Diana Sheehan, Lorene Maddox, Kristopher Fennie, Mary Jo Trepka (Florida International University)

Introduction: Delayed linkage to care can lead to later initiation of antiretroviral therapy, advanced infection, decreased quality of life, and lower rate of survival. Delayed linkage to care may help explain survival disparities between HIV positive non-Hispanic blacks (NHB) and non-Hispanic whites (NHW). **Objective:** The objective of this study was to estimate racial-ethnic disparities in timely linkage to HIV care in individuals without a concurrent HIV and AIDS diagnosis. **Methods:** De-identified data were obtained from the Florida Department of Health Enhanced HIV/AIDS Reporting System (eHARS). Cases aged 13 who met the CDC HIV case definition in 2014 were classified as linked to HIV care late if a CD4 or viral load test was not performed within three months of HIV diagnosis. Individuals with AIDS diagnosis within 3 months of HIV diagnosis were excluded. Multilevel logistic regression was used to calculate adjusted odds ratios (AOR) for late linkage to care by race/ethnicity adjusting for age, gender, HIV transmission mode, US vs. foreign birth, neighborhood-level socioeconomic status, and rural/urban residence. **Results:** Of the 4,425 cases, 1,172 (26.49%) were linked to care late. NHB females (AOR=2.22, 95% confidence interval [CI]: 1.34-3.66), NHB males (AOR 1.74, 95% CI: 1.41-2.15), and Hispanic males (AOR 1.43, 95% CI: 1.14-1.80) had higher odds of late linkage to care compared with their NHW counterparts. An HIV transmission mode of heterosexual transmission (AOR=1.87, 95% CI: 1.47-2.38) compared with men who have sex with men (MSM) was a risk factor among males. **Conclusion:** Results suggest that NHB and Hispanic males are at increased odds of delayed linkage to care than their NHW counterparts. Heterosexual transmission is also a risk factor among males compared to MSM. Barriers in linkage to care for NHB and Hispanics should be studied and targeted to decrease racial/ethnic disparities.

“S/P” indicates work done while a student/postdoc

0880-S/P

A NEW MAP OF HISTOPLASMOSIS CAPSULATUM USING A SOIL SUITABILITY SCORE MODEL

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INTRODUCTION: Histoplasmosis infections are a common cause of morbidity and mortality in immunocompromised hosts. Histoplasmosis capsulatum is a fungus endemic to the lower Mississippi River Basin where soils act as infection reservoirs. Historic maps of histoplasmosis infection prevalence are over fifty years old, and recent outbreaks occurring outside of known endemic regions suggest shifts in the geographic distribution. Updated maps may inform clinical diagnosis. **METHODS:** Using a Geographic Information System, we utilized satellite imagery to develop a weighted overlay geographic soil suitability model for histoplasmosis. The suitability model assigns values from 1 to 9 where 9 represents the strongest affinity for histoplasmosis fungi for a given remotely imaged pixel. We compared our map with state-level acute histoplasmosis incident infection data from 1999-2008 using a 5% sample of the Center for Medicaid Services (CMS). A logistic regression model estimated the area under the receiver operator curve (AUC) for comparison. **RESULTS:** The final suitability model included the 2006 National Land Cover Database, soil pH (1998 SoilData) and Euclidean distance from the nearest open water (2006). Layers were weighted 70% for land utilization, 10% for soil pH and 20% for distance from water. The data and model are most applicable to geographic regions east of the Rocky Mountains. Our suitability score model predicted states having high (AUC=0.72) and mid-to-high (AUC=0.74) histoplasmosis incidence when compared to state-based outbreak data. **CONCLUSION:** Preferred soil environments for histoplasmosis have migrated into the upper Missouri River basin. New maps using suitability scores for histoplasmosis predict outbreaks using state-level data from CMS datasets with an AUC > 0.72. These methods may be applicable to other geographic-specific infectious vectors.

0883

SOIL-TRANSMITTED HELMINTH INFECTIONS AND NUTRITIONAL STATUS IN ECUADOR: FINDINGS FROM A NATIONAL SURVEY AND IMPLICATIONS FOR CONTROL STRATEGIES.

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Introduction: Although highly focal studies have shown a high prevalence of soil-transmitted helminth (STH) infections in Ecuador, a survey to estimate infection prevalence and intensity at a country-level has not been done, and is an essential pre-requisite for the implementation of a rational control programme. The aim of the present study was to estimate the prevalence and distribution of STH infections in school children in rural areas of Ecuador. **Methods and Findings:** A cross-sectional study was done in 18 rural schools that were randomly selected from the three ecological regions of Ecuador (coastal, highlands and Amazon basin). Demographic and anthropometric (weight and height) data and stool samples were collected from 920 children aged 6-16 years old. Stool samples were examined using the Kato-Katz method. The results showed that 257 (27.9%) children were infected with at least one STH parasite. The prevalence of Trichuris trichiura, Ascaris lumbricoides and hookworm was 19.3%, 18.5%, and 5.0%, respectively. Malnutrition was present in 14.2% of children and most common was stunting (12.3%). Compared to other regions, schoolchildren in the Amazon region had the highest STH prevalence (58.9%) of which a greater proportion of infections were moderate/heavy intensity (45.6%) and had the highest prevalence of malnutrition (20.4%). A positive association was observed between heavy infections with A. lumbricoides and malnutrition (OR 3.70, 95% CI 1.48 to 9.24, p = 0.005). **Conclusions:** Our overall estimates of STH infection prevalence of 27.9% at a national level in Ecuador are lower than suggested by previous studies. Our data indicate that schoolchildren living in the Amazon region have a greater risk of STH infection and stunting compared with children from other regions. The implementation of control programs within this region, therefore, is a priority and should include both deworming and health education strategies.

0884-S/P

ANALYSIS OF THE RECORDING DATA INSTRUMENTS FOR TB CONTROL

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This study found to analyze the instruments and record systems of tuberculosis (TB) treatment in relation to the integration of assistance to TB patients before and after the implementation of the Information System (SISTB) in a TB Control Program in Ribeirão Preto - SP. Descriptive epidemiological study, retrospective type of record instruments for monitoring the TB (Medical Records, Directly Observed Treatment (DOT) Record, TB Cases Book and SISTB) through a structured form, based on the Manual Recommendations for the TB Control. Data collection became from March to June 2014, considering the period before implementation of SISTB, and in April 2015, the period after the implementation this one. The collected data were analyzed through frequency distribution and chi-square test or Fisher's exact with 95% significance level, after approval by the Ethics Committee of the Ribeirão Preto College of Nursing / USP (CAAE 15671713.9.1001.5393). The results were observed an association between the period before the implementation of SISTB with filing in the medical record, and the period after with the TB patient's phone contact and address (DOT Record and SISTB), as well as most record of the data end of TB treatment, the situation of outcome, the result of the sputum smears exam for monthly control and HIV testing (TB Cases Book); and largest record of appointment monthly with the doctor, assistance with social worker, test requests made by the doctor, living conditions of TB patient, contacts control, social incentives and use of alcohol and drugs (Medical Records). It was found that there were improvement in the records of some variables after the implementation of SISTB, although the epidemiological surveillance activities, such as contacts control, still remain marginal and the focus of attention is turned for TB patients and centered on individual care.

0886

POOR NEIGHBORHOOD SOCIOECONOMIC CONTEXT NEGATIVELY INFLUENCES RETENTION IN HIV CARE

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Background: Retention in care is critical to delayed HIV progression and reduced HIV transmission. Neighborhood socioeconomic context (NSEC) may affect access to care. In a novel analysis, we therefore assessed NSEC impact on individual retention in a diverse Southern US cohort. **Methods:** Adults with 1 visit in care from 2008-2012 at the Vanderbilt Comprehensive Care Clinic (Nashville, TN) who resided in ZIP code tabulation areas (ZCTAs) with available census-derived socioeconomic information at enrollment (1998-2011) contributed data from enrollment until last visit before death or study end. Neighborhood level indicators were used to create an NSEC z-score index for each individual: % with income less than twice the poverty level, % less than high school educated, % vacant housing, % daily commute >1 hour, % non-participation in labor force, % non-urban residence, and % black race within a given ZCTA. Retention was a repeated outcome indicated by 2 HIV primary care visits in a calendar year, >90 days apart. Modified Poisson regression was used to estimate risk ratios (RR) and 95% confidence intervals (CI) for retention as a function of NSEC quartile, adjusting for birth year, sex, race/ethnicity, and time in care. **Results:** Among 2,878 adults contributing 9,602 person-years, median baseline age and CD4 cell count was 38 (quartiles: 30,44) years and 351 (174,540) cells/ μ L, respectively, while 24% were female, 38% were Black, and 8% had injection drug use as an HIV risk factor. Across 329 ZCTAs, the median NSEC z-score was 0 (-3.97,3.10). Overall, 78% of person-time contributed was retained. In the adjusted model, poorer socioeconomic context was associated with worse retention (RR=0.93, 95% CI: 0.90,0.97 for 4th vs. 1st NSEC quartile). **Conclusion:** Poor neighborhood context was associated with poorer retention, even after accounting for individual characteristics. Future studies should explore mechanisms by which poor living conditions influence clinical retention.

0885- S/P

SPREADING OF DENGUE AND CHIKUNGUNYA IN NORTH-WESTERN PERU: FROM WAVES TO COINFECTION

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Introduction: The recent outbreak of chikungunya in Peru has been a source of great concern among regional and national authorities. Such concerns have increased given the current threat of a very strong El Niño phenomenon, which threatens to be unprecedented. In this study we analyzed the predictability of the pattern of transmission of Chikungunya based on the historical patterns of transmission of dengue in Peru's north coast. **Methods:** We characterized the transmission patterns of both dengue and chikungunya from 2000 to 2015 by modeling surveillance data. The model allowed us to analyze the patterns of transmission from the calculation of the basic reproductive ratios for a number of health centers in Tumbes, as well as to discuss the observed synchronization in the spread of the two diseases. **Results:** In Tumbes, dengue cases moved along the PanAmerican Highway in the northeast direction with speeds of ~2-2.5 km/wk while spreading sideways (from this highway) with speeds of 0.3 km/wk, and then weakening. Similarly, we showed how chikungunya arrived in Tumbes from the northeastern border and moved in the opposite southwest direction along the highway with speeds of ~5 km/wk from May to August of 2015 while spreading sideways at 0.9 km/wk and then weakening. Massive applications of insecticides and larvicides in Tumbes in 2015 were not effective in preventing either wave. As of the time of this writing, chikungunya is fully established in the Zarumilla district of Tumbes, with the majority of cases being double-listed, indicative of coinfection. **Conclusions:** The waves of cases during the 2015 chikungunya outbreak in Peru's north coast could be predicted accurately based on the historical patterns of dengue transmission in the region. In fact, the behavior of waves of both diseases suggests that it is likely that coinfections are playing a significant role in chikungunya's transmission, which deserves further investigation.

0888-S/P

COMPARISON OF A NEWLY DEVELOPED ELECTRONIC SPRAY SYSTEM TO THE STANDARD HOSPITAL DISINFECTION ON BACTERIAL CONTAMINATION AND HOSPITAL ACQUIRED INFECTION RATES

Dayana Rojas*, Julio Figueroa II, Susanne Straif-Bourgeois (Louisiana State University Health Sciences Center)

Background Healthcare-associated infections (HAI) are a major concern in hospitals due to increased lengths of stay, which lead to an increased risk of mortality for critically ill and elderly patients. Environmental cleaning may decrease the risk of HAIs; however, little is known of the effect of environmental disinfection on the risk of HAI in high-risk hospital populations. The aim of this study is to compare ByoSolve™, an electronic spray system, to the standard hospital disinfection on bacterial contamination in patient rooms as well as on infection rates in the patient population at an acute care hospital in New Orleans, LA. **Methods** Environmental samples were collected biweekly for 25 weeks in selected hospital units and glove impressions were taken from randomly selected healthcare workers (HCW) on alternate weeks. Samples from the intensive care units were cultured on MacConkey Agar at the hospital lab alongside ATP readings. Monthly aggregate data for HAI rates were used to perform a statistical analysis comparing the percentages of culture positive environmental sites, positive glove impression plates, and positive ATP readings to determine statistically significant differences between the two disinfectants. **Results** Preliminary results showed that over a 23-week period, the glove sampling yielded 12 positive cultures, while the environmental sampling yielded 9. Thus far, the majority of positive cultures from the environment were taken from the hospital room tray table tops. In addition, based on the current data, ATP readings cannot predict positive cultures. **Conclusions** Although the study is ongoing, the number of positive cultures attained from the environment in this 23-week period, is significantly lower than the number of cultures attained from HCW gloves, which may be due to the effectiveness of ByoSolve™ in disinfecting the environment. Comparisons to hospital HAI rates will be accomplished upon completion of the data collection stage.

0889

COMPLETE VACCINATION SCHEDULE OF CHILDREN BORN 1998-2013 IN A MEDIUM-SIZED CITY, BRAZIL Ana Paula Sayuri Sato*, Ana Paula Sayuri Sato Vinícius, Leati de Rossi Ferreira, Márcia de Cantuária Tauli, Eliseu Alves Waldman, Laura Cunha, Rodrigues Edmar, Martineli Ângela, Aparecida Costa Marta Inenami (University of São Paulo)

Background: The Brazilian Immunization Program expanded in last decades with several additional vaccines, free of charge. Vaccination coverage (based on administrative data) is high but ignores validity and timeliness of doses and whether schedule is completed. Electronic Immunization Registry (EIR) are useful tools for this. **Objective:** To assess coverage of complete and timely vaccination schedules in 49,785 children at age 12 months, born in 1998-2013 in a medium-sized Brazilian city (Araraquara), based on EIR. **Methods:** Vaccination status from an EIR (Juarez System) analyzed as time series to investigate coverage of valid doses (validity based on minimum age and minimum interval); timeliness of vaccination (all doses in recommended age); and up-to-date vaccination status (timely or late doses). Trends were analyzed using Prais-Winsten method. **Results:** The recommended schedule changes over the study period from 7 doses in 1998 to 15 in 2013. There were no time trends in the coverage of up-to-date and timely vaccination schedule, which remained around 85% ($p=0.181$) and 65% ($p=0.961$), respectively. Up-to-date coverage ranged from 79% (2000) to 89% (2006 and 2013) and timeliness coverage ranged from 55% (2011) to 74% (2006). Although there was no trend, timeliness coverage increased until 2006, decreased until 2011 and increased until 2013 (62%). **Conclusions:** The program has great coverage of complete schedules even with increasing complexity. The lowest timeliness coverage, in 2011, was when 5 new doses were introduced in the schedule at 3, 5 and 7 months, ages previously without recommended vaccinations. Despite limitations using secondary data, this analysis reflects more accurately the vaccination coverage of children enrolled in Juarez System, which has high sensitivity capturing children born in the city (99.6% in 2012). Thus, it emphasizes the potential of EIR for planning and evaluation of public health actions. Supported by FAPESP: grant 2014/05183-9

0891

MISSED HIV DIAGNOSIS DURING PREGNANCY AND PERINATAL TRANSMISSION, FLORIDA, 2007–2014 Mary Jo Trepka* Soumyadeep Mukherjee, Lorene Maddox, Consuelo Beck-Sague, Kristopher Fennie, Diana Sheehan, Maithri Prabakaran, Spencer Lieb, Dan Thompson (Florida International University)

Background: Perinatal HIV transmission has declined substantially in the United States since 1994; yet cases still occur with devastating consequences for affected children and families. An apparent increase in perinatal HIV transmission during 2013–2014 in Florida prompted this retrospective cohort study to identify factors associated with perinatal HIV transmission and failure to diagnose maternal infections prenatally. **Methods:** Records of perinatally HIV-exposed children born 2007–2014 in Florida and reported to the Florida Enhanced HIV/AIDS Reporting System were obtained including demographic, prenatal care (PNC), and birth characteristics and maternal HIV diagnosis timing. Crude relative risks (RRs) and 95% confidence intervals (CIs) for mothers' HIV diagnosis after birth by various characteristics were calculated. **Results:** Of 4,337 known singleton HIV perinatally-exposed newborns, 70 (1.6%) were perinatally infected. Relative to maternal HIV infection diagnosis prior to labor, later diagnosis of maternal infection was strongly associated with perinatal transmission ($RR=12.95$; 95%CI 7.84-21.40). Among the 984 women not known to be HIV infected prior to pregnancy, factors associated with failure to diagnose HIV infection during pregnancy included premature birth (RR 1.69; 95% CI 1.15-2.50), very low birth weight (RR 2.13; 1.03-4.55), and no PNC (RR 8.75; 95% CI 4.89-15.65). Of 29 mothers of perinatally infected infants not known to be HIV infected prior to pregnancy, 18 (62.1%) were not diagnosed during pregnancy. Of these, 8 had a negative and 2 had an indeterminate HIV test during PNC (55.6%), 6 had no PNC (33.3%), 1 refused testing, and 1 had no listed reason for lack of diagnosis. **Discussion:** Lack of prenatal HIV diagnosis appeared to be related to acute HIV infection during pregnancy and lack of PNC. Third trimester retesting with highest-sensitivity assays in high HIV incidence states like Florida may be essential to eliminate perinatal transmission.

“S/P” indicates work done while a student/postdoc

0890-S/P

RACIAL/ETHNIC DISPARITIES IN DELAYED HIV DIAGNOSIS AMONG MEN WHO HAVE SEX WITH MEN, FLORIDA, 2000–2014 Diana Sheehan*, Mary Jo Trepka, Kristopher Fennie Guillermo, Prado Gladys Ibanez, Lorene Maddox (Florida International University)

Background: The incidence of HIV among men who have sex with men (MSM) in the United States (US) is on the rise—increasing 12% from 2008 to 2010, and leading to over 30,000 new diagnoses in 2013. Prompt HIV diagnosis can decrease the risk of HIV transmission and improve health outcomes among this population. The objective of this study was to examine racial/ethnic disparities in delayed HIV diagnosis among MSM and associated factors. **Methods:** Cases aged 13 who met the CDC HIV case definition during the years 2000–2014 and were reported to the Florida Enhanced HIV/AIDS Reporting System were analyzed. Delayed HIV diagnosis was defined as AIDS diagnosis within three months of HIV diagnosis. Multilevel logistic regressions were used to address correlation within cases residing in the same zip code at time of HIV diagnosis and to estimate adjusted odds ratios (AOR). **Results:** Of 39,301 MSM, 27% were diagnosed with HIV late. After controlling for year of HIV diagnosis, age, and US birth, non-Latino Black MSM had higher odds of late diagnosis compared with non-Latino White MSM (AOR 1.21, 95% confidence interval [CI] 1.14-1.28). The effect remained after controlling for neighborhood socioeconomic status (AOR 1.15, 95% CI 1.08-1.23). No differences were observed between Latino and non-Latino White MSM. Foreign birth compared with US birth was a risk factor for non-Latino Blacks (AOR 1.27, 95% CI 1.12-1.44), but a protective factor for non-Latino Whites (AOR 0.77, 95% CI 0.68-0.87). Rural residence was a risk for non-Latino Blacks (AOR 1.79, 95% CI 1.36-2.35) and Latinos (AOR 1.87, 95% CI 1.24-2.84), but not for non-Latino Whites (AOR 1.26, 95% CI 0.99-1.60). **Discussion:** Results suggest that barriers to HIV testing are particularly affecting non-Latino Black MSM. Further, social and/or structural barriers to testing in rural communities may be significantly contributing to late HIV diagnosis among non-Latino Blacks and Latinos.

0892

EFFECTIVENESS OF INSECTICIDE IMPREGNATED DOG COLLARS ON THE OCCURRENCE OF VISCERAL LEISHMANIASIS IN BRAZIL Guilherme Werneck*, Figueiredo Erika Barretto-Alves, Maria Helena Hasselmann (Universidade do Estado do Rio de Janeiro)

Visceral leishmaniasis (VL) is considered one of the most important neglected tropical diseases worldwide. A randomized community intervention trial was carried out in Brazil to evaluate the effectiveness of insecticide-impregnated dog collars in reducing the incidence of human VL and the prevalence of canine VL. Seven cities with high levels of VL transmission were included in the study. In each city two to six areas were randomly allocated to two interventions: (1) impregnated dog collars + culling infected dogs + vector control (“intervention”) and (2) culling infected dogs + vector control (“control”). The study started in 2012 with a baseline cross-sectional study in each area to evaluate the seroprevalence of VL infection among dogs followed by the implementation of the proposed interventions. Two to three new cycles of interventions and canine seroprevalence evaluations were performed every six months following the baseline study. The occurrence of human VL cases was monitored in each city. The effectiveness of dog collars was evaluated using Poisson mixed-effects regression models. In each cycle, an average of 30,000 dogs was evaluated for canine VL. The use of collars in addition to the usual control measures was associated with a 20% reduction in the prevalence of canine infection in the intervention areas as compared to control areas ($p=0.006$). The incidence rates of human VL from 2007 to 2014 decreased faster in the cities that received dog collars as compared to similar cities that did not receive such intervention ($p<0.001$). The results indicate that dog collars could be incorporated into the Brazilian VL control program in combination with selective actions for controlling vector and reservoir populations. However, there is a need to assess the cost-effectiveness of the dog-collar intervention before deciding on its large-scale use.”

0893- S/P

DISCLOSURE OF HIV STATUS, KNOWLEDGE AND PERCEIVED RISK AMONG PREGNANT WOMEN IN RURAL MYSORE, INDIA Kelly Winter*, Meredith Wilcox, Karl Krupp, Bhavana Niranjankumar Poornima, Jay Purnima Madhivanan) Robert Stempel College of Public Health & Social Work, Florida International University)

Background: Disclosure of HIV status is key to controlling the spread of the virus. This study assessed relationships between sociodemographics, HIV knowledge, perceived HIV risk, and willingness to disclose HIV status among pregnant women in rural Mysore, India. **Methods:** A total of 1,675 pregnant women visited mobile medical facilities and, after consent, completed group pre-test counseling for HIV testing, an interviewer-administered questionnaire in Kannada, antenatal checkup, HIV testing, and individual post-test counseling. A structural equation model was created using AMOS 21.0. Woman's age and education, husband's education, and years of marriage were modeled as exogenous variables. HIV knowledge (scale 0-12), perceived HIV risk (scale 1-4), and disclosure (number of people to whom one would disclose HIV status) were modeled as endogenous variables. Because of non-normality, the model was evaluated using bootstrapping (200 replicates) with missing cases (3.4%) excluded. **Results:** Woman's median age was 20 years; median marriage length was 3 years. Thirteen percent of women and 28% husbands had no education. HIV knowledge (median=11) and perceived HIV risk (median=4) were high; disclosure was low (median=3). The model was statistically overidentified. The majority of fit indices pointed to good model fit. Mother's age and education were significant predictors of HIV knowledge. HIV knowledge was negatively associated with perceived HIV risk, which in turn was positively associated with disclosure. The model explained about 1% of the variance in HIV knowledge and perceived HIV risk and 3% of the variance in disclosure. **Conclusion:** Interventions promoting HIV status disclosure among pregnant women in rural areas should take into account sociodemographics, HIV knowledge, and perceived risk. Future studies should explore factors that might further explain the positive relationship between perceived HIV risk and disclosure.

0900

BEST PRACTICES TO REDUCE IN-HOSPITAL FALLS FOR NEWBORNS Mary Bocox*, Liana Merz (BJC HealthCare)

Background: There is limited published literature reporting statistics on newborn falls. One health care system reported an incidence of neonatal falls to be 1.6 falls per 10,000 live births. Another system of 22 hospitals observed a rate of 4.14 falls per 10,000 live births. Overall, newborns experience in-hospital falls at an estimated rate of 600–1,600 falls per year in the United States. The Baby Friendly Hospital Initiative was introduced by the World Health Organization and the United Nations Children's Fund in 1991 to encourage hospitals to offer the ideal level of care for infant feeding and mother/baby bonding. This Initiative encourages prolonged skin-to-skin contact and bed sharing between newborns and mothers. Baby Friendly USA advises that infants and mothers share a room continuously; resulting in likely bed sharing for prolonged periods of time. This creates a challenge to balance the opportunity for bonding with safety for both mother and infant. **Methods:** A systematic literature review was conducted. This evidence and best practice review included electronic searches that were performed using Medline, CINAHL, and Google. References of included studies were also searched. **Results:** Literature revealed the most common risk factors for infant falls were time of day (early morning hours), excessive fatigue, mothers falling asleep after breast feeding, and recent administration of pain medicine. Most studies recommend more frequent observation of the mother when she is holding the baby, increased education for mothers on newborn falls, and encouraging parental rest. Also of high priority is better documentation of newborn falls so that they may be monitored and evaluated. **Conclusions:** Although these events are rare, guidelines for safe newborn interaction at birth are necessary. Hospitals should encourage skin-to-skin contact between mothers and babies while also emphasizing safe sleep practices to prevent potential dangers such as falls to newborns.

0902-S/P

ROLE OF ALCOHOL AND RACE IN DEATH WITHIN 180 DAYS FOLLOWING DISCHARGE FOR MOTOR VEHICLE CRASH TRAUMA Christina Greene*, Bethany Strong, Gordon Smith (University of Maryland, Baltimore)

Introduction: Studies have shown Black race is associated with increased risk of in-hospital death following trauma. However little is known of the role that race plays in short-term mortality following hospital discharge for a motor vehicle crash (MVC). This study examines if Black race is associated with increased risk of dying in the 180 days following discharge. **Methods:** Black and White MVC injury patients discharged alive from a Level I Trauma Center between 1997 and 2008 were identified in the trauma registry and linked with the National Death Index through 12/31/2008. Death within 180 days of hospital discharge date was examined. Black and white patients were compared with respect to BAC levels, pre-existing conditions, seatbelt use, Injury Severity Score (ISS), age, and sex using chi-squared test. Cox proportional hazard regression was used to assess the relationship between race, BAC level, and death within the first 180 days. **Results:** Of 21,758 MVC patients discharged alive, 1.1% (n=248) died within 180 days of discharge. Black race was associated with a non-significant hazard of death (HR 1.30 [0.97- 1.74], p=0.07) compared to whites after adjusting for age, sex, ISS, pre-existing conditions, and seatbelt use. BAC of 80-149 mg/dL was associated with higher risk of death for Blacks (HR 3.67 [1.01- 13.44]). There was no difference in risk of short-term death between blacks and whites with an unknown or negative BAC, or a positive BAC under 80mg/dL or over 150mg/dL. **Conclusions:** In addition to having a higher risk of in-hospital mortality, Blacks appear to have a slightly higher, non-significant risk of death in the first 180 days following discharge. While Blacks coming in with a BAC between 80-149mg/dL had a higher hazard of death in the first 180 days than whites, this observation was not found for any other BAC category. Further MVC research should investigate why there is a difference in survival between Blacks and Whites with this BAC level only.

0901-S/P

ALCOHOL AND MARIJUANA POSITIVITY IN FATAL CRASHES: DO ASSOCIATIONS WITH RACE/ETHNICITY CHANGE ACROSS THE LIFE COURSE? Dahsan Gary*, Kerry Keyes (Columbia University Department of Epidemiology)

Background: Previous epidemiological research suggests that non-Hispanic whites, compared with Black individuals, have higher rates of substance use, however, there is a greater burden of substance-related motor vehicle crash fatality among black subgroups. Little evidence has examined the mechanisms underlying these epidemiological discrepancies. We used a life course approach to examine whether there are sensitive periods in the life course for the emergence of substance-related injury disparities. **Methods:** A study sample from the Fatality Analysis Reporting System between 2000-2013 consisted of non-Hispanic white and black drivers who were fatally injured in a motor vehicle. We examined rates of alcohol positivity, marijuana positivity and both among fatally injured drivers (case-only analysis), and the rates of death using census-based age-stratified population totals for the included states (population analysis). **Results:** For population analysis, white drivers were more likely to die in an alcohol-related crash at almost every age. For case only analysis, white drivers were slightly more likely to be positive for alcohol between their 20s through 40s. White drivers were significantly less likely than black drivers to be positive for marijuana at age 20-24 (OR=0.58, 95% C.I. 0.37-0.92) and age 30-39 (OR=0.43, 95% C.I. 0.28-0.68); no other differences were significant. Black drivers were more likely to test positive for marijuana only use over the life course. Crashes where alcohol/marijuana were both positive were not different across race. **Conclusions:** Alcohol use is not a viable mechanism for the emergence of disparities as whites are more likely to use alcohol at almost every age, and there are no racial/ethnic differences in concurrent alcohol/marijuana use at the time of crashes. Environmental factors influence on disparities instead of health behaviors like substance use may be better suited for research in the future.

0903

ESTIMATED NUMBER OF DEATHS AND SERIOUS INJURIES CAUSED BY ROAD TRAFFIC CRASHES IN BRAZILIAN MACRO-REGIONS USING DATA RECORD LINKAGE. Otaliba Libânio de Moraes Neto*, Polyana Maria Pimenta Mandacaru, Otaliba Libânio de Moraes Neto, Fernando Rezek Rodrigues, Luiz Arthur Franco Beniz, Caio Ferro Botacin (Universidade Federal de Goiás)

Background Low and middle income countries account for 92% of deaths from road traffic injuries (RTI) in the world. Furthermore, the mortality data completeness and reliability are poorer than high income countries. Because of that, it's necessary to qualify the databases to produce health indicators that adequately portray that situation. The data record linkage enables greater use of existing data in different sources of data. The objective was to measure the magnitude of deaths and serious injuries by using record linkage, and to estimate correction factors for health and road traffic databases and in five urban areas that represent all macro regions of the Brazil. **Method** Cross-Sectional study, using the road traffic victim database (VIT), Information System of Hospitalization (SIH) and Mortality Information System (SIM), the year of 2013 for Teresina and 2012 for the remaining four cities. For the linkage procedure, the software RecLink 3 was used. The number of deaths and serious injured victims of RTI were identified. The overall global percentage of correction of the underlying cause of death and the hospitalization diagnosis were estimated and the victim condition in the road traffic database. **Result** The overall percentage of correction of the underlying cause of death for the SIM were 29.9, 11.9, 4.2, and 33.5 respectively to Belo Horizonte, Campo Grande, Curitiba and Teresina. For the city of Palmas, there was no correction. For the SIH, the percentage of correction of the hospitalization cause were 24.4 for Belo Horizonte, 96.9 for Campo Grande, 100 for Palmas and 33 for Teresina. For the VIT, there were changes in the victim's severity classification with overall percentage of 100 for Belo Horizonte and Teresina, 48 for Campo Grande and 51 for Palmas. **Conclusion** There are considerable gaps and limitations on information system that record RTI, requiring the incorporation of national standards and integration between health databases and traffic databases

0910

IS BIRTH WEIGHT ASSOCIATED WITH BODY ADIPOSITY AND GLUCOSE METABOLISM IN YOUNGSTERS? Bianca Almeida-Pittito*, Luciana D Folchetti, Isis Tande da Silva, Angelica M M Valente, Renata Vidonsky Luthold, Bianca Waltrick, Sandra R Ferreira (Department of Preventive Medicine, Federal University of Sao Paulo, Brazil)

Introduction: Associations have been detected between birth weight (BW) and adulthood obesity and diabetes. The young adult phase is a unique opportunity to identify early stages of these metabolic disturbances, when preventive strategies might be more effective. **Objective:** To examine the association of birth weight with body mass index (BMI) and fasting plasma glucose (FG) at adulthood in Nutritionist' Health Study (NutriHS). **Methods:** Data was collected by a web-based online self-administered system (e-NutriHS). After fulfilling on-line questionnaires, participants are invited to a clinical visit for physical examination and lab procedures. Participants were stratified according to BW in categories: <2.5kg (n=50), 2.5-3.9kg (n=420) and 4.0kg (n=80), and compared by ANOVA. Frequencies of BW categories were tested across plasma glucose tertiles. **Results:** The first non-diabetic 550 participants were included, with mean age of 23.1±4.5 years; 93.4% were women and 68.7% Caucasians. There were no differences in physical activity level and dietary variables. Comparing participants by BW categories, a higher self-reported BMI was reported in the higher BW category (22.4±3.8 vs 23.1±3.9 vs 24.9±5.2 kg/m², p=0.01). In the subsample of participants (n=150) who visited the clinic, higher BMI (21.9±2.2 vs 22.1±5.7 vs 25.6±5.2kg/m², p=0.05) and waist circumference (72.4±6.4 vs 75.9±9.5 vs 85.6±9.7cm; p=0.03) was confirmed among those of BW 4.0kg; while FG was marginally significant between groups (p=0.059). A borderline significance (p=0.079) of higher frequency of BW<2.5kg was seen in the third tertile (20.5%) when compared to first and second tertiles (9.4%). **Conclusion:** In youngsters, BW seems to be directly related to body adiposity -but inversely with plasma glucose, raising the possibility of plasma glucose -within the normal range- be an indicator of risk for glucose metabolism disturbance, independent of adiposity. The NutriHS cohort will allow testing this hypothesis.

0912

PATTERNS AND CAUSES OF YEARS OF POTENTIAL LIFE LOST IN THE US Jeanine Buchanich*, Shannon Woolley, Michael Lann, Donald Burke, Gary Marsh (University of Pittsburgh Graduate School of Public Health)

Purpose: Years of potential life lost (YPLL) is a measure of premature death which gives more weight to deaths occurring among young people, or those deaths which may be considered preventable. The goal of this study was to examine overall and cause-specific patterns in YPLL for the US and each state. **Methods:** Death records for 2013 with information on sex, age group at death, state at time of death and specific cause of death, along with corresponding population counts were extracted from the Mortality and Population Data System housed at the University of Pittsburgh. YPLL at age 65 (YPLL65) was calculated by summing the number of years that death occurred before age 65 for each age group (<1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64) for the US and by state. Crude YPLL65 was calculated by dividing the total YPLL65 by the state-specific population. Cause-specific YPLL65 was also calculated for the US and each state. **Results:** In 2013, there were 692,221 deaths before age 65 accounting for 11.36 million YPLL65. Overdose was the top cause, accounting for more than 850,000 YPLL. Motor vehicle accidents (MVA) were second, then suicides, perinatal complications and ischemic heart disease. For females, the top cause was perinatal complications; for males, the top cause was suicide. Minnesota had the lowest crude rate for YPLL65, with Massachusetts, California, Connecticut and New York in the top 5. Mississippi had the highest crude rate for YPLL65 with double the rate of Minnesota. The other poor performing states were West Virginia, Alabama, Louisiana and Oklahoma. Overdose was the top cause of YPLL65 in seventeen states; MVA and suicides were the top causes in 13 and 12 states, respectively. **Conclusion:** This study highlights the large burden of deaths due to external causes of death, especially overdose, before age 65. The geographic heterogeneity in these findings requires location-specific public health interventions to reduce the effects of these premature deaths.

0911-S/P

ASSOCIATION OF CHILDHOOD ABUSE AND SOCIAL INTEGRATION AMONG OLDER PEOPLE IN JAPAN Toyo Ashida*, Takeo Fujiwara, Naoki Kondo, Katsunori Kondo (The University of Tokyo)

Background : Social integration, social network and social support are beneficial for health. However, few study showed the association between childhood abuse history and social integration in later life. The purpose of this study is to investigate the association childhood abuse history and social integration.

Methods: We used data from the Japan Gerontological Evaluation Study (JAGES) 2013. This study was self-reported survey of 26,229 people aged without certification of long term care insurance. Social integration defined as participation of social group, or the number of friends or acquaintance during one month, housebound (going out only less than once a week). Childhood abuse history was evaluated by self-report on whether having experience on physical or psychological abuse, or neglect up to 18 years old. Poisson regression analysis was used to assess the association between childhood abuse history and social integration, adjusted for sex, age, education, marital status, employment status, annual equivalized household income, diseases status. **Results:** Approximately 11.7% had a history of the childhood abuse. The prevalence of childhood abuse history for each social integration indicators were as follows: sports group participation, 0.88 (95% confidence interval (CI):0.80-0.95); hobby group participation, 0.90 (95%CI: 0.84-0.97); number of friend or acquaintances who met during one month, 0.85 (95%CI: 0.80-0.90); and housebound, 1.41 (95%CI: 1.19-1.66). **Conclusions:** Childhood abuse history was negatively associated with social integration in older age in Japan. Childhood abuse history may deteriorate to participate in the community, which need to be payed attention to develop social network or community.

0913-S/P

ASSOCIATION OF ADVERSE CHILDHOOD EXPERIENCES WITH SHAKING AND SMOTHERING BEHAVIORS AMONG JAPANESE CAREGIVERS Aya Isumi*, Takeo Fujiwara (National Research Institute for Child Health and Development)

Background: Shaking and smothering behaviors in response to infant crying are life-threatening child abuse and often result in death. Adverse childhood experiences (ACEs), which include childhood experiences of parental loss or psychopathology, abuse or neglect, and poverty, are known to be a risk factor for abusing their offspring. Yet, few studies have investigated the impact of ACEs on shaking and smothering towards infants. **Objective:** This study aims to investigate the association of ACEs with shaking and smothering among caregivers of 4-month infants in Japan. **Methods:** A questionnaire was administered to caregivers who participated in a 4-month health checkup program in Chiba city to assess their ACEs [parental death, parental divorce, mentally ill parents, witnessed intimate partner violence (IPV), physical abuse, neglect, psychological abuse and economic hardship], and abusive behaviors (shaking and smothering) towards their infants (N=4,297). Logistic regression analysis was used to examine the association of each ACE and the total number of ACE with shaking and smothering, respectively. **Results:** 28.3% reported as having experienced at least 1 ACE during their childhood. We found that only witness of IPV had a significant association with shaking of their infant (OR=1.93, 95% CI: 1.03 - 3.61). The total number of ACEs was not associated with either shaking or smothering. **Conclusion:** ACEs were not associated with shaking and smothering, except witness of IPV and shaking, suggesting that shaking and smothering in response to crying can occur regardless of ACEs. Population-based prevention of shaking and smothering, that is, targeting all caregivers, is needed.

0914-S/P

ASSOCIATION OF CHILD MALTREATMENT AND DEPRESSIVE SYMPTOMS AMONG PUERTO RICAN YOUTH Graciela Jaschek*, Olivia Carter-Pokras, Xin He, Sunmin Lee, Glorisa Canino (University of Maryland College Park)

This article compares multiple types of child maltreatment among Puerto Rican youth. We seek to expand the limited knowledge of the effects of multiple types of maltreatment on depressive symptoms in a specific Latino population as emerging studies indicate that children who are exposed to one type of maltreatment are often exposed to other types. This study examines the predictive strength of different and multiple types of lifetime child maltreatment (i.e. physical, sexual, and emotional abuse; and neglect), and the effect of youth support from parents, youth coping, youth self-esteem, and place of residence on depressive symptoms among Puerto Rican youth. Secondary data analyses were performed using three annual waves (2000-2004) of data from the Boricua Youth Study. The analytic sample consists of 1,041 10-13 year old Puerto Rican youth living in New York and Puerto Rico. Results indicate that: 1) youth who experienced 'sexual abuse only', 'multiple maltreatment' (2 or more types of maltreatment), 'physical abuse only' have a significant increase in depressive symptoms (75.1%, 61.6%, and 40.5% respectively) compared to those without maltreatment; and 2) place of residence, exposure to violence, and mental disorders were significant risk factors. When developing psychosocial interventions to prevent the onset and recurrence of depression among Puerto Rican youth, professionals should particularly focus on youth who report past lifetime experience with child maltreatment and comorbidity living in the Bronx, New York.

0915-S/P

SMOKING DURING YOUNG ADULTHOOD AND PSYCHO-SOCIAL OUTCOMES AT MID-AGE: FINDINGS FROM A US LONGITUDINAL STUDY Melanie Sabado*, Kelvin Choi (NIH/NIMHD)

Objectives. This study explores the social, behavioral, and psychological outcomes for United States adults associated with smoking cigarettes during young adulthood. **Methods.** In the Coronary Artery Risk Development in Young Adults Study (CARDIA) study, a cohort of 5113 individuals (18 to 30 years old of African American and European American descent across four US cities) were recruited in 1985-1986 and followed-up at Year 7, 10, 15, 20, and 25. Logistic regression models were used to examine smoking status as baseline and psycho-social outcomes measured between Year 15-25. **Results.** At baseline, 43% (2213) young adults reported lifetime cigarette use and 70% (1566) of those were current smokers. Between Year 15-25, compared to participants who were non-smokers at baseline, participants who were current smokers at baseline were significantly more likely to not be married ($p<0.001$); have lower academic achievement ($p<0.001$); reported lower health status ($p<0.001$), poorer quality of life ($p<0.01$), experience higher (personal) chronic burden ($p<0.01$), less social support ($p<0.01$), more loneliness ($p<0.01$), higher symptoms of depression ($p<0.001$), higher reactive coping ($p<0.001$), lower self-control ($p<0.01$), and higher anger expression and hostility ($p<0.01$). **Conclusions.** Cigarette smokers at young adulthood experience more negative psychological and social outcomes than as they matured into mid-age. Smoking in young adulthood may lead to worsening of social determinants of health later in life. If confirmed by additional longitudinal studies, these findings further suggest the importance of smoking cessation during young adulthood.

0920-S/P

COMPUTED TOMOGRAPHY MEASURED HIP AND THIGH CROSS-SECTIONAL AREA AND MYOSTEATOSIS AS RISK FACTORS FOR NON-SPINE FRACTURE IN OLDER ADULTS

Didier Chalhoub*, Elisa Marques, Vilundur Gudnason, Gunnar Sigurdsson, Thomas Lang, Kristin Siggeirsdottir, Gudny Eiriksdottir, Sigurdur Sigurdsson Thor Aspelund, Lenore Launer, Tamara Harris (National Institute on Aging (NIH))

With age, the tendency of precursor cells to differentiate into adipocytes instead of osteoblasts or myocytes increases as does the lipid content of muscle, or myosteosis. Both muscle mass and myosteosis may be associated with loss of muscle strength and function which may lead to an increased risk of falls and potentially fractures. Therefore, we examined the association between non-spine fracture risk and both the cross-sectional area (CSA) and degree of myosteosis [defined as the Hounsfield Unit (HU) from computerized tomography] in older adults. The prospective study data consisted of 4,727 older men and women (mean age=76.3) from the Ages Gene/Environment Susceptibility-Reykjavik Study. The CSA and HU of the thigh and hip (abductor, adductor, flexor, extensor) muscles were measured by computed tomography (CT). Non-spine fractures were recorded, verified and confirmed over a mean follow-up of 8 years. Cox-proportional hazards modeling was used to assess fracture risk per one standard deviation (SD) decrease in CSA and HU of thigh and hip muscles. In the demographic-adjusted model (age, gender, BMI, education), lower thigh and hip muscles' CT parameters (except for the hip abductor muscle) were positively associated with fractures. In a fully adjusted model which included fracture risk factors and total hip BMD, one SD decrease in the HU of the flexor and adductor muscles were each associated with an 11% increase risk of fractures. Borderline statistically significant increases of 7% and 6% were obtained with one SD decrease in the HU of hip extensor muscle and thigh respectively. There was no association between the CSA of the muscles and fracture risk with hazard ratios (HR) ranging between 0.91 and 1.06. In older individuals, fat infiltration into the flexor and adductor muscles of the hip increases risk of non-spine fractures, independently of BMD.

0922

MULTIPLE SYMPTOMATIC JOINTS IN OSTEOARTHRITIS AND COMORBID RESPIRATORY DISEASE

Anthony Perruccio*, J Denise Power, Elizabeth Badley, Rajiv Gandhi (Dalla Lana School of Public Health, University of Toronto; Health Care and Outcomes Research, Toronto Western Research Institute)

Background/Purpose: Comorbidity is highly prevalent in osteoarthritis (OA), although the origin of this is not well understood. The presence of multi-joint symptoms in OA, and noted associations between obesity and OA in non-weight bearing joints, implicates OA as a likely systemic disorder. Respiratory disease is prevalent in OA populations and also has been associated with systemic factors. We investigate the association between the extent of multi-joint symptoms in OA and prevalent respiratory disease. **Methods:** Patients with hip and knee OA were recruited. Patient questionnaires captured symptomatic joints, comorbidities (respiratory disease, heart disease, diabetes, and high blood pressure), height and weight, smoking status, functional limitations and demographic characteristics. Logistic regression analyses evaluated the association between multi-joint symptom count and respiratory disease, adjusting for assessed study measures. **Results:** Study sample: 469 knees and 444 hips. Mean age was 64 years, 44% male. Nearly 10% reported respiratory disease. Mean symptomatic joint count was 4.4 (range: 1-20); almost 40% reported 5 symptomatic joints. Individuals reporting respiratory disease had higher mean body mass index, more previous/current smokers, greater comorbidity, and greater symptomatic joint count than those not reporting respiratory disease. Stratified by body mass index (normal; overweight; obese), the prevalence of respiratory disease significantly increased with increasing joint count. Adjusted for study covariates, each numerical increase in symptomatic joint count was associated with a 7% (OR: 1.07, 95% CI: 1.01, 1.14) increased likelihood of reporting respiratory disease. **Conclusion:** 'Generalized' osteoarthritis may reflect a more systemic OA phenotype, and may be an important marker for future risk of comorbidity, particularly respiratory disease. Given projected increases in OA prevalence, targeted public/clinical interventions may be warranted in this population.

"-S/P" indicates work done while a student/postdoc

0921-S/P

WORKING IN CHRONIC PAIN: THE ASSOCIATION BETWEEN OCCUPATIONAL CLASS AND CHRONIC MUSCULOSKELETAL PAIN

Samuel Huntley*, Rudolph A. Davis, Xuan Yang, Tainya Clarke, Alberto Caban-Martinez (University of Miami, Miller School of Medicine)

Background: Musculoskeletal disorders such as joint pain can interfere with daily activities and work performance. Despite known physical and psychosocial hazards associated with acute pain (i.e., within the past 30 days), little is known of risk factors that influence reporting of chronic pain (i.e., lasting for 3 months) among working adults. In the present study, we estimate the prevalence of self-reported chronic musculoskeletal pain across various socio-demographic and occupational groups. **Methods:** Pooled data from the 1999-2004 National Health and Nutrition Examination Survey (NHANES) were used to estimate the prevalence of self-reported chronic musculoskeletal pain by socio-demographic (e.g. age, gender, race, education, marital status, health insurance) and work (e.g., part-time work) characteristics stratified by respondent's longest-held occupational classes (i.e., white-collar, blue-collar, service, farm) and across 41 occupational groups. Multivariable logistic regression models were used to evaluate risk factors associated with report of chronic pain by occupational class. **Results:** Among all minority workers, service (weighted prevalence estimate: 22.6%) and blue-collar (18.5%) Hispanic workers had significantly higher estimates of chronic musculoskeletal pain. Adults employed in supervisor and proprietor (weighted prevalence estimate: 26.5%, 95% C.I.: 20.4%-33.5%), military (26.4%, 14.6%-42.8%), and agricultural, forestry, and fishing (25.5%, 16.6%-37.2%) occupations had the highest prevalence of chronic pain. Compared to white-collar workers, adults employed in blue-collar (Adjusted Odds Ratio: 1.46, 95% C.I.: 1.20-1.77) and service (1.46, 1.23-1.73) occupations were significantly more likely to report chronic musculoskeletal pain after controlling for socio-demographic and work characteristics. **Conclusions:** Hispanic workers in service and blue-collar occupations reported working in chronic pain more than other minority occupational groups.

0923-S/P

DIFFERENCE IN THE TRAJECTORY OF CHANGE IN BONE GEOMETRY AS MEASURED BY HIP STRUCTURAL ANALYSIS AT THE FEMORAL NECK AND INTERTROCHANTERIC REGION BETWEEN MEN AND WOMEN IN THE YEAR FOLLOWING HIP FRACTURE

Alan Rathbun*, Michelle Shardell, Denise Orwig, Richard Hebel, Gregory Hicks, Thomas Beck, Jay Magaziner, Marc Hochberg (University of Maryland School of Medicine)

Background: Osteoporosis reduces the structural integrity and mechanical strength of bones, and leads to hip fracture, the most serious consequence of the disease. Research suggests that women with hip fracture have significant declines in bone strength after fracture; however, it is unclear whether men experience similar changes. The aim was to examine sex differences in bone strength between men and women in the year after hip fracture. **Methods:** Hip Structural Analysis was used to derive metrics of bone surface area (cross sectional area; CSA), bending strength (section modulus; SM), and bone instability (buckling ratio; BR) from dual-energy x-ray absorptiometry scans performed at baseline, 2, 6, or 12 months after hip fracture in men and women (n=282) enrolled in the Baltimore Hip Studies 7th cohort. Weighted estimating equations accounting for missing data and selective survival were used to assess longitudinal sex differences in CSA, SM, and BR at the narrow neck (NN) and intertrochanteric region (IT) of the non-fractured femur. Models were adjusted for demographics, clinical characteristics, and concomitant medications. **Results:** Men had declines in 12 month NN CSA (-6.4%; 95% CI: -12.7, -0.1) and SM (-5.1%; 95% CI: -11.3, 1.3) and increases in BR (7.5%; 95% CI: 0.7, 14.4). Women experienced smaller changes in 12 month NN CSA (1.1%; 95% CI: -3.5, 6.1), SM (3.8%; 95% CI: -2.7, 10.2), and BR (-1.2%; 95% CI: -6.4, 4.0). The sex differences in change for both SM and BR were statistically significant: 8.9% (95% CI: 0.2, 17.7; P=0.04) and 8.7% (95% CI: 0.2, 17.6; P=0.04), respectively. Findings for the IT were similar but lower in magnitude. **Conclusions:** Men had greater decline in bending strength and increases in bone instability compared to women in the year after hip fracture. These findings may be due to sex differences in bone turnover or medication use prior to and post hip fracture and suggest the need for improved osteoporosis care for men.

0930

ASSOCIATION OF MIGRAINE HEADACHES WITH SUICIDAL IDEATION AMONG PREGNANT WOMEN IN LIMA, PERU Lauren Friedman*, Bizu Gelaye, Marta Rondon, Sixto Sanchez, B. Lee Peterlin, Michelle Williams (Department of Epidemiology, Harvard T. H. Chan School of Public Health, Boston, MA, USA)

Background: Migraine and depressive disorders are highly prevalent and often comorbid conditions among reproductive aged women. Suicidal behaviors, including ideation and attempts, are considered symptoms of major depressive disorder, although they can occur with or without accompanying depression. Suicide is now a leading cause of maternal death globally, but there is limited evidence on the comorbidity between migraines and suicidal ideation, and no previous study has examined this association during pregnancy. **Objective:** To examine the association between migraine and suicidal ideation among a cohort of pregnant women. **Methods:** A cross-sectional study (N=3372) was conducted among women attending prenatal care clinics in Lima, Peru. Depression and suicidal ideation were assessed using the Patient Health Questionnaire-9 (PHQ-9) scale. Migraine classification (including migraine and probable migraine) was based on International Classification of Headache Disorders (ICHD)-III beta criteria. Multivariate logistic regression analyses were performed to estimate odd ratios (OR) and 95% confidence intervals (95% CI). **Results:** The prevalence of suicidal ideation in this cohort was 16.0%. Suicidal ideation was more common among migraineurs compared with probable or non-migraineurs (25.6% vs. 22.1% vs. 12.3%, $p<0.001$). After adjusting for confounders, including depression, those with migraine or probable migraine had an increased odds of suicidal ideation (OR=1.71; 95% CI: 1.4-2.1), as compared with non-migraineurs. Women with migraine and depression comorbidity had 3.5-fold increased odds of suicidal ideation (95% CI: 2.67-4.64) compared with those who had neither condition. **Conclusion:** Migraines are associated with increased odds of suicidal ideation in pregnant women even when controlling for depression. If confirmed, there may be merits to screening patients for highly comorbid pain and mood disorders, including suicidal behavior, during pregnancy.

0932- S/P

SERUM 25-HYDROXYVITAMIN D CONCENTRATIONS AND RISK OF PARKINSON'S DISEASE IN THE ATHEROSCLEROSIS RISK IN COMMUNITIES (ARIC) STUDY Srishti Shrestha*, Pamela Lutsey, Alvaro Alonso, Xuemei Huang, Thomas Mosley, Honglei Chen (National Institute of Environmental Health Sciences, Research Triangle Park, NC)

Abstract Background: Low vitamin D levels are common among patients with Parkinson's disease. Experimental evidence further suggests that vitamin D may be protective against Parkinson's disease. **Objectives:** We prospectively assessed the association between serum 25-hydroxyvitamin D (25(OH)D) and Parkinson's disease among 12,762 participants of the Atherosclerosis Risk in Communities (ARIC) cohort. **Methods:** Serum samples were collected in 1990-1992, and 25(OH)D was measured by liquid chromatography mass spectrometry. A total of 67 incident Parkinson's disease cases were identified through December 31, 2008. We used Cox proportional hazards models to obtain hazard ratios (HR) and 95% confidence intervals (CI), adjusting for age, sex, and race. We did not find any association between serum 25(OH)D and Parkinson's disease risk, regardless of how serum 25(OH)D was modeled. Compared to participants with serum 25(OH)D < 20 ng/mL, the HR for Parkinson's disease was 1.05 (95% CI = 0.58, 1.90) for 20-30 ng/mL and 1.14 (95% CI = 0.59, 2.23) for ≥ 30 ng/mL. Similar results were obtained in sensitivity analyses that included white participants only and that were stratified by the length of follow-up. **Conclusion:** This prospective study lends little support to the hypothesis that vitamin D may reduce the risk of Parkinson's disease.

0931

MIGRAINE AND THE RISK OF PARKINSON'S DISEASE AMONG WOMEN Pamela Rist*, Anke Winter, Julie Buring, Tobias Kurth (Division of Preventive Medicine, Dept of Medicine, Brigham and Women's Hospital and Harvard Medical School)

Although it has been hypothesized that migraine may be linked with movement disorders, including Parkinson's disease (PD), few studies have examined the association between migraine and PD. A recent prospective population-based cohort study suggested that migraine with aura was associated with an increased risk of physician-diagnosed PD. However, the number of cases of PD among female migraineurs with aura was small (8 cases) and these results have yet to be confirmed in other studies. We performed a prospective cohort study among women without a history of cardiovascular disease or cancer who were enrolled in the Women's Health Study and provided information on migraine and aura status at baseline. Among the 39,814 women included in this study, 7215 (12.6%) women had migraine, of whom 2031 reported current migraine with aura, 3065 reported current migraine without aura and 2119 reported a past history of migraine. During a mean of 18.7 years of follow-up, 605 women reported a diagnosis of PD. We used multivariable Cox proportional hazards models with age as the time scale to determine the association between migraine and PD. After adjustment for age, smoking status, physical activity, alcohol consumption, body mass index, history of hypertension, diabetes, or high cholesterol, treatment for hypertension or high cholesterol, caffeine consumption, and history of depression, those who experienced migraine with aura (RR=1.04; 95% CI: 0.71-1.52), migraine without aura (RR=1.14; 95% CI: 0.84-1.53) or with a past history of migraine (RR=1.00; 95% CI: 0.71-1.42) were not at an increased risk of developing PD. Among those who reported active migraine at baseline, we observed no association between migraine frequency and risk of PD. In this large prospective population-based cohort study of women, migraine status was not associated with an increased risk of developing PD.

0940

EARLY CHILDHOOD UNDERNUTRITION AND METABOLIC SYNDROME: EVIDENCES FROM THE BRAZILIAN LONGITUDINAL STUDY OF ADULT HEALTH (ELSA-BRASIL). Luana Giatti*, Bruna Briskiewicz, Joana Amaral, Maria de Fátima Sander, Maria Inês Schmidt, Maria del Carmen Molina, Letícia Cardoso, Sheila Alvim Gustavo Velasquez, Sandhi Barreto (Universidade Federal de Minas Gerais)

OBJECTIVE: Early nutritional environment has been associated with adult chronic disease. We investigated the association between markers of undernutrition at childhood and the prevalence of metabolic syndrome (MetS) in a cohort of Brazilian adults. **METHODS:** Our analytical sample comprised 12602 (35-74 years) participants from ELSA-Brasil baseline (2008–2010). The response variable was MetS (2005 ATP III criteria). Low birthweight (<2.5Kg) and leg length index (leg length/height x 100) categorized by age and sex specific Z score [Long: >Mean+1SD (reference category); Middle: Mean+1SD; Short:<Mean-1SD] were the explanatory variables. We used Poisson regression (robust variance) to estimate the association between each explanatory variable and MetS according to sex adjusted by age, race, education, physical activity, smoking and alcohol consumption. We performed additional adjustment by low birth weight (for leg length index), menarche age and BMI at age 20. **RESULTS:** The prevalence of MetS was 37% for men and 32% for women. Low birthweight (PR:1.30 95%IC:1.14-1.48), middle (PR:1.15 95%IC:1.03-1.29) and short leg length (PR:1.44 95%IC:1.25-1.65) were associated with MetS among women independently of all co-variables considered. However, only middle (PR:1.25 95%IC:1.12-1.39) and short leg length (PR:1.52 95%IC:1.34-1.72) remained associated with MetS in men after adjustment for co-variables. **CONCLUSIONS:** Our results corroborate evidences that exposures to nutritional adversities at birth and at childhood are associated with the occurrence of MetS at adulthood. Our findings are especially relevant considering the increasing of obesity, the experience of early life undernutrition of Brazilian adults, and the raising of low birthweight due to preterm births in the country

0942- S/P

MATERNAL POLYUNSATURATED FATTY ACID INTAKE DURING PREGNANCY IN ASSOCIATION WITH AUTISM SPECTRUM DISORDER AND OTHER DEVELOPMENTAL DISORDERS Yunru Huang*, Rebecca J. Schmidt (Department of Public Health Science, UC Davis)

Background: Studies suggest that maternal omega-3 and other polyunsaturated fatty acids (PUFAs) could have protective effects on neurodevelopmental outcomes. **Objectives:** To examine the association between maternal PUFA intake during pregnancy and Autism Spectrum Disorder (ASD) as well as Other Developmental Disorders (OD) in a prospective Markers of Autism Risk in Babies-Learning Early Signs (MARBLES) cohort. **Methods:** Eligible women (n=184) were those who already had a child with ASD and thus were at increased risk (up to 20%) for having another child who will develop ASD. Children were diagnosed at 36 months at University of California Davis MIND Institute with standardized clinical tools. PUFA intake during pregnancy was determined using food frequency questionnaires with nutrients calculated by NutritionQuest (Berkeley, California). Gas Chromatography (OmegaQuant) was used to measure maternal plasma PUFA concentrations in the 3rd trimester. **Results:** Adjusting for maternal age, home ownership and folic acid intake, omega3 intake during pregnancy assessed by the questionnaire did not differ for mothers of children with ASD (odds ratio (OR) =0.63, 95% confidence interval (CI): 0.12, 3.27) or OD (OR=0.70, CI: 0.15, 3.29) relative to the typically developed group. Similar associations were found among omega3 subtypes: eicosapentaenoic acid (EPA), alpha-linolenic acid (ALA) and docosahexaenoic acid (DHA), and omega6 as well as its subtypes: linoleic acid (LA) and arachidonic acid (AA). In the 3rd trimester maternal plasma, all omega3 and omega6 subtypes were not significantly associated with the development of ASD (OR: from 0.93 to 1.04) and OD (OR: from 0.97 to 1.00). **Conclusion:** This preliminary study provides evidence for no associations between maternal PUFA intake, being assessed by questionnaires and biomarkers, and both ASD and OD during pregnancy. Further analyses are needed to evaluate these potential relationships in more detail.

“S/P” indicates work done while a student/postdoc

0941-S/P

DIETARY FAT AND FATTY ACIDS INTAKE AND THE RISK OF PREMENSTRUAL SYNDROME Serena C. Houghton*, JoAnn E. Manson, Brian W. Whitcomb, Susan E. Hankinson, Lisa Troy, Carol Bigelow, Elizabeth R. Bertone-Johnson (Department of Biostatistics and Epidemiology, University of Massachusetts Amherst, Amherst, MA, USA)

Up to 20% of reproductive aged women experience emotionally and physically significant premenstrual syndrome (PMS), a cyclical late luteal phase disorder of the menstrual cycle. Women with PMS are often counseled to decrease their total and saturated fat intakes and increase omega-3 fatty acids to improve symptoms; however, few studies have prospectively assessed whether fat intake is related to the initial development of PMS. We examined the association between intakes of specific dietary fatty acids and the development of PMS in a prospective study nested within the Nurses' Health Study II. Participants were 27-44 years old and free of PMS at baseline in 1991. Cases were 1,257 women reporting a new clinician-made diagnosis of PMS during 14 years of follow-up and who confirmed symptom severity and impact by premenstrual symptom questionnaire. Controls were 2,463 women without PMS, frequency matched to cases on age and follow-up year. Dietary fat intake 2-4 years prior to diagnosis was assessed via quadrennial food frequency questionnaires and adjusted for total energy intake. After adjustment for age, body mass index, smoking status, calcium, and other factors, intakes of total fat, monounsaturated, polyunsaturated, and trans fat were not associated with risk of PMS. However, inverse associations were observed for high saturated fat intake (Odds Ratio (OR) for quintile 5 vs 1 = 0.75, 95% confidence interval (CI) = 0.58-0.97, p TREND = 0.07) and stearic acid intake (OR5v1=0.75, 95% CI=0.57-0.98, p TREND = 0.03). Specific omega-3 and omega-6 fatty acids including oleic, linoleic, conjugated linoleic, linolenic, arachidonic, eicosapentaenoic, and docosapentaenoic were not associated with PMS. Overall, findings do not suggest that fat intake is associated with increased risk of PMS. The inverse associations observed for saturated fat and stearic acid warrant replication and further investigation.

0943-S/P

VITAMIN D RECEPTOR GENE POLYMORPHISMS ARE ASSOCIATED WITH ADIPOSITY AND ADIPOKINE LEVELS IN AFRICAN AMERICANS: THE JACKSON HEART STUDY Rumana Khan*, Pia Riestra, Samson Gebreab, James Wilson, Amadou Gaye, Ruihua Xu, Sharon Davis (National Institutes of Health)

Background: Vitamin D receptors (VDR) play an important role in mediating the biological actions of vitamin D. Studies suggest that vitamin D levels are associated with adiposity traits and adipokine levels. **Objective:** Using data from Jackson Heart Study, we examined the association of 45 tagging single nucleotide polymorphisms (SNPs) in the VDR gene with multiple adiposity measures including waist circumference (WC), body mass index (BMI), body fat percentage(%), visceral and subcutaneous adipose tissue (VAT and SAT) and adipokine (adiponectin and leptin) levels in adult African Americans (AA). **Methods:** In a sample of 3020 participants (61.9% female, mean age 54.63 years), we used linear regression to test the association of imputed VDR SNPs with each of the trait adjusting for age, gender, education status, physical activity, smoking, alcohol intake, serum vitamin D level, European ancestry and multiple testing. Adiponectin and leptin values were log transformed. All the associations were analyzed separately by gender. **Results:** The G allele of the SNP rs4328262 remained associated with increased VAT volume after multiple -testing correction [beta coefficient, = 45.71; P<0.001]. The A allele of another SNP rs11574070 was nominally associated with body fat% [= 0.96; P=0.002]. None of the VDR SNPs analyzed showed any link with WC or BMI. Two of the SNPs were strongly associated with adiponectin levels after multiple testing correction, rs2853563 in which females carriers of the T allele presented higher adiponectin concentrations [= 0.04; P<0.001] and the VDR SNP rs2228570, where male carriers of the A allele presented increased adiponectin levels [= 0.08; P=0.001]. **Conclusion:** Although we did not find any association for anthropometric measures, we observed association of VDR variants with adipokines and with more metabolically active fat, VAT. Therefore, our findings demonstrate a possible role of VDR variants in regulating adipose tissue activity and adiposity among AA.

0944-S/P

BODY MASS INDEX (BMI) IN BRAZILIAN ADULTS: A DESCRIPTIVE STUDY Roberta Silva*, Fabiana Araujo, Figueiredo da Mata, Priscilla Pereira, Keitty Regina Andrade, Ana Cláudia Figueiredo, Maurício G. Pereira (Freelance/University of Brasilia)

Background: Brazilian people have been experiencing epidemiological and nutritional transitions which impact on people's lifestyle and nutritional state. These transitions increase overweight and obesity which in turn act as risk factors for non-communicable chronic diseases. **Objective:** To analyze the body mass index of Brazilian adults in 2013. **Methods:** This cross-sectional descriptive study uses data from a National Health Survey (PNS) carried out in 2013 by the Brazilian Official Bureau of Statistics. Self-reported weight and height were collected from people aged 18 years or over to calculate the BMI and to assess its variation according to sex and age. **Results:** The majority of people classified as underweight and normal weight was women (63.3% and 51.4%, respectively), while from those classified as overweight 57.3% were men. Women were the majority in all obesity groups revealing proportions of 50.5%, 55.7%, and 64.1% respectively for the obesity types 1, 2, and 3. Among women, the ones between 18 and 29 years old presented higher percentages of low weight (61.1%) and eutrophic (8.4%). Women aged between 40 and 49 years presented higher percentages of overweight and obesity types 1 and 2. Younger men (18-29 years old) were more frequently characterized as presenting low weight (55.5%), eutrophic (40.5%), and types 2 and 3 obesity (27.7% and 30%, respectively). **Conclusion:** Brazilian women suffer more from obesity than men. Women are often found to be obese between 40 and 49 years old, while men are found at younger ages, between 18 and 29 years old.

0946-S/P

DIETARY INTAKE OF GRAINS DURING PREGNANCY AND OFFSPRING GROWTH THROUGH THE FIRST 7 YEARS OF LIFE: A PROSPECTIVE COHORT STUDY Yeyi Zhu*, Sjurdur Olsen, Pauline Mendola, Edwina Yeung, Stefanie Hinkle, Jing Wu, Shristi Rawal, Joege Chavarro, Frank Hu, Cuilin Zhang (Eunice Kennedy Shriver National Institute of Child Health and Human Development)

Introduction: Animal studies suggest that diet during pregnancy may affect offspring fetal growth and metabolic programming with long-term consequences. Epidemiologic data on transgenerational effects of maternal diet on offspring growth are sparse. **Objective:** We assessed the association of grain intake in pregnancy with offspring growth through age 7 y in a high risk population: women with gestational diabetes (GDM) and their children. **Methods:** 918 women from the Danish National Birth Cohort who had GDM and their children were included in the study. Diet during pregnancy was assessed by a food frequency questionnaire. Offspring body mass index z-scores (BMIZ) by WHO references were calculated using clinically measured weight and length/height at birth, 5 mo, 12 mo, and 7 y. Overweight/obesity was defined by WHO cutoffs. Linear and Poisson regression with robust standard errors were used, adjusting for maternal demographic, lifestyle, and dietary factors. **Results:** Maternal intake of refined grains in pregnancy was significantly and positively associated with offspring BMIZ [adjusted (95% CI) = 0.087 (0.017, 0.158) per serving (1 ounce equivalent) increase/day] and the risk of overweight/obesity at 7 y [adjusted relative risk (95% CI) = 1.74 (1.03, 2.93) and 2.59 (1.28, 5.23) comparing the highest quartile and decile vs the lowest quartile, respectively]. The associations were more pronounced in children who were breastfed <6 mo, physically inactive, or consumed more sugar sweetened beverages at 7 y. Substitution of 1 serving/day of refined grains with an equal serving of whole grains was related to an 11% (95% CI: 0.82, 0.98) reduced risk of overweight/obesity at 7 y. No associations were observed between grain intake and offspring growth at earlier ages. **Conclusions:** Intrauterine exposure to higher intake of refined grains was significantly related to greater BMIZ and increased risk of overweight/obesity at 7 y among children born to women with GDM.

0945-S/P

CONSUMPTION OF ULTRA-PROCESSED FOODS AND SOCIOECONOMIC POSITION INDICATORS: BRAZILIAN LONGITUDINAL STUDY OF ADULT HEALTH (ELSA-BRASIL) 2008-2010 Bárbara Simões *, Sandhi Barreto, Renata Levi, Maria Del Carmen Molina, Paulo Lotufo, Bruce Duncan, Maria Inês Schmidt, Isabela Bensenor, Vivian Luft, Luana Giatti (UFMG)

Background: The consumption of ultra-processed food has been increasing in Brazil. **Objective:** to assess the contribution of consuming ultra-processed food on the nutritional dietary profile in Brazilian adults and to investigate the association between socioeconomic position (SEP) indicators and high consumption of ultra-processed food. **Methods:** We analyzed baseline data of 14666 civil servants (35-74 years) from the ELSA-Brasil study, a cohort study. Food consumption was evaluated by food frequency questionnaires. The consumed food items were classified into three groups: natural/minimally processed, processed, and ultra-processed food (UPF). We estimated the prevalence of high consumption of UPF (daily energy intake above the fourth quartile) according to sex, age, and SEP indicators. We used Poisson regression to estimate the association between each SEP indicators (education, family income per capita, occupational social class) and high consumption of UPF adjusted by potential confounders. **Results:** The average calorie consumption was 2942.4 kcal/day, with 66.9% being provided by natural/minimally processed food and 28.7% by UPF. UPF contributed to 56.6% of simple carbohydrates, 13.2% of fiber and 54.8% of trans lipids. The overall prevalence of high UPF was 28.7%, and it was higher in men and decreased with age. After adjustments, this prevalence was higher in individuals with high school (RP=1.30 95% CI=1.23-1.38) or elementary school (RP=1.28 95%CI=1.15-1.42) compared to university degree; increased with decreasing family income (3° quintile: RP=1.22 95% CI=1.11-1.35 to 1°quintile:RP=1.45 95%CI=1.31-1.60 compared with the 5° quintile) a (middle-middle: RP=1.15 95%CI=1.06-1.24 to lower-lower: RP=1.27 95%CI=1.18-1.38 compared to high class). **Conclusions:** There were social inequalities in the consumption of ultra-processed foods. The growing consumption of these foods can enhance social inequalities in health, especially in chronic non communicable diseases and obesity.

0950

BI-DIRECTIONAL LONGITUDINAL RELATIONSHIPS AMONG SOCIO-ECONOMIC STATUS, DEPRESSIVE SYMPTOMS, DIET QUALITY AND CENTRAL ADIPOSITY IN A SAMPLE OF URBAN US ADULTS May Beydoun*, Marie T. Fanelli-Kuczmarski, Danielle Shaked1, Greg A. Dore1, Hind A. Beydoun, Ola S. Rostant1, Michele K. Evans, Alan B. Zonderman1 (Laboratory of Epidemiology and Population Sciences, National Institute on Aging, NIA/NIH/IRP, Baltimore, MD)

Background: Temporal relationships among socioeconomic status (SES), depression, dietary quality and central adiposity remain under-explored. **Objectives:** Alternative bi-directional pathways linking SES to dietary quality, depressive symptoms and central adiposity were tested and models compared. **Design:** Using data from the Healthy Aging in Neighborhoods of Diversity across the Life Span (HANDLS) (baseline age:30-64y; 2 visits; mean follow-up:4.6y), 12 structural equations models (SEM) with SES as the antecedent variable were conducted and compared. Time-dependent factors included the Center for Epidemiologic Studies-Depression (CES-D total score, baseline(v1), follow-up(v2), mean across waves(m) and annual rate of change()), 2010-Healthy Eating Index (HEI) (same notation), and central adiposity z-score (Adipcent) combining waist circumference with trunk fat(kg) (same notation). Sample sizes were: White women(WW, n=236), White men(WM, n=159); African-American women(AAW, n=395) and African-American men(AAM, n=274). **Results:** In the best fitting model, overall, ~31% of SES-->(-)Adipcent(v2) total effect was mediated through a combination of CES-D(v1) and HEI. Two dominant pathways contributed to the indirect effect: SES-->(-)CES-D(v1)-->(+)Adipcent(v2) and SES-->(+) HEI-->(-)Adipcent(v2). In a second best fitting model, SES independently predicted Adipcent(v1,-), HEI(+) and CES-D(v2,-), (p<0.05) with Adipcent(v1) marginally predicting HEI(-) and CES-D(v2,+) (p<0.10). Best fit was consistent within race×sex categories, though path coefficients differed significantly between groups yielding diverging path coefficients. Specifically, SES-->Adipcent(v1,v2) was a positive association among AAM (p<0.05) and a positive direct relationship between Adipcent(v1) and CES-D(v2) was found only among AAW (p<0.10). **Conclusions:** In sum, despite consistent model fit, pathways linking SES to diet quality, depressive symptoms and central adiposity differed markedly between race×sex groups.

0952-S/P

ASSOCIATION BETWEEN OBESITY MARKERS AND THE NUMBER OF SITES OF CHRONIC MUSCULOSKELETAL SYMPTOMS: ELSA-BRASIL MUSCULOSKELETAL STUDY (ELSA-BRASIL MSK) Sandhi M. Barreto*, Aline B P Costa, Luciana A C Machado, Rosa W Telles, Poliane T Silva, Luciana C (Faculty of Medicine - Universidade Federal de Minas Gerais - ELSA-Brasil MSK)

Introduction: Obesity is a recognized risk factor for chronic musculoskeletal (MSK) pain. However, the evidence of the relationship between obesity and multisite pain is conflicting. **Objectives:** To investigate the relationship between obesity and abdominal obesity with the number of sites of chronic MSK symptoms, at baseline of the ELSA-Brasil MSK Study. **Methods:** Participants were interviewed and examined between 2012-14. Overweight was defined as 25kg/m² < BMI <30kg/m² and obesity as BMI ≥ 30 kg/m². Abdominal obesity was defined according to waist circumference (WC): level 1, 94cm < WC <102cm for men and 80cm < WC <88cm for women; and level 2, WC ≥102 cm for men and ≥88 cm for women. Chronic MSK symptoms were defined as pain, discomfort and/or stiffness lasting >6 months in the past 12 months. The number of local MSK symptoms were categorized as none, those present in one site, 2 sites and multisite (>3 sites); including the neck, shoulder, elbow, wrist/hand, upper back, lower back, hip/thigh, knee and ankle/foot. Multinomial regression models including sex and age as covariates investigated the association between obesity markers and the number of sites of chronic MSK symptoms. **Results:** The study included 2889 participants with mean (SD) age of 55.9 (8.9) years, 52.8% were women. 1585 (54.9%) reported chronic MSK symptoms; from which 553 (34.9%) had multisite symptoms. Results indicated an increased magnitude and strength of the association between obesity markers and the number of sites of chronic MSK symptoms. This was most evident for obesity (OR 2.35; 1.80-3.09) and abdominal obesity level 2 (OR 2.11; 1.64-272). **Conclusion:** The results suggest that the increase in the number of MSK chronic symptoms sites is influenced by a combination of factors related to obesity, possibly including mechanical and systemic inflammation. Funding: Brazilian Ministry of Health (Science and Technology Department), of Science and Technology (FINEP, CNPq), and of Education (CAPES).

“-S/P” indicates work done while a student/postdoc

0951

CHILDHOOD OBESITY IS ASSOCIATED TO THE INTERACTION BETWEEN FIRMICUTES AND HIGH ENERGY FOOD CONSUMPTION Ana Isabel Burguete-Garcia*, Barbara Estrada-Velasco, Miguel Cruz, Vicente Madrid-Marina (instituto nacional de salud publica)

Introducción: Obesity is a serious public health problem in Mexico, the National Health and Nutrition Survey (ENSANUT 2012) reported a 34.4% prevalence of overweight, and obesity in children aged 5-11. Recent research has suggested that the gut microbiota may be a risk factor of obesity through its influence on human metabolism. Aim of the study: To evaluate association between the intestinal microbiota profile and obesity among children and whether this association is modified depending on the feeding pattern of a sample of schoolchildren from Mexico City. **Methodology and Results:** Cross-sectional study on 1042 children aged 6-14 years; physical activity questionnaire, personal medical history and heredofamilial of obesity and type 2 diabetes were administered to all the children. Eating patterns was performed by principal component analysis (PCA). The association between intestinal microbiota and overweight / obesity depending on diet was assessed with logistic regression models. Our results shows that the interaction between the intestinal microbiota and diet, particularly high in fats and simple carbohydrates increases the chance of developing obesity.

0953

EXPLORING HETEROGENEITY IN THE ASSOCIATION BETWEEN JOB STRAIN AND ADIPOSITY: RESULTS FROM THE BASELINE OF THE BRAZILIAN LONGITUDINAL STUDY OF ADULT HEALTH (ELSA-BRASIL) Maria de Jesus Mendes da Fonseca*, Leidjaira Lopes Juvanhol, Márcia Guimarães de Mello Alves, Aline Araújo Nobre, Dórchor Letícia de Oliveira, Cardoso Estela Maria Aquino, Luana Giatti, Maria Angélica Nunes, Rosane Härter Griep (National School of Public Health, Oswaldo Cruz Foundation, Brazil)

Introduction: Studies of job strain and adiposity have been inconclusive, which may result partly from the fact that most do not consider that job strain affects eutrophic and overweight individuals differently. **Methods:** The study sample comprised 11,960, 35-74 years old, active participants in the 2008-2010 baseline of the ELSA-Brasil study. Job strain was measured using the demand-control-support questionnaire, while how the quadrants (reference category = low strain) and the dimensions in isolation associate with Body Mass Index (BMI) and Waist Circumference (WC) was tested by quantile regression. The analyses were stratified by gender (interaction test p 0.05) and adjusted for confounders (age, schooling, income, marital status and weekly hours worked). **Results:** Among women, significant associations with the quadrants were found only in the 90th quantile between active job and lower BMI and between high strain and greater WC; inverse associations were observed between social support at work and the two outcomes in specific BMI (5th, 15th and 85th) and WC (85th) distribution quantiles. Among men, active work was found to associate directly with BMI and WC in the 30th and 10th quantiles, respectively, and an upward trend in the effects of high strain was observed along the course of the distributions of both outcomes. The association between job control and BMI was also heterogeneous along the distribution, and significant effects of psychological demands were observed only in specific BMI (30th and 35th) and WC (30th and 65th) distribution quantiles; social support at work associated significantly with lower BMI in the 20th and 25th quantiles, and with WC in the 50th and 55th quantiles. **Conclusion:** The association between job strain (quadrants and dimensions) and adiposity varies by gender and is heterogeneous over the course of the outcome distributions.

0954

ASSOCIATION BETWEEN BURNOUT SYNDROME AND METABOLIC SYNDROME IN PRIMARY HEALTH CARE NURSES IN A CITY OF BAHIA, BRAZIL Magno Conceição das Mercês*, Douglas de Souza e Silva, Douglas Marcela Andrade Rios, Marcela Daniela Sousa, Oliveira Daniela Iracema Lua, Iracema Else Lorena Pereira Guimaraes Else, Maria Lúcia Silva Servo, Maria Jaine Karenny da Silva, Jaine Johelle de Santana Passos Soares (University of the State of Bahia Brazil)

Burnout syndrome which is considered as a psychological reaction to exposure to chronic work stressors and whose classification is composed of three dimensions: emotional exhaustion (EE), depersonalization (DP) and low personal accomplishment (BRP). The duration and intensity of stress may cause short-effects or long term, may disrupt the homeostasis even result in a pathological process, such as Metabolic Syndrome (MS) (Maslach; Schaufeli; Leiter, 2001; Smeltzer et al., 2009). In this sense, the goal of the study was association between burnout syndrome and metabolic syndrome in primary health care nurses in a city of Bahia, Brazil. Cross-sectional, population-based study with 60 nursing professionals of Primary health of a city of Bahia, Brazil, with data collection in the period December 2014 to February 2015. The instrument for data collection consisted on a specific questionnaire prepared for this study and inventory Maslach Burnout Inventory, and calculating the Cronbach's alpha, pointing reliability and internal consistency. Blood samples were collected for evidence the presence of metabolic syndrome. The analysis was univariate and bivariate by using SPSS 20.0 with chi-square or Fisher's exact tests. The measure adopted epidemiological association was the Prevalence of reason. The prevalence of burnout syndrome in the population urban was 58.3%. It was identified positive association between the variables race / color (OR: 1.22), income (OR: 1.20), professional category (OR: 1.19), physical activity (OR: 1.33) alcohol consumption (OR: 1.43), satisfaction with the physical form (OR: 1.21), headaches (OR = 1.41) and dizziness (OR = 1.4), and the burnout syndrome. The prevalence of metabolic syndrome found among the studied nurses was 30.9%. It was found positive associations between burnout syndrome and hypertriglyceridemia (OR: 1.10) and low HDL (OR: 1.02). There were positive epidemiological association between burnout syndrome and hypertriglyceridemia and low HDL.

0956- S/P

A CHILDHOOD OBESITY GENETIC RISK SCORE IS ASSOCIATED WITH PEDIATRIC BUT NOT ADULT-ONSET MULTIPLE SCLEROSIS SUSCEPTIBILITY Milena Gianfrancesco*, Edison Xuu, Xiaorong Shao, Brooke Rhead, Stefan Walter, Jennifer Graves, Amy Waldman, Timothy Lotze, Teri Schreiner, Anita Belman, Benjamin Greenberg, Bianca Weinstock-Guttman, Gregory Aaen, Jan-Mendelt Tillema, Janance Hart, Jayne Ness, Yolanda Harris, Jennifer Rubin, Meghan Candee, Lauren Krupp, Mark Gorman, Leslie Benson, Moses Rodriguez, Tanuja Chitnis, Soe Mar, I Kahn, John Rose, Shelly Roalstad, T. Charles Casper Ling (University of California, Berkeley; School of Public Health)

Childhood and adolescent obesity are associated with a two-fold increased risk of pediatric and adult-onset MS. However, the relationship between childhood obesity and MS may be confounded by lifestyle and socioeconomic factors, and may partially reflect recall bias. We utilized Mendelian randomization analysis to estimate the causal relationship between increased childhood body mass index (BMI) and MS susceptibility in both pediatric and adult-onset MS populations using a childhood BMI genetic risk score (chBMI GRS). The chBMI GRS includes 28 independent variants associated with childhood BMI from several genome-wide association studies and meta-analyses. A split-sample instrumental variable (IV) analysis was used by summing all risk alleles as reported in the literature. Participants included non-Hispanic white pediatric MS cases and controls from over 15 sites across the U.S. (total sample size: 394 MS cases, 10,875 controls), and adult MS cases and controls from Kaiser Permanente, Northern California (1,104 MS cases, 10,536 controls). Pediatric MS cases displayed a higher chBMI GRS compared to adult MS cases (26.85 + 3.05 vs. 25.51 + 3.28, respectively) and controls (25.46 + 3.26). IV estimates demonstrated a significant association between chBMI GRS and pediatric MS (causal odds ratio [OR] = 1.11, 95% CI (1.07, 1.15); p<0.001) after adjusting for sex, ancestry, HLA-DRB1*15:01, and a weighted genetic risk score of 110 non-HLA MS risk variants. There was no association between chBMI GRS and adult-onset MS (OR=1.01, 95% CI 0.99, 1.03; p=0.29) after covariate adjustment. For the first time, we demonstrate that an increased number of childhood BMI risk alleles is associated with pediatric, but not adult-onset MS susceptibility. Further, pediatric MS risk conferred by obesity may involve predisposing genetic factors for childhood BMI, suggesting that specific inflammatory mechanisms involved in the obesity pathway may mediate pediatric disease onset.

0955- S/P

RACE-ETHNIC DISPARITIES IN OVERWEIGHT AND OBESITY AMONG HOSPITALIZED ADULTS IN FLORIDA Nadia Lise Fleurantin*, Tulay Koru-Sengul, Alisha Monnette, Majid Sultan Al Maqbali., WayWay M. Hlaing (University of Miami)

Introduction: Although the prevalence of overweight and obesity have increased across the United States among people of all ages, genders, and race-ethnic groups, some groups such as Black and Hispanic populations are disproportionately affected. The aims of this study are (1) to describe the prevalence of overweight and obesity, and (2) to compare the prevalence among race-ethnic groups of adults who are hospitalized in Florida. **Methods:** Among 2,673,465 de-identified in-patient hospital records of 2013 data, our analytical sample of 18+ years is 2,324,798. Overweight (278.02), obesity (278.00), and morbid obesity (278.01) is defined using the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM). Race and ethnicity variables are recoded to create five categories; Non-Hispanic Black (NHB), Non-Hispanic White (NHW), Hispanic, others, and unknown. Using the Statistical Analysis System (SAS), a Chi-squared test is done to compare weight status among race-ethnic groups. **Results:** The sample consists predominantly of Non-Hispanic White (64.7%), followed by Hispanic (16.2%), Non-Hispanic Black (15.9%), others (2.4%), and unknown (0.8%). The mean age is 59.1 years with a preponderance of women (56.5%) in our sample. The combined prevalence of overweight, obesity, and morbid obesity is 12.6%. In the overweight group, Hispanic (0.56%) has the highest prevalence of overweight, followed by NHW (0.34%), and NHB (0.31%). For obesity, NHB (8.43%) and Hispanic (7.30%) both have higher prevalence compared to NHW (7.18%). NHB (6.89%) group has the highest prevalence of morbid obesity, followed by NHW (4.72%) and Hispanic (4.02%) groups (p<.001). **Conclusion:** Our retrospective record review indicates that race-ethnic disparities of overweight and obesity exist in the hospitalized population of Florida adults. Our analysis plan is to further assess the areas in which disparities occur among this sample.

0957

ASSOCIATION BETWEEN OBESITY AND CIGARETTE SMOKING AMONG NORTHERN SAUDI CIVILIAN: A COMMUNITY BASED STUDY Ibrahim Ginawi* (University of Hail)

Background: Smoking cigarettes and obesity are major public health problems and leading causes of preventable morbidity and mortality worldwide. **Objectives:** The aim of this study was to investigate the relationship between smoking cigarettes and body weight status among Northern Saudi subjects. **Methods:** Data were collected during cross-sectional survey which included 5000 Saudi selected from 30 primary health care centers (PHCs) in Hail Region. Results: The overall prevalence of obesity in Hail was 63.6%. The prevalence of smoking cigarettes were 9.92%. The prevalence of obesity (primarily over weight) is high among current smokers (138/39.5%). The ex-smokers showed very high prevalence of obesity in term of all types; overweight, obese and morbid obesity (784/40.3%, 323/16.6%, 326/16.8%) respectively. **Conclusion:** The study showed that cigarette smoking was associated with all types of obesity. However more efforts should be put on the risk of obesity among smokers. Key words: obesity, cigarette smoking, Saudi

0958

NUTRITION AND PHYSICAL ACTIVITY BEHAVIORS BASED ON WEIGHT INTENTIONS IN A REPRESENTATIVE SAMPLE OF US HIGH SCHOOL STUDENTS

Lisa Kakinami*, Stephanie Houle-Johnson, Zewditu Demissie, Sylvia Santosa, Janet Fulton (Concordia University)

Almost 1/3 of youth are overweight/obese, and many report an intention to lose weight. Little is known about the nutrition and physical activity (PA) behaviors among youth with different weight intentions and whether use of weight control strategies translates to healthier behaviors. Data were obtained from the 2010 National Youth Physical Activity and Nutrition Study, a cross-sectional, nationally representative sample of U.S. high school students and restricted to overweight/obese students with no missing relevant data (n=3,342). Logistic regression assessed the odds of meeting recommendations (> 5 fruits and vegetables [F&V] times/day, and > 60 minutes of PA/day and > 3 days of strength training/week) by 1) weight intention (lose, gain, or maintain weight vs. no intention); and 2) use of weight control strategies (exercising or eating more F&V to lose or keep from gaining weight in the past 30 days) among those trying to lose or maintain weight. Analyses adjusted for age, sex, and race/ethnicity. Most (76%) were trying to lose weight; less were trying to gain (5%), maintain (10%), or had no intentions (8%). The prevalence of meeting recommendations was 6.3% (F&V) and 12.0% (PA). Those trying to lose, gain, or maintain weight were more likely to meet F&V (OR: 1.8, CI: 1.0-3.0; OR: 3.9, CI: 2.3-6.6; OR: 2.2, CI: 1.2-4.0, respectively) and PA recommendations (OR: 2.0, CI: 1.1-3.6; OR: 8.2, CI: 4.5-15.2; OR: 3.8, CI: 1.8-8.0, respectively) compared to those with no intentions. Among those trying to lose or maintain weight, using F&V as a weight control strategy was associated with meeting F&V recommendations (OR: 3.6, CI: 2.9-4.4), but using exercise for weight control was not associated with meeting PA recommendations (OR: 1.4, CI: 0.9-2.2). Having a weight intention was associated with higher likelihood of meeting recommendations, but associations with use of particular strategies were mixed. Further study on the strategies and how they relate to weight is needed.

0960-S/P

OBESITY AND COLORECTAL CANCER IN ADULTS: A MATCHED CASE-CONTROL STUDY IN MEXICO

Oscar Ovalle-Luna*, Benajmin Acosta-Cazares, Saul Rodriguez-Ramirez, Sandra Ruiz-Betancourt (Mexican Institute of the Social Security)

Objective: To determine the relationship between obesity and some life-style variables with the risk for colorectal cancer (CCR). **Methods:** A matched case-control study by sex and age (± 5 years) was done in a Hospital of Oncology from the Mexican Institute of the Social Security. Cases (CCR) had less than 6 months of evolution and they were aged between 20 and 74 years; participants with Lynch syndrome, polyposic familial adenoma, ascites and kidney failure were excluded. People that attended a General Hospital for low-risk procedures from surgery, ophthalmology and otorhinolaryngology services were selected as controls. Obesity was classified according to BMI criteria issued by the WHO. Historical records for weight and height for the last 10 years were asked to the National Health Information Department for all subjects. The questionnaire included food-frequency, alcohol consumption and physical activity. Matched odds ratio (MOR), McNemar test and a conditional logistic regression model were calculated by using SAS version 9.3. **Results:** 169 matched pairs were included, 52.1% were male, the median of age was 62 years (IQR 16 for cases and 17 for controls). Historical BMI values obtained 5 to 10 years before the inclusion of the study showed that overweight had a MOR=4.0 (CI95% 0.84,18.83) $p=0.07$, obesity=1.25 (CI95% 0.33,4.65) $p=0.73$; physical activity was 0.84 (CI95% 0.54,1.30) $p=0.44$ and alcohol consumption 3.13 (CI95% 1.75,5.60) $p<0.001$. Matched logistic regression showed that historical obesity had an OR=2.29 for developing CCR (CI95% 0.37,13.98) $p=0.36$, alcohol consumption had OR=4.98 (CI95% 0.58,42.61) $p=0.14$ and family history of cancer was 2.51 (CI95% 0.42-14.81) $p=0.30$. **Conclusions:** Results show that obesity is a risk factor for colorectal cancer like other studies have reported. Mexico is the country with the highest prevalence of obesity in the world therefore prevention interventions are needed to reduce the risk for developing cancer and other chronic diseases.

0959-S/P

COMMUNITY AUDIT OF SOCIAL, CIVIL, AND ACTIVITY DOMAINS IN DIVERSE ENVIRONMENTS (CASCADDE): A NEW COMMUNITY AUDIT METHODOLOGY FOR DIRECT OBSERVATION OF OBESITY-RELATED ENVIRONMENTAL FEATURES

Emily Knapp*, Claudia Nau, Thomas Glass (Johns Hopkins School of Public Health, Department of Epidemiology)

The Community Audit of Social, Civil, and Activity Domains in Diverse Environments (CASCADDE) is a new iPad-based direct observation tool designed to address gaps in existing community audit tools. It is designed for urban, rural, and suburban settings, has a replicable spatial sampling strategy, and characterizes the obesogenic environment along multiple domains. The 214-item tool yields 7 indices to measure physical activity promoting features, aesthetic quality, social cohesion, barriers to physical activity, environmental features that promote safety, commercial and civic activity, and incivilities. CASCADDE was developed as part of an ongoing study of determinants of childhood obesity in Pennsylvania. CASCADDE observations were recorded during daylight hours by a single auditor at 519 geographic points in 30 communities. Observation points were selected by random sampling of street segments using GIS. Observations took on average 10 minutes to complete. Sensitivity analyses demonstrated that 15 points were sufficient to characterize conditions within a community. To assess validity we examined Spearman correlations between key items, indices, and a standard walk score and census variables. Results suggest that the CASCADDE co-varies with criterion variables, and that it measures aspects of communities not captured by traditional secondary data sources. To evaluate consistency among multiple observations in the same community, we fitted a multilevel model and calculated intraclass correlation coefficients (ICCs) for each index. With the exception of the social cohesion, all ICCs were 20% or higher, suggesting that there were statistically significant differences between the 30 communities examined. Additional work is needed to assess reliability and to evaluate the association of the CASCADDE with other outcomes. Direct observation tools such as CASCADDE may complement and extend secondary data sources for the purpose of characterizing the obesogenic environment.

0961

SMOKING DURING PREGNANCY AND BMI-Z AT AGE 5 YEARS: WITHIN-FAMILY ANALYSIS

Sheryl Rifas-Shiman*, Summer Hawkins, Matthew, Gillman, Elsie Taveras (Department of Population Medicine, Harvard Medical School and Harvard Pilgrim Health Care Institute)

Background: Previously reported associations of smoking during pregnancy with childhood obesity may be confounded by sociocultural factors. To address this possibility, we assessed this association within sibling pairs. **Methods:** From the Linked CENTURY Study, a longitudinal clinical database of well-child visits from 1980 to 2008 in eastern Massachusetts linked to each child's birth certificate, we examined the association of smoking during pregnancy with BMI-z at age 5 years among 14,008 siblings and their mothers from 7,004 families. We used a single linear mixed model, adjusted for mother's age, parity and race/ethnicity and child's age, sex, birth year, to decompose the total association into a within-family component and an additional between-family component. The outcome was observed BMI-z at 5 years. **Results:** Mothers smoked during 633 (5%) of their pregnancies and 6,887 (49%) of the children were female. 3,264 (23%) of the mothers were non-white and mean (SD) age was 31.2 (4.8) years. Mean (SD) childhood BMI-z at was 0.49 (1.00) at a mean age of 5.3 (0.3) years. The within-family association of smoking during pregnancy was 0.10 lower BMI-z at 5 years (95% CI -0.23, 0.04) and the additional between-family association was 0.36 higher BMI-z at 5 years (95% CI 0.19, 0.54). **Conclusions:** The within-family effect of smoking during pregnancy was small; suggesting that previously reported direct associations of smoking during pregnancy with childhood obesity may be confounded by unmeasured variables. This study highlights advantages of linking clinical and vital statistics databases to examine early life risk factors for obesity.

0970-S/P

BURNOUT AS PREDICTOR OF PHYSICAL, PSYCHOLOGICAL AND PROFESSIONAL CONSEQUENCES: SYSTEMATIC REVIEW OF PROSPECTIVE STUDIES Francine Nesello Melanda*, Denise Albieri Jodas Salvagioni, Flávia Lopes Sant'Anna, Alberto Durán González, Arthur Eumann Mesas, Selma Maffei de Andrade (UEL/IFPR)

This study aims to identify the physical, psychological and professional consequences of burnout in prospective studies published in scientific journals. This is a systematic review conducted as recommended by the Transparent Reporting of Systematic Reviews and Meta-Analyses. We searched the databases PubMed, Science Direct, PsycINFO, SciELO, LILACS and Web of Science, without language restriction, publication period or study population. The inclusion criteria were: original studies with quantitative data, published as complete articles in journal with editorial board, with prospective design and that analyzed burnout as exposure for health or professional consequences. A total of 805 articles was identified. Of these, 264 were duplicates, four studies were added from references of the articles selected and 483 were excluded after reading the titles, the abstracts or the full texts, resulting in a final sample of 62 studies. Approximately half (50.8%) of the studies took place in Finland, the Netherlands and Israel; 85.5% investigated workers from various segments. Severe injuries, mortality, cardiovascular diseases, insomnia, musculoskeletal pain, headaches, gastrointestinal and respiratory problems, fatigue, type 2 diabetes, hyperlipidemia, hospitalization due to cardiovascular and musculoskeletal disorders were the main physical consequences for those who were exposed to burnout. The psychological effects were depression, suicidal ideation, use of psychotropic and the antidepressant medication, stress and hospitalization for mental disorders. Work disability, absenteeism, sick leave absences, reduced job performance and turnover, lost time, job dissatisfaction, presenteeism, work/family conflict and intention to leave the profession were the main professional outcomes. This review provides evidence of some consequences of burnout and highlights the importance of its prevention by intervention programs.

0972

HIV TESTING IN THE U.S. WORKFORCE Felicia Casanova*, Ocasio Manuel, Yi Du, Alexis Goldstein (University of Miami, Dept. of Public Health Sciences)

Objective: To characterize lifetime HIV testing prevalence among workers in the United States (U.S.) by industry sector. **Methods:** Nationally-representative cross-sectional survey data from the 2004-2014 National Health Interview Survey (NHIS) for lifetime HIV Testing and HIV testing prevalence from 2004-2014. Employed respondents were grouped into eight industry group classes. Adjusted bivariate logistical regression models were used to compare the lifetime HIV testing prevalence among industry sector adjusting for socio-demographic characteristics, and healthcare access and utilization indicators. All analyses adjusted for complex survey design and sample weighting. **Results:** Overall lifetime testing prevalence was 35.2% (95% CI: 34.9-35.5). Among sociodemographic characteristics, female workers (42.1; 41.7-42.4), black workers (57.3; 56.5-58.2), workers aged 25-64 (40.8; 40.5-41.1) and workers with greater than a high school education (42.1; 41.7-42.5) reported the highest lifetime prevalence estimates of HIV testing. Among healthcare utilization indicators, insured (38.7; 38.3-39.0) relative to uninsured (40.2; 39.6-40.8). In addition, workers who had seen a primary care physician in the last 12 months (41.5; 41.1-41.8) reported a significantly higher prevalence compared to workers who had not (33.1; 32.6-33.6). Among U.S. worker industry sectors, prevalence estimates varied substantially, with Agricultural, Fishing and Forestry workers reporting the lowest lifetime prevalence (23.4; 21.9-25.0) and Service workers (42.5; 41.8-43.2). **Conclusions:** Despite ongoing changes in increasing insurance and healthcare accessibility in the U.S., results indicate risk of continued workforce industry disparities in HIV testing among U.S. workers. Understanding these risks in current HIV surveillance may provide new opportunities for targeted workplace intervention.

0971-S/P

SOCIO DEMOGRAPHIC PROFILE AND PREVALENCE HYPERTENSION OF AMONG RICKSHAW PULLERS IN DELHI Panna Lal*, Mohit Batra (Maulana Azad Medical College, Community Medicine)

Various studies have confirmed rickshaw pullers to be a high risk group for diseases due to the nature of their occupation which also requires extreme muscle force leading to increased cardiovascular load. This study was conducted to find out the socio demographic profile and prevalence of pre-hypertension and hypertension and related risk factors among rickshaw pullers in Delhi. A total of 305 rickshaw pullers, selected from five sites each of central and east Delhi, were interviewed by semi structured pretested questionnaire seeking information regarding age, education status, income, sleeping pattern, working hours, labour hours, distance travelled, tobacco use, substance abuse, etc. More than half (57.4%) of study subjects were illiterate with 88.5% of them having monthly income less than Rs 10,000 and had to support on an average 5 family members back home. Almost three fourth (73.1) of rickshaw pullers were into substance abuse. Majority of rickshaw pullers (85.9%) were either found to have pre hypertension or hypertension Mean systolic B.P. was 127.55±15 mm Hg and mean diastolic B.P. was found to be 81.9±10 mm Hg. Major factors found to be statistically significant with hypertension or pre hypertension were age >40 years (p value 0.017) and substance abuse (p value 0.044). A large no. of subjects were into substance addiction and more than half of rickshaw pullers were illiterate. A large percentage of rickshaw pullers were found to be in pre-hypertensive (50.2%) or hypertensive (35.7%) group. This calls for a lifestyle intervention, initiation of BCC strategies in this cadre of workers for prevention and control of hypertension in them.

0973-S/P

CHEMICAL AND PHYSICAL EXPOSURES AMONG GREEN COLLAR AND NON-GREEN COLLAR WORKERS Charles Chen*, Kevin Moore, David Lee, Lora Fleming, Kristopher Arheart, William LeBlanc, Laura McClure, Sharon Christ, Cristina Fernandez, Manuel Cifuentes Alberto Caban-Martinez (University of Miami Miller School of Medicine)

Background: Green collar workers are individuals employed in "green" businesses whose services and work products directly improve environmental quality and sustainability. Despite the growth of green collar jobs supported by the U.S. Green Jobs Act of 2007, little is known about the inhalable and other chemical occupational exposures of this newly emerging workforce. In the present study, we use nationally representative data to estimate and compare the prevalence of select physical and chemical exposures in Green versus non-Green U.S. workers. **Methods:** Data from the 2010 National Health Interview Survey Occupational Health Supplement was linked to the Occupational Information Network Database (O*NET) via the Research Data Center at the National Center for Health Statistics to classify green and non-green collar workers. Estimates for inhalable (i.e., vapors, gas, dust, fumes; outdoor work; and environmental tobacco smoke) and other chemical occupational exposures were adjusted for the complex survey design and stratified by socio-demographic characteristics (e.g. gender, race, ethnicity, age group, and geographic region). **Results/Outcomes:** In 2010, 32% of Green collar workers reported exposure to vapors, gas, dust, or fumes in the workplace twice a week or more compared to 22% of non-Green workers. Green collar workers were the least exposed to other chemicals (19%) but slightly greater exposed to work outdoors when compared to non-Green workers (34% and 22%, respectively). Green collar workers also reported higher smoke exposure (17%) compared to their non-Green counterparts (14%). **Conclusions:** Green collar workers report higher exposure to vapors, gas, dust or fumes and outdoor work, and secondhand smoke, but less to chemicals than non-green collar workers. More specific measures are needed and warrant further research.

0974

WORKING CONDITIONS AND GENDER DIFFERENTIALS: A SITUATION ANALYSIS OF BASIC EDUCATION TEACHERS IN BRAZIL Julianade Jesus Silva*, Ada Ávila Assunção (Universidade Federal de Minas Gerais (UFMG))

In recent decades, transitions in the Brazilian education system caused changes in the work of teachers. In basic education, there is the feminization of the teaching. Historically, women experience worse working conditions than men, both in the labor market in general and in teaching. In Brazil, there are few studies on the national territory about the situation of basic education teachers. The aim is to examine gender differences in relation to exposure to material conditions and access to teaching materials from 2,190,743 teachers according to the School Census data. These secondary data are collected annually from all schools of the educational system by the National Institute for Education Studies (INEP) and is available for download. This is a quantitative study, including professional basic education in Brazil who exercised teaching function and provided their data to the School Census between 2007 and 2014. Data are being collected on secondary basis. Sociodemographic and infrastructure schools variables will be included. All variables will be contrasted with gender to identify the possible differences between male and female teachers. Descriptive statistics will be used for data analysis.

0976

SHIFTWORK AND PERCEIVED STRESS AMONG POLICE OFFICERS: THE BCOPS STUDY Jin Fukumoto*, Luenda E. Charles, Songzhu Zhao, Desta Fekedulegn, John M. Violanti, Michael E. Andrew, Cecil M. Burchfiel (West Virginia University, Morgantown, WV, USA)

Background: Night shift work is generally considered to be a stressor but it may not be stressful for all workers. Our objective was to investigate the association between shiftwork status and perceived stress among police officers. **Methods:** This cross-sectional study was conducted in 387 officers (73.1% men) who participated in the Buffalo Cardio-Metabolic Occupational Police Stress (BCOPS) study. Shiftwork status (day, afternoon, night) was assessed objectively using daily City of Buffalo, NY payroll work history records. In this study, we used an officer's dominant shift (defined as the shift during which he/she worked the largest percentage of hours) in the past year. Perceived stress was assessed using the Perceived Stress Scale (PSS-14). Officers rated each of the 14 items on a 5-point scale based on the frequency with which a particular event was experienced; half of the items were designed to identify positive events and were reverse-coded. The total PSS scores ranged from 0 to 56 with higher scores indicating higher stress. ANOVA and ANCOVA were utilized to compare mean values of perceived stress across shiftwork status. **Results:** Mean age of all officers was 41.4 years (SD=6.6). Shiftwork status was significantly associated with perceived stress after adjustment for age, gender, and sleep quality: day (21.7±0.62), afternoon (20.5±0.78), and night shift (18.0±0.83), $p=0.003$. Multiple comparisons analysis showed that mean levels of perceived stress were significantly higher for officers on the afternoon ($p=0.027$) and the day ($p=0.001$) shifts compared to those on the night shift. **Conclusions:** Surprisingly, our results showed that mean levels of perceived stress were significantly higher for officers working the day and afternoon shifts compared to those on the night shift. Further investigations are warranted to determine if shiftwork status is a risk factor for elevations in perceived stress.

0975-S/P

ANXIETY AND DEPRESSION AMONG WORKERS FROM A YOUTH CUSTODY CENTRE (FASE) IN BRAZIL Fernando Feijó*, Cristiane Bündchen, Inaiara Kersting, Paulo Antonio Oliveira (Federal University of Rio Grande do Sul)

Objectives: FASE workers have high prevalence of mental disorders in Brazil. This study aimed to investigate prevalence and levels of depression and anxiety and their relation to psychosocial risks in this public institution. **Methods:** Cross-sectional study with a sample of 214 workers. We used the Job Stress Scale to evaluate the exposure to psychosocial factors at work based on the job strain model. To evaluate mental health outcomes, we used validated Brazilian versions of Beck Depression Inventory and Beck Anxiety Inventory. T test and chi-square were performed to evaluate factors and covariates in the bivariate analyzes. Poisson regression with robust variance and Wald test were used to estimate prevalence ratios (PR) and the significance of each factor. **Results:** Workers from detention houses had worse rates of occupational stress and greater prevalence and levels of depression and anxiety compared to administrative workers. Workers with high demands at work had a higher prevalence of anxious and depressive symptoms. Job strain was associated with depressive symptoms (PR = 2.36) and anxiety (OR = 2.10), even after controlling for covariates. Low social support was associated with a higher prevalence of depressive and anxiety symptoms. **Conclusions:** Our findings confirm the assumptions of the job strain model, demonstrating that occupational stress is associated with worse mental health outcomes in this sample. Social support had a buffer effect on stress in this sample of workers. Interventions are needed in the institution in order to intervene in work processes within the organization, with emphasis on improving social support in order to prevent and promote mental health among these workers.

0977

CONSEQUENCES OF INJURIES – HEALTH STATUS AMONG AGRICULTURAL OPERATION ADULT HOUSEHOLD MEMBERS: REGIONAL RURAL INJURY STUDY-III Susan Gerberich*, Colleen Renier, Andrew Ryan, Bruce Alexander (Midwest Center for Occupational Health and Safety Education and Research Center, Division of Environmental Health Sciences, University of Minnesota)

Background: Long-term health status of adults on family agricultural operations may be affected by their own illness, injury, and disability and those of household (HH) members; yet, little is known about the effect of these conditions on their health status. The Health Utilities Index-3 (HUI3), developed to assess outcomes associated with disease, injury or therapy, measures health status, reporting health-related quality of life, and producing utility scores on the 0.00=dead and 1.00=perfect health scale. **Methods:** Data, including the HUI3, were collected for 1,459 eligible agricultural operation HHs in Minnesota, Wisconsin, North Dakota, South Dakota, and Nebraska. Two six-month injury data collection periods followed baseline collection; annual follow-up data were collected for two years. Mixed models analysis, adjusted for within-HH and within-subject correlation, weighted for non-response, evaluated the longitudinal association between HUI3 scores and injury, illness and disability among HH members. A difference of 0.03 was defined as a "minimum clinically important difference" (MCID). **Results:** A total of 1,632 HH × Interview Set × Person combinations, for 737 HHs and 1,525 adults, were included. Mean Baseline HUI3 multi-attribute utility score was 0.888. MCID among adults were associated at each interview (baseline, injury, 1-year and 2-year follow-up) with personal disability (-0.22, -0.13, -0.24, -0.24), personal medical/health problems (-0.09, -0.06, -0.08, -0.08), personal injury (-0.08, -0.13, -0.09, -0.09), and disability among HH youth (-0.05, -0.04, -0.06, -0.06) and other HH adults (-0.04, -0.05, -0.04, -0.05). **Conclusions:** Health status of adults on family agricultural operations is impacted to a clinically important and statistically significant level in association with not only the adult's own previously diagnosed/treated health conditions, pre-existing disabilities, and current injuries, but also the pre-existing disabilities of other HH members.

0978-S/P

ATTITUDES OF VETERINARIANS TOWARD MENTAL ILLNESS — UNITED STATES, 2014

Ahmed Kassem*, Tracy Witte Randall Nett, Kris Carter (Centers for Disease Control and Prevention)

Background: Suicide rates among veterinarians are 1.7–2.6-fold higher than the U.S. population. Because negative attitudes toward mental illness deter care seeking and data regarding veterinarians' attitudes are limited, we examined associations with negative attitudes of veterinarians toward mental illness. **Methods:** Using data from a 2014 cross-sectional web-based survey of U.S.-employed veterinarians, we assessed demographic, occupational, and mental health characteristics. We defined negative attitude as slight or strong disagreement with each of two validated 5-level Likert items, "Treatment can help people with mental illness lead normal lives" (treatment effectiveness) and "People are generally caring and sympathetic to people with mental illness" (public attitudes). We used multivariable logistic regression to calculate adjusted odds ratios (aORs) and 95% confidence intervals (CIs) for associations with negative attitude. **Results:** Among 9,522 veterinarians, 6,588 (69%) were women; 4,523 (48%) were aged 40–59 years; 291 (3%) had a negative attitude toward treatment effectiveness; and 4,504 (47%) had a negative perception of public attitudes. Negative attitude toward treatment effectiveness was positively associated with male sex (aOR 1.79, CI 1.36–2.36), solo practice (aOR 1.60, CI 1.17–2.19), past month serious psychological distress (SPD) (aOR 2.11, CI 1.51–2.93), and any suicidal ideation after veterinary school (aOR 1.83, CI 1.33–2.53). Negative perception of public attitudes was positively associated with age 40–59 years (aOR 1.18, CI 1.02–1.37), solo practice (aOR 1.23, CI 1.09–1.39), SPD (aOR 1.55, CI 1.32–1.81), and any depression after veterinary school (aOR 1.21, CI 1.08–1.35). **Conclusion:** Male sex, practice setting, and mental health history might be used to target interventions to support and educate veterinarians about mental illness to modify their attitudes, improve care seeking, and reduce suicides.

0980-S/P

USE OF PSYCHIATRIC MEDICATION AMONG MINAS GERAIS STATE COURT WORKERS, BRAZIL

Eduardo Lima*, Bruna Costa, Ada Assunção (Núcleo de Estudos Saúde e Trabalho, Universidade Federal de Minas Gerais, Brazil)

The use of anxiolytics and antidepressants indicates the presence of psychiatric morbidity among active workers in labor market. When used without proper orientation (self-medication), the consumption of these substances can exacerbate or cause more serious conditions, including intoxication and dependence. Cross-sectional study, with random and representative sample, is being held at the Minas Gerais State Court, Brazil. The aim is to investigate the prevalence and occupational factors associated with psychiatric self-medication among State Court workers. Data is being collected by telephone survey, including socioeconomic, occupational, and health information. Among the occupational variables we call attention to position, work location (city), area of work at Court (criminal, civil, etc.), career length at State Court (in years), demand, control and social support. The Portuguese version of the Job Stress Scale is being used to measure psychosocial factors. Logistic regression models will be used to evaluate the association of psychiatric self-medication with occupational variables.

0979-S/P

CHANGING PATTERNS IN THE PERFORMANCE OF FLUOROSCOPICALLY-GUIDED INTERVENTIONAL PROCEDURES AND ADHERENCE TO RADIATION SAFETY PRACTICES AMONG U.S. RADIOLOGIC TECHNOLOGISTS

Hyeeyun Lim* (National Cancer Institute)

BACKGROUND: The number of fluoroscopically-guided interventional (FGI) procedures performed in the United States has rapidly increased, but limited historical information exists about specific FGI procedures that radiologic technologists assisted with or radiation safety practices associated with these procedures. **METHODS:** We studied 12,571 U.S. radiologic technologists who reported ever assisting with FGI procedures at least once a month and completed a mailed questionnaire describing their detailed work practices for 21 FGI procedures and associated radiation safety practices during five time periods (pre 1970, 1970-79, 1980-89, 1990-99, and 2000-09). **RESULTS:** The proportion of technologists who assisted with percutaneous coronary interventions, electrophysiology diagnostic studies and ablations, embolizations, endovascular therapeutic procedures, peripheral and other vascular procedures, urologic procedures, vertebroplasty, and biliary/gastric procedures increased over time, while the proportion of technologists assisting with diagnostic cardiovascular catheterization and neuroangiographic procedures decreased. We also observed substantial increases in the median number of times per month that technologists assisted with diagnostic cardiovascular catheterizations, percutaneous coronary interventions and dialysis interventions. In each time period, the majority of technologists reported consistently (75 – 100% of work time) wearing radiation monitoring badges at neck or chest level and lead aprons when they assisted with FGI procedures. Although use of other safety measures generally increased over time, thyroid shields, lead glasses, and room shield were consistently used less than 30 – 50% of the time even in more recent time periods. **CONCLUSIONS:** Information from this study can be used to provide individual dose estimates in conjunction with badge dose measurements and to identify gaps in radiation safety practices for radiologic technologists who working with FGI procedures.

0981

THE EFFECT OF WORLD TRADE CENTER EXPOSURE ON THE LATENCY OF AERODIGESTIVE DIAGNOSES IN NEW YORK CITY FIREFIGHTERS: 2001-2011

Xiaoxue Liu* (MONTEFIORE MEDICAL CENTER)

Objective The destruction of the World Trade Center (WTC) exposed responding firefighters to a massive dust cloud containing particulate matter and products of combustion and pyrolysis. We wished to assess change over time in the effect of this exposure on the incidence of physician-diagnosed obstructive airway disease (OAD), chronic rhinosinusitis (CRS) and gastro-esophageal reflux disease (GERD) between 9/11/01 (9/11) and 9/10/11. **Methods** Exposure was categorized by time of initial exposure: high (9/11 AM); moderate (9/11 PM or 9/12/01); or low (9/13/01-9/24/01). Confirmed cases of OAD, CRS, and GERD were diagnosed post-9/11 by Fire Department of City of New York (FDNY) physicians. Piecewise exponential survival models were used to estimate incidences by arrival group, with change points in the relative incidences estimated by maximum likelihood. **Results** Incidence in all exposure increased after the WTC Health Program began to offer free coverage of medications after 2007. For OAD, change points were observed at 15 and 84 months post-9/11, with relative incidence rates for the high vs. low exposure group of 4.02 (95% CI 2.62-6.16) prior to 15 months, 1.90 (95% CI 1.49-2.44) from months 16 to 84, and 1.20 (95% CI 0.92-1.56) thereafter. For CRS and GERD, we observed no change point during the study period, meaning the relative incidences of CRS and GERD disease did not change significantly during the post-9/11 decade. The relative rate of developing CRS was 1.99 (95% CI=1.64-2.41) for high vs. low exposure during the 10 year follow-up; the relative rate of developing GERD was 1.24 (95% CI=1.06-1.46) for high vs. low exposure during follow-up. **Conclusions** New OAD diagnoses are associated with WTC exposure for at least seven years. New CRS and GERD diagnoses are associated with WTC exposure for at least ten years. Our results support recognizing OAD, CRS and GERD among rescue workers as WTC-related even when diagnosed years after exposure.

0982

EVALUATION OF OCCUPATIONAL BENZENE EXPOSURE AND LEUKEMIA MORTALITY: A LIFETABLE ANALYSIS OF THE PLIOFILM COHORT Julie Goodman*, Kirsten Zu, Julie Goodman, Gloria Tao, Lorenz Rhomberg (Gradient)

US EPA based its benzene carcinogenicity assessment on the Pliofilm cohort. In this study, we evaluated associations between benzene exposure and mortality risks from acute non-lymphocytic leukemia (ANLL) and one of its subtypes, acute myelocytic leukemia (AML), using this cohort's updated exposure estimates and mortality data. We calculated standardized mortality ratios (SMR) for ANLL and AML using life table analyses, with various exposure quantile categories and lag times. When no lag was assumed, for ANLL, one case (SMR = 1.73, 95% confidence interval [CI] = 0.04-9.62) was observed in the second highest exposure category (20.25-80.10 ppm-years) and seven cases (SMR = 9.94, 95% CI = 4-20.48) were observed in the highest exposure category (80.11 ppm-years); for AML, all six cases were observed in the highest exposure category (SMR = 10.11, 95% CI = 3.71-22.01). Lag analysis suggested that exposure within 10 years of cancer onset may be most relevant for leukemia induction. Our results confirmed the association between high-level benzene exposures and leukemia risks, providing further evidence of a threshold effect and relevant exposure window. Our findings call for an updated risk assessment for benzene leukemogenicity, using updated exposure estimates and mortality data.

0983- S/P

IRRATIONAL USE OF ANXIOLYTICS AMONG FIREFIGHTERS IN BELO HORIZONTE, BRAZIL Danielle Sandra da Silva de Azevedo*, Ada Ávila Assunção, Eduardo de Paula Lima (UFMG)

The rational use of anxiolytics refers to the situation where the user has been diagnosed with mental illness and is under specialized monitoring. The opposite is characterized as irrational use, leading to increased risk of cognitive and behavioral changes. It is possible that groups with higher exposure to stressful events are more vulnerable to irrational use of anxiolytics. Working conditions of firefighters negatively influence mental health. In an attempt to block the psychic symptoms such subjects would use unhealthy coping strategies, such as the irrational use of anxiolytics? The study aims to investigate the prevalence and factors associated with rational and irrational use of anxiolytics in firefighters from the city of Belo Horizonte. Transversal research based census, held in 2011, with male firefighters (n = 711) through self-report questionnaire. Multinomial logistic regression models were used to analyze the association between outcome and socio-demographic characteristics, living, health and work conditions. The prevalence of rational and irrational use of anxiolytics was 2.4% and 7.5%, respectively. Most irrational consumption was found among the oldest in the corporation and the group reported smoking. Symptoms consistent with common mental disorder was associated with the most rational and irrational use. Psychosocial factors at work did not remain associated. The healthy worker effect and social recognition are possibly modulating the described associations. Firefighters with more working time may be more vulnerable to irrational use due to the physiological effects of aging and the cumulative exposure to occupational fatigue. Smoking can be harmful coping strategy to the same situations of anxiety that led to the use of anxiolytics. Psychic symptoms indicate the need for greater attention to the mental health of firefighters.

0990

IMPACT OF SHORTENED DENTAL ARCHES ON ORAL HEALTH-RELATED QUALITY OF LIFE

Jos Leopoldo Ferreira Antunes*, Haiping Tan, Karen Glazer, Peres Marco Aurelio Peres (University of Sao Paulo, School of Public Health)

This study described the prevalence of adults with shortened dental arches (SDA) in Brazil, specifically assessing the differences of oral health-related quality of life [the prevalence and severity of oral impacts on daily performance (OIDP)] by dentition status. We analyzed data from the 2010 National Survey of Oral Health in Brazil, including home interviews and oral examinations. The assessment of SDA used two alternative definitions: having 3-5 natural occlusal units (OUs) in posterior teeth, or having 4 OUs in posterior teeth. Both definitions included having intact anterior region and no dental prosthesis. The analysis was weighted and a complex sampling design was used. Negative binomial regression models assessed associations as adjusted for socio-demographic conditions and dental outcomes. 9,779 adults (35-44 years old) participated in the study. A non-negligible proportion had SDA: 9.9% and 3.8% for the first and second definition, respectively. Individuals with SDA (first definition) ranked higher in OIDP prevalence [count ratio (CR) 1.22; 1.09-1.36, 95% confidence interval (CI)] and severity (CR=1.43; 1.19-1.72, 95%CI) than those with more natural teeth. This difference was not statistically significant when adjusted for sociodemographic and dental covariates: OIDP prevalence (CR=1.04; 0.92-1.17, 95%CI) and severity (CR=1.09; 0.91-1.30, 95%CI). Analogous results were obtained when the second definition of SDA was adopted. These findings suggest that a considerable contingent of adults may function well without dental prostheses, despite having several missing teeth. This conclusion challenges the traditional approach of replacing any missing tooth, and instructs the allocation of more dental resources to preventive, diagnostic and restorative services.

0993- S/P

EPIDEMIOLOGICAL PROFILE OF SNAKEBITES IN THE AMAZON FROM 2008 TO 2012

Raquel Tomé da Silva*, Ana Paula Miranda mundim Pombo (Instituto de pós graduação - IPOG)

The snakebites pose serious public health problem in tropical countries by the frequency with which they occur and the morbidity and mortality they cause. In Brazil are recorded about 26.000 cases a year. In Amazonas, the 1% mortality associated with snake bites. In order to obtain the epidemiological profile of snakebites, it performed a descriptive observational study based on secondary data, from 2008 to 2012, presenting an incidence of snake bites in the state of Amazonas second most affected municipalities, main kinds of snakes involved, seasonality and population affected by gender and age group. The data were analyzed retrospectively. It was addressed in the study population that has been victim of snakebite and has issued in the System for Notifiable Diseases Information System (SINAN). Among the findings is that in the period 2008-2012 were 7.685 reported cases of accidents by venomous snakes in the Amazon, the incidence rate was 2.20/1.000 inhabitants. The municipality of Uarini prevailed during the first 4 years of study. In 2008, 2010 and 2011 the municipality of Alvarães drew attention to present one of the main rates of snakebites incidences of State. The municipality of São Gabriel da Cachoeira prevailed in 2008, 2009 and 2012. The year 2009 showed a higher frequency of notification of snakebites in this period was recorded one of the largest river floods, extolling the idea of the influence of rainfall. The months with the highest occurrence of accidents were: January, February, March, April and May are treated the Amazon winter period. The snake genus with the highest incidence of accidents was Bothrops (67%), followed by Lachesis (22%). Were most affected male people (79%) and aged over 50 (17%), it is even active population in the Amazon. Finally, it is concluded that the epidemiological profile in the Amazon is no different to that found in the rest of Brazil. However epidemiological studies on the subject in the North are still scarce.

0991- S/P

INTENSIVE CARE PATIENTS AND ACUTE KIDNEY INJURY INCIDENCE IN A MULTICENTER PROSPECTIVE STUDY IN AMAZON, BRAZIL

Dirce Zanetta*, Fernando Melo, Waledya Melo Natali Mendes, Marcos Daniel Xavier, Emmanuel Burdmann Dirce, Maria Zanett (University of Sao Paulo)

Background: In some areas of developing countries, infectious tropical diseases or animal venoms may be important causes of acute kidney injury (AKI). Epidemiological studies of AKI incidence in these areas are scanty and prospective population-based studies are even scarcer. **Method:** Prospective data on all adult patients admitted in all intensive care units (ICU) of the Western Amazon region (600 square kilometers and 800,000 inhabitants) were collected from February 2014 to May 2015. Patients with chronic kidney disease stage 5, kidney transplant or ICU stay < 48 hours were excluded. AKI was diagnosed by KDIGO and mortality was assessed 180 days after ICU discharge. Data are presented as mean±SD or percent. **Results:** 613 patients that fulfilled the inclusion criteria aged 57.5 ± 19.4 years, 55% were male and 35% were white. Main reasons for ICU admission were postoperative (28%), hemodynamic instability (18%) and respiratory failure (17%), with only 2% with tropical diseases. AKI incidence was 33%, but was lower in postoperative patients (28% vs 43% in non-postoperative, p = 0.005). Mortality with chronic kidney patients (42% vs 27% in non-AKI, p <0.001) during ICU hospitalization and 180 days after discharge (17% vs 10%, p <0.001). **Conclusions:** AKI has a high incidence in ICU patients of the Western Amazon area. The causes of ICU admission did not differ from those seen in developed countries. The few number of patients with the typical tropical diseases of Amazon may be due to poor access to health care. The peculiar social geographical region characteristics, with rivers that are not navigable most of the year, long rain period that difficult access to larger cities and the lack of health services in diverse areas, may be associated to the present findings. Funding: Sao Paulo Research Foundation - FAPESP, Brazil

0994

ETIOLOGY OF CHRONIC KIDNEY DISEASE (CKD) IN BEIJING, CHINA: DATA FROM A LARGE HEALTHCARE FACILITY

Jieming Wang*, Jia Wei, Claudia Cabrera, Fan Liu, Li Zuo (R & D information China, AstraZeneca)

Background: The etiology of chronic kidney disease (CKD) is transitioning gradually in developing countries. Large-scale or national studies on CKD etiology in China were limited. This study aimed to exam the etiology of CKD in Chinese population using data from a large tertiary hospital in Beijing. **Methods:** Data of patients who visited the nephrology department of Peking University People's Hospital, one of the largest tertiary healthcare facilities in China, between March, 2010 and April, 2015 were retrieved from hospital's electrical medical record (EMR) system. Patients who had the evidence of either a decreased eGFR level (<60mL/min/1.732m2) or abnormalities of kidney structure or function lasting for more than 3 months were included. The study cohort consisted of 16,562 CKD patients. The causes of CKD were collected from patient's medical records, and were scrutinized and categorized manually. **Results:** The mean age of all included CKD patients was 57 (±18) years, 47.6% of whom were female. The causes of CKD in 25.3% (4,182/16,562) of all patients were unknown. In patients with known causes, primary glomerulonephritis (GN, 30.2%), hypertensive nephropathy (29.3%) and diabetic nephropathy (26.2%) were the leading causes. The ratio of primary to secondary GN was 1:1.09. The major pathological types of primary GN among patients who underwent renal biopsy (n=1,653) were IgA nephropathy (61.6%), followed by membranous nephropathy (25.6%) and focal segmental glomerulosclerosis (FSGS, 5.0%). The most common causes of secondary GN (n=4,065) were diabetic nephropathy (79.9%), systemic lupus erythematosus (SLE, 8.6%) and henoch-schönlein purpura nephritis (7.8%). **Conclusion:** Primary GN remains the leading cause of CKD in China currently. However, it has been declining significantly compared with previous studies. In contrast, diabetic and hypertensive nephropathy have become major causes of CKD. IgA nephropathy is the most prevalent primary GN in China.

0995- S/P

PREVALENCE AND ASSOCIATED FACTORS TO SNORING IN A BRAZILIAN CITY Edilson Zancanella*, Margareth Lima, Maria Filomena Ceolim, Marilisa Berti Azevedo Barros, Tania Apda Marchiori, Oliveira Cardoso (University of Campinas/Brazil)

Objectives: To estimate the prevalence of snoring in a sample of Campinas City population and analyze associated factors. **Method:** It is a population-based, cross-sectional study, carried out with data from the Campinas Health Survey developed in 2014/2015. A total of 2904 participants: adolescents (n=1032), adults (n=1006) and elderly (n=982) participated in the study. Prevalence and confidence intervals for the dependent variable were estimated according to independent variables. Differences were tested by Chi-square test. Prevalence ratio was estimated by multiple Poisson regression, adjusting for gender and age. The analyses were performed with svy commands of STATA 11.0. **Results:** The prevalence of snoring in the survey was: 40.4% . Among adults: 43.4 % (men 53,7 % women 34,3%), and elderly: 52.7% (men 56,9% women 49,7%). For adults, there was significantly association with Hypertension (PR=1,2); Sinusitis (RP=1,3); Dizziness (PR=1,5); Insomnia (PR=4,85); Bad sleep (PR=1,2); Bruxism (PR=1,4); Napping (RP=1,3); Witnessed apnea: (PR=2,1). For elderly there was significantly association with Hypertension: (PR=1,2); Colesterol high levels (PR=1,2); Dizziness (PR=1,3); Bruxism (PR=1,5); fall (RP=1,3); Napping (1,5); Witnessed apnea (PR=1,7). **Conclusions:** Snoring is a very common sleep complaint associated to the Obstructive Sleep Apnea Syndrome (OSAS). Hypertension and Colesterol high levels are common comorbidities. Dizziness, bruxism, napping and witnessed apnea were associated in this sample for adults and elderly.

1000

LONGITUDINAL STUDY OF MOTOR VEHICLE CRASH RATES AMONG LICENSED TEEN DRIVERS WITH ADHD

Allison Curry*, Kristina Metzger, Melissa Pfeiffer, Flaura Winston, Michael Elliott, Thomas Power (The Children's Hospital of Philadelphia)

Background: Several small studies suggesting teens with ADHD are at heightened crash risk were conducted among more severely affected teens in highly specialized samples but had substantial methodological limitations. Thus, we conducted the first truly longitudinal study focused on comparing crash risk between teen drivers with and without ADHD. We also aimed to determine if the association between ADHD and risk varies by sex, licensing age, or over the course of licensure. **Methods:** We utilized electronic health records (EHR) to identify residents of New Jersey (NJ) born 1987-1995 who were patients of The Children's Hospital of Philadelphia's six NJ primary care practices within 4 years of driving-eligible age. EHR records were linked to NJ's state-wide driver licensing and crash databases through June 2012. Subjects were classified as having ADHD using ICD-9-CM diagnosis codes and known chronic conditions from their EHR. Cox regression was used to estimate adjusted hazard ratios (HR) to compare crash rates for 1,307 licensed teens with and 10,415 licensed teens without ADHD. **Results:** Subjects had a median [interquartile range] of 17 [9, 28] CHOP primary care visits, were 18 [16, 19] years old at their last visit, and were 21 [19, 23] years old at study end. Overall, the crash rate for teens with ADHD was 35% higher (95% CI: 1.22, 1.49) than for teens without ADHD. Modeling revealed heightened risk for male teens (HR [95% CI]: 1.43 [1.27, 1.61]) with less evidence of an increase among females (1.17 [0.97, 1.42]). Conversely, the association between ADHD and crash involvement did not vary by licensing age or over time. **Conclusions:** Young novice drivers with ADHD—and in particular males—appear to be at increased crash risk, although the estimated increase is notably lower than frequently cited figures from previous small studies of self-reported crashes. Additional research is needed to understand the specific mechanisms by which ADHD influences per-driver crash risk.

1004- S/P

THE PREVALENCE OF OBESITY AND CARDIOMETABOLIC DISEASE RISK FACTORS AMONG ETHNIC MINORITY, MEDICALLY UNDERSERVED YOUTH.

Denisse Pareja*, Sarah Messiah, Liat Corcia, Lisa Gwynn, Tulay Koru-Sengul (University of Miami)

Background: Childhood obesity and its medical consequences continue to pose major clinical and public health challenges, particularly among medically underserved families. Florida is home to the third largest undocumented immigrant population in the United States, and this group currently accounts for 4.5% of the total state population. Little is known about the prevalence of obesity and cardiometabolic disease risk factors (CDRF) among this hard-to-reach population, and how they may vary by ethnicity. **Methods:** Retrospective medical chart data were collected from all children (n=122) ages 2-to-17 who attended a university-based pediatric mobile clinic which provides healthcare to the medically underserved in Miami Dade County, Florida between 2013-2015. The variables collected were: age, sex, height, weight, systolic/diastolic blood pressure, body mass index [BMI], high density lipoprotein, low density lipoprotein, total cholesterol, triglycerides, and aspartate and alanine-transaminase. While we did not exclude patients due to not being obese, the majority of these patients had these CDRF lab data available. The prevalence of obesity (>95th% for BMI adjusted for age and sex) and the presence of CDRF as >1, >2, and >3 by ethnicity (non-Hispanic Black [NHB], Hispanic and Mixed/Other), age and sex were reported. **Results:** The majority (70%) of the sample (64% of Hispanics, 78% of NHB and 92% of Mixed/Other) were obese (differences were not significant). Among those obese patients, 90% had > 1, 49% had >2 and 24% had >3 CDRF present. Hispanics had the highest prevalence of a clustering of >3 CDRF (70%), compared to NHB (9%) and Mixed/Other (22%) (NS). **Conclusion:** A majority of obese medically underserved patients, and Hispanics in particular have > 1 CDRF, suggesting they are at increased risk for future chronic disease. These findings have important implications for medical professionals treating these patients, particularly if their patient population is Hispanic.

1003-S/P

PREVALENCE AND DETERMINANTS OF PRESCHOOL CHILD MYOPIA IN TAIWAN

Chun-Ji Lin*, Pei-chang Wu, Hsiao-Ling Huang (Kaohsiung Medical University)

There are over 80 million myopic children worldwide. The prevalence of myopia varies greatly between different populations and ethnic groups. Early onset and high myopia have a worse prognosis for long term visual acuity. Our aim is to identify the prevalence and determinants of myopia, including quiescent behavior, physical activity and vision habits among preschool children. A large-scale school-based survey of preschool children was conducted from April 2014 to December 2014 in Taipei, Taiwan. A total of 10,556 children and their caregivers completed the questionnaire and eye exam. The eye screening was tested by trained staff using Snellen's E charts, NTU 300 random-dot stereogram and recorded paper. A child was referred to clinic retesting by physicians if the screening result was abnormal. Data were means of a parent questionnaire, screening and retesting result. Our results showed that myopia prevalence was 8.6%. The risk factors of myopia were parental myopia (adjusted odds ratio [aOR] =1.28; CI=1.04-1.58), improper vision habits with both too close and longtime use (aOR=1.81; CI=1.45-2.26) and near work (aOR=1.23; CI=1.01-1.50). The protecting factors of myopia were indoor activity (aOR=0.73; CI=0.57-0.91) and outdoor activity (aOR=0.63; CI=0.5-0.78). This study confirmed the improper vision habits were significant associated with child myopia; however, physical activity is key protecting factor for preschool children.

1005

SLEEP HABITS AND SNORING PREVALENCE AMONG PRIMARY SCHOOL STUDENTS IN MATSUYAMA CITY, JAPAN

Naoko Sakamoto*, Limin Yang, Noriko Morimoto, Itsuko Horiguchi, Kotatsu Maruyama Ai Noda, David Gozal, Takeshi Tanigawa (Gunma University)

Background: Sleep disorders are common in childhood and snoring is a hallmark symptoms of obstructive sleep apnea (OSA), a relatively common condition that affects 1-4% of the general pediatric population. We conducted a population-based study among primary school students using a 6-item validated screening tool for pediatric OSA. **Objective:** To describe sleep habits and OSA risk in Japanese primary school students. **Design:** Cross-sectional study. **Setting:** All 55 public primary schools in Matsuyama city, Japan. **Period:** October, 2014. **Methods:** Self-administered questionnaires conducted on parents. **Results:** A total of 24,296 responses (response rate, 90%) were received. After excluding incompletely filled questionnaires, complete datasets from 22,482 responders were available for analysis. On average, children sleep 8.6 and 9.0 hours during weekdays and weekends, respectively. Sleep duration decreased with increasing school grade on both weekdays and weekends. The prevalence of snoring was 11.1%, 11.4%, 11.0%, 9.4%, 10.0% and 8.9% for grades 1 to 6, respectively, indicating a slight decline in snoring frequency with age. Using the validated OSA screening algorithm, we found that 0.6% of responders had scores > 2.72 (highly suggestive of OSA), with 2.72 score frequencies of 0.8%, 0.6%, 0.6%, 0.5%, 0.6%, and 0.5% for grades 1 to 6, respectively, with the prevalence of loud snoring hovering around 3% for the cohort. However, based on answers to the question "do you have concerns about your child's breathing while asleep?" the awareness of the parents to OSA and snoring was low. **Discussion:** The reported prevalence of OSA in primary school students worldwide is 1-4%, a much higher prevalence than suggested by the current survey. Current findings suggest the need for public awareness educational campaigns.

1006- S/P

ELEVATED CANCER RISK AMONG US PEDIATRIC SOLID ORGAN TRANSPLANT RECIPIENTS Elizabeth Yanik*, Jodi Smith, Meredith Shiels, Christina Clarke, Charles Lynch, Amy Kahn, Lori Koch, Karen Pawlish, Eric Engels (Division of Cancer Epidemiology and Genetics, National Cancer Institute)

Solid organ transplant recipients have higher cancer risk than the general population, largely attributable to immunosuppressant use. Among pediatric recipients, the effects of transplantation and immunosuppression on cancer risk may differ from those observed in adults, but no prior study has comprehensively described cancer risk in this group. The U.S. transplant registry was linked to 16 cancer registries to identify cancers among solid organ recipients <18 years old at transplant. Standardized incidence ratios (SIRs) were estimated by dividing observed cancer counts in recipients by expected counts calculated from general population rates in strata of age, sex, race, calendar year, and registry. We included 17,958 pediatric recipients (44% of U.S. total) diagnosed with 394 cancers, of which 279 (71%) were non-Hodgkin lymphomas (NHL). Compared to the general population, cancer incidence was 22 times higher overall (SIR=22, 95%CI=20-24). Specifically, incidence was higher for NHL (SIR=210), Hodgkin lymphoma (SIR=19), leukemia (SIR=4), myeloma (SIR=230), and cancers of the kidney (SIR=16), thyroid (SIR=6), liver (SIR=28), testis (SIR=4), soft tissue (SIR=4), ovary (SIR=8), bladder (SIR=49), breast (SIR=9) and vulva (SIR=130). NHL risk was highest in the first year post-transplant (SIR=800, 95%CI=600-1000), in recipients seronegative for Epstein-Barr virus pre-transplant (SIR=450, 95%CI=350-550), and in intestine recipients (SIR=1300, 95%CI=530-2700). In conclusion, pediatric recipients have highly elevated risk for many cancers, but most of the burden is attributable to NHL. NHL risk was very high in recipients susceptible to primary Epstein-Barr virus infection after transplant, and in intestine recipients, who receive intense immunosuppression and are exposed to donor lymphoid tissue conveyed in the donor organ. Given the high NHL risk, we will next estimate the proportion of NHL burden in the total U.S. pediatric population attributable to transplant recipients.

1010-S/P

MOST COMMONLY USED MEDICATIONS IN COUPLES PLANNING PREGNANCY: THE LIFE STUDY Katrina Flores*, Kristin Palmsten, Christina D Chambers, Lauren A Weiss, Germaine M Buck Louis (Department of Pediatrics, University of California, San Diego)

While there are a number of studies that describe medication use in the months prior to pregnancy among women who have conceived, there is limited information regarding medication use in women and men who are trying to conceive. The objective of our study was to identify the most commonly used medications among couples in a pre-conception cohort. There were 501 couples who enrolled in the Longitudinal Study of Infertility and the Environment (LIFE) (2005-2009). Participants reported their prescription and over-the-counter medication use at enrollment. We identified medications used by 1% of women and men, separately. The mean age was 30 (SD 4.1) for women and 32 (SD 4.9) for men. The majority of women (81.2%) and men (84.9%) were non-Hispanic white. For women, the 5 most commonly used medications were levothyroxine (5.8%) indicated for hypothyroidism, cetirizine (2.6%) an antihistamine, fluticasone (2.4%) an inhaled or intranasal corticosteroid, escitalopram (1.8%), and fluoxetine (1.8%) both selective serotonin reuptake inhibitor antidepressants. The top 5 medications reported by men were lisinopril (2.0%) an ACE inhibitor antihypertensive, mometasone (2.0%) an intranasal corticosteroid, fexofenadine (1.8%) an antihistamine, atorvastatin (1.6%) a statin cholesterol lowering medication, and montelukast (1.6%) a leukotriene receptor antagonist asthma medication. A variety of medications, both chronically and occasionally used drugs, were common at baseline. The identified medications differed by gender. Additional assessment of medication and vitamin use during follow-up is planned. The Food and Drug Administration's 2015 Pregnancy and Lactation Labeling Rule, which will require drug labels to include a new section on infertility related to the drug, and the lack of guidance regarding medications and fertility in the Center for Disease Control and Prevention's preconception guidelines underscore the need for information on the impact of medications on fertility.

1012

GENDER DIFFERENCES IN DRUG-INDUCED QT PROLONGATION Shi-Heng Wang*, Wei J. Chen, Chi-Shin Wu (Institute of Epidemiology and Preventive Medicine, College of Public Health, National Taiwan University)

There are gender differences in the reaction to a drug, and generally women experience more drug-related adverse events than men. The prolongation of the QT interval is a common cause of the withdrawal or restriction of the use of drugs. The FDA adverse Event Reporting System (FAERS) is a database supporting the FDA postmarketing safety surveillance for approved drugs. The FAERS consists of the submitted reports on the adverse events and the drugs used by the patients, but lack for detail to population exposed to a specified drug. With case-only information, it is difficult to explore if the risk of an adverse event among users of a specified drug is higher than that among non-users. Case-only study designs have been shown to be powerful in the assessment of possible interactions. Assuming independence between gender and medication, we applied case-only study design to study the interactions between gender and medication in FAERS from 2004 to 2014. The Standardized Medical Queries index was used to identify QT prolongation-related events. We further validated the detected signals of interactions from the FAERS by utilizing a representative subset of the Taiwan National Health Insurance Research Database (NHIRD) between 1998 and 2013, which contains patients' demographic characteristics, diagnosis, prescription, hospitalization, and medical expenditure. We tested the assumption of independence between gender and medications as well as apply nested case-control study design to validate the interaction between gender and a specified drug. The findings provide scientific evidence for personalized medicine.

1011- S/P

CURRENT DEPRESSION, ANTIDEPRESSANT USE AND INFLAMMATORY MARKER: STUDY OF ADULT HEALTH LONGITUDINAL (ELSA-BRAZIL) Roberta Carvalho De Figueiredo*, Sara Teles de Menezes, Sandhi Maria Barreto (Federal University of Minas Gerais - UFMG)

BACKGROUND: Population-based studies have shown the association of depression with the rise of various inflammatory markers, but the results are inconsistent. Antidepressant use was also associated with inflammatory markers, but seems to vary according to the drug class. **OBJECTIVES:** To estimate the independent association of the current depression and antidepressant use with levels of C-reactive protein (CRP) among adults. **METHODS:** Sectional study of 14,438 participants (35-74 years) from baseline (2008-2010) of the ELSA-Brazil cohort, composed of educational institutions and research servers in three regions of the country. Depression in the last 30 days (yes / no), assessed by the Clinical Interview Schedule-Revised, combined or not with the use of antidepressants (yes / no) was the main explanatory variable and serum CRP levels, the response variable. Sociodemographic characteristics, health behaviors and comorbidities were the covariates. It also assessed whether any antidepressant class was independently associated with CRP levels. The reasons for arithmetic means (RMA) and 95% confidence intervals were estimated using the general linear model (GLM) using the Gamma distribution and log link function. **RESULTS:** After adjustments, or depression alone or associated with antidepressants, or the use of isolated antidepressant were statistically associated with elevated CRP levels. No class of drug was associated with serum levels of CRP in the multivariate analysis. The analysis removal of participants in anti-inflammatory use (n = 533) did not alter the results. **CONCLUSION:** Neither the current depression, with or without use of antidepressant or antidepressant individually associated inflammation was measured by PCR. No antidepressant class was associated with elevated CRP. The presence of individuals with depression in the past year or life among non-depressed may have contributed to dilute an association, if any.

1013-S/P

CONSUMPTION OF MEDICINES BY THE BRAZILIAN POPULATION ACCORDING TO PNAUM: AN ANALYSIS OF THEIR SOURCES OF ACQUISITION. Anamaria Zaccolo*, Sotero Menguê (UFRGS)

Introduction: Medicines are the therapeutic resources most commonly used for the treatment the vast majority of health issues and are also a major component of the Ministry of Health spent Access to essential medicines remains a major challenge for public health in the century XXI, especially for Chronic Noncommunicable Diseases (NCDs), which require drug therapy of continuous use. **Objectives:** To describe the use of medicines by the Brazilian population, its funding sources and to describe the expenses incurred in on their acquisition. **Methodology:** use of data from PNAUM, a cross-sectional population-based, based on a probability sample stratified conducted via home inquiry among residents in permanent private households in urban areas of Brazil. Results: predominance of high cost medicines and medicines for treating chronic diseases being acquired exclusively by SUS or popular pharmacy (PF). OR (odds ratio) of 3.66 for the use of continuous medication use purchased via SUS or FP when compared to private pharmacy and an OR of 0.27 for eventual use medicine. **Conclusions:** access to medicines in Brazil within the SUS is still insufficient to meet all existing demand, given that significant part of the medicines is still fully paid by the user. But we emphasize the strategies adopted by the government to provide medicines for the treatment of NCDs, which most of the treatment is funded by the state.

1020

THE WORK ENVIRONMENT AND CARDIOVASCULAR DISEASE RISK FACTORS: DATA FROM THE U.S. GALLUP-HEALTHWAYS WELL-BEING INDEX

Toni Alterman*, Rebecca Tsai, Jun Ju, Kevin Kelly (NIOSH, CDC)

We examined associations among 4 work environment (WE) questions concerning supervisor behavior and job dissatisfaction and 7 cardiovascular disease risk factors (American Heart Association Life's Simple 7 screening tool) included in the U.S. Gallup-Healthways Well-Being Index. CVD risks factors include: abstinence from smoking, ideal BMI, being physically active, healthy diet, absence of diabetes, good total cholesterol, and ideal blood pressure. Our sample consisted of 412,884 participants interviewed by telephone during 2010-2012 currently employed by an employer for at least 30 hours per week. WE questions included: (1) Does your supervisor always create an environment that is trusting and open, or not?"; (2) "Does your supervisor at work treat you more like he or she is your boss or your partner?"; (3) "At work, do you get to use your strengths to do what you do best every day, or not?"; and (4) "Are you satisfied or dissatisfied with your job or the work that you do?" Analyses were stratified by gender with weights provided by Gallup. Correlations among the four WE factors were found to be low, with the highest correlation between supervisor not creating an open and trusting environment and supervisor acting like a boss rather than partner ($r=0.37$). Logistic regression models adjusting for demographic factors were run with each of the Simple 7 CVD risk factors as dependent variables and WE factors as independent variables, separately, and then together in a final model. Most work environment characteristics were significantly associated with the Simple 7 CVD risk factors after adjusting for demographic factors. The highest odds ratios were for job dissatisfaction and currently smoking (29% increase in odds) followed by not being able to use your strengths at work and not meeting exercise guidelines (20% increase in odds for women and 19% increase in men). Results show the importance of the work environment for workers' cardiovascular health.

1022-S/P

ASSOCIATIONS OF SITTING TIME, PROLONGED SITTING TIME AND SITTING ACCUMULATION PATTERNS WITH CARDIOMETABOLIC RISK BIOMARKERS IN AUSTRALIAN ADULTS FROM THE 2011/12 AUSDIAB COHORT

John Bellettiere*, Elisabeth A. H. Winkler, Sebastian F. M. Chastin, Jacqueline Kerr, Neville Owen, David W. Dunstan, Genevieve Healy (San Diego State University/University of California, San Diego | Joint Doctoral Program in Public Health (Epidemiology))

Excessive sedentary behavior is related to diabetes and cardiovascular disease risk, possibly via accumulating sitting in long uninterrupted bouts. Using data from sensors that accurately detect sitting, we tested relationships of 3 commonly used sitting-related measures, usual sitting-bout duration (UBD; sitting bout duration in which $\geq 50\%$ of sitting occurs) and alpha (α); which characterizes the power-law distribution of sitting-bout duration) with 10 cardiometabolic risk biomarkers. A subsample of adults (aged >35 years; mean \pm SD 58 ± 10 y) from the AusDiab cohort wore thigh-mounted activPAL inclinometers over 7 days; 678 provided ≥ 4 valid device-wear days, cardiometabolic biomarker and confounder data. Outcomes were BMI, waist circumference, systolic and diastolic blood pressure, HDL- and LDL-cholesterol, triglycerides, glucose, HbA1c and 2-hour post-load glucose (PLG). Multivariable linear regressions examined associations of biomarkers with quintiles of sitting time, prolonged sitting time (time in sitting bouts ≥ 30 min.), sit-stand transitions (corrected for sitting time), UBD and α , separately, while adjusting for potential confounders (not including other activities). Interactions tested effect modification of associations of sitting time by UBD. All sitting-related measures were significantly ($p < 0.05$) associated with BMI and waist circumference. Only sitting time, prolonged sitting time and α showed significant associations with HDL and triglycerides. Only sitting time and α , and only α , were significantly associated with PLG and fasting glucose, respectively. Associations with HDL, triglycerides and PLG were significantly stronger with increasing UBD. Consistent with previous studies, sitting time, prolonged sitting time, and accumulating sitting in longer bouts showed significant detrimental associations with some, but not all, indicators of cardiometabolic health. Sitting time had stronger associations with some biomarkers when accumulated in longer bouts.

"S/P" indicates work done while a student/postdoc

1021-S/P

E-CIGARETTE USE AS A PREDICTOR OF COMBUSTIBLE TOBACCO PRODUCT USE IN THE TRANSITION TO ADULTHOOD: RESULTS FROM THE SOUTHERN CALIFORNIA CHILDREN'S HEALTH STUDY

Jessica Barrington-Trimis*, Robert Urman, Kiros Berhane, Jennifer Unger, Tess Boley Cruz, Adam Leventhal, Jonathan Samet, Rob McConnell (University of Southern California)

Background: There has been little research examining whether electronic (e-) cigarette use increases the risk of initiation of cigarette smoking among adolescents in the transition to adulthood. **Methods:** The Children's Health Study (CHS) is a prospectively followed cohort in diverse communities across southern California. Data on e-cigarette use were collected in classrooms of 11th and 12th grade CHS participants (at mean age 17.3 [SD 0.6 years]); follow-up data were collected an average of 14 months later from e-cigarette users who had never smoked a cigarette at initial evaluation ($N=101$) and from a sample of never smoking, never e-cigarette users ($N=120$) frequency matched to users on gender, ethnicity, and grade. **Results:** Initiation of cigarette use during follow-up was reported by 34.7% of e-cigarette users ($N=35$) and 7.5% of never users ($N=9$). E-cigarette users were 6.59 times (95% CI: 2.99, 15.0) as likely as never e-cigarette users to initiate use of combustible cigarettes during the follow-up period. Results were robust to adjustment for potential confounders, including sociodemographic characteristics, use or approval of e-cigarette use by friends and in the home, participant use of other combustible tobacco products, and in analyses restricted to never users of any combustible tobacco product (cigarettes, cigars, hookah or pipe) at initial evaluation. Associations were stronger in adolescents with no intention of smoking at initial evaluation. **Conclusion:** E-cigarette use in never-smoking youth may increase risk of subsequent initiation of cigarette use during the transition to adulthood when the purchase of tobacco products becomes legal. Stronger associations in participants with no intention of smoking at initial evaluation raises the possibility that e-cigarette use was not simply a marker for individuals who would have gone on to smoke regardless of e-cigarette use.

1023-S/P

PREDICTORS OF NICOTINE WITHDRAWAL SYMPTOMS: FINDINGS FROM THE FIRST RANDOMIZED SMOKING CESSATION TRIAL IN A LOW-INCOME COUNTRY SETTING

Ziyad Ben Taleb* (Florida International University)

Introduction: Inability to cope with withdrawal symptoms when attempting to quit is a major cause for failure of cessation. However, little is known about factors influencing nicotine withdrawal symptoms in low-income countries. This is the first study to characterize and identify predictors of withdrawal symptoms during smoking cessation trial in this context. **Methods:** We analyzed data from 269 smokers who participated in a multi-site, two-group, parallel-arm, double-blind, randomized, placebo-controlled smoking cessation trial conducted in primary healthcare setting in Aleppo, Syria. All participants received behavioral counseling and were randomized to receive either 6 weeks of nicotine or placebo patch and were followed for one year. Generalized estimating equation (GEE) was performed to determine the factors associated with nicotine withdrawal symptoms during the study. **Results:** Smoking abstainers had lower withdrawal symptoms than non-abstainers ($p < .001$). For abstainers, the most reported severe withdrawal symptoms were hunger, increased eating, and desire for sweets. For non-abstainers, the most reported severe symptoms were urges to smoke, irritability/frustration/anger and craving a cigarette/nicotine. For the whole sample, lower total withdrawal symptomatology was predicted by higher education ($p=.033$), older age at smoking initiation ($p=.044$), lower nicotine dependence at baseline ($p=.040$), abstinence ($p=.034$), lower depression ($p < .001$), better adherence to patch ($p=.039$), and belief of receiving active nicotine patches ($p=.015$). **Conclusion:** Higher nicotine dependence, lower educational attainment, and failure to maintain abstinence predict greater withdrawal severity among participants in smoking cessation intervention in a low-income country setting. Further, expectancies about the effects of pharmacotherapy appear to mediate the experience of nicotine withdrawal.

1024-S/P

MEASURING ALCOHOL TRAJECTORIES IN PEOPLE LIVING WITH HIV: MODELING FINITE MIXTURES OF MULTI-NOMIAL DISTRIBUTIONS Usama Bilal*, Bryan Lau, W. Christopher Mathews, Kenneth Mayer, Elvin Geng, Sonia Napravnik, Joseph J Eron, Michael J Mugavero, Heidi Hutton, Karen L Cropsey, Betsy McCaul, Heidi Crane, Geetanjali Chander (Johns Hopkins Bloomberg School of Public Health)

Background: Alcohol use is a significant determinant of morbidity and mortality among persons living with HIV (PLWH). Our objective was to measure and describe alcohol consumption trajectories in a large and well characterized cohort. **Methods:** We used data from 7906 PLWH from 7 US sites in the Centers for AIDS Research Network of Integrated Clinical Systems (CNICS). Patients complete a clinical assessment of standardized instruments every 6 months as part of clinical care. Alcohol use was measured longitudinally using the AUDIT-C. Individuals were classified as non- (score of 0), moderate, or hazardous drinkers (4 in men, 3 in women). Finite mixture models of multinomial distributions were used to classify PLWH into trajectories of alcohol patterns and examine predictors. Time was included non-linearly through polynomials. **Results:** Average follow up was 2.4 years (IQR: 1-4 years). Our model included 8 classes of alcohol trajectories: 3 classes of stable non-, moderate, and hazardous drinkers (class prevalence: 24%, 24% and 13%, respectively); 2 classes hazardous drinkers who transitioned into non- and moderate (4% and 9%); 1 class of non-drinkers who initiated moderate drinking (8%); 1 class of moderate drinkers who initiated hazardous drinking (8%); and 1 class who alternated between moderate and nondrinking (10%). Compared to stable moderate drinkers, PLWH initiating hazardous drinking were more likely to be black, have depression or anxiety, use illicit drugs or have CD4 <200. PLWH belonging to the stable hazardous drinker category were more likely to be younger, white, current or former users of cocaine or marijuana, and have CD4 >200. **Discussion:** Nearly 22% of this nationally distributed sample of PLWH in care had hazardous alcohol use at baseline or during follow-up. Given the role of hazardous alcohol consumption on morbidity and mortality among PLWH, identifying predictors of hazardous drinking initiation and maintenance has important clinical implications.

1026

UNHEALTHY WEIGHT MANAGEMENT PRACTICES AND SEXUAL RISK BEHAVIORS AMONG MALE AND FEMALE U.S. HIGH SCHOOL STUDENTS, 2013 Heather Clayton*, Zewditu Demissie, Richard Lowry, Catherine Rasberry (Centers for Disease Control and Prevention)

Background: A limited body of research has suggested that unhealthy weight management practices (UWMPs) may be associated with sexual risk behaviors (SRBs) that contribute to HIV, sexually transmitted infections (STIs) and pregnancy among adolescents, with little information on demographic differences. We investigated the association between UWMPs and SRBs among U.S. high school students by sex. **Methods:** We used data from the 2013 national Youth Risk Behavior Survey, a cross-sectional survey with a nationally representative sample of 6,950 male and 6,621 female students in grades 9–12. Logistic regression models estimated adjusted prevalence ratios and 95% confidence intervals for associations between UWMPs and SRBs. Analyses examined both individual UWMPs [(1) fasting, (2) taking diet pills, powders, or liquids without a doctor's advice, or (3) vomiting, or taking laxatives] and total number of reported UWMPs (0, 1, or 2+). SRBs included lifetime and current (past 3 months) sexual intercourse, first sexual intercourse <13 years of age, sexual intercourse with 4+ partners, use of alcohol or drugs before last sexual intercourse, and no condom use at last sexual intercourse. Models adjusted for race/ethnicity, grade, forced sexual intercourse, and past year dating violence. **Results:** Among female students, all UWMPs were positively associated with lifetime sexual intercourse. Among currently sexually active male students, all UWMPs were positively associated with drinking alcohol or using drugs before last intercourse. Among female students, the number of UWMPs was positively associated with only lifetime sexual intercourse and drinking alcohol or using drugs before last intercourse. Among male students, the number of UWMPs was significantly associated with all SRBs. **Conclusions:** Screening of and treatment for UWMPs may help in HIV/STI prevention efforts, and interventions should recognize that males with UWMPs are particularly at risk for SRBs.

1025

HAZARDS OF AGE OF E-CIGARETTE USE ONSET AND RELATIONSHIPS WITH COMBUSTIBLE CIGARETTE USE ONSET AMONG US YOUTH: DATA FROM THE 2014 NATIONAL YOUTH TOBACCO SURVEY Xinguang Chen*, Bin Yu, Tracey E. Barnett (Department of Epidemiology, University of Florida)

Nicotine uptake through electronic or e-cigarettes presents a new challenge for tobacco control because of the complex relationship between e- and combustible cigarettes. The negative consequences from early onset of e-cigarettes have been documented. In this study we reported our work to quantify the age pattern of e-cigarette use initiation. Data for a total sample of 20680 participants (50.6% male, aged 11-19) from the 2014 National Youth Tobacco Survey (NYTS) were analyzed. Probability (hazards) of e-cigarette use initiation by age from birth to 18 was estimated using survival modeling method and compared with that of combustible cigarette use. Unconditional and conditional hazards of both e- and combustible cigarettes by age were also estimated to characterize the mutual impacts of the two tobacco products using relative risk (RR). Analytical results indicated that more participants reported e-cigarette use (21.21%) than combustible cigarettes (18.7%). The hazards of e-cigarette onset was <.05 up to 11, and it increased to ~5% from 12-14, and further to 20.26% (male 22.25% and female 18.20%) from 14-17. Whites, Hispanic and multi-racial participants had the same high risk to start e-cigarettes across the age span similar to the total sample, but the hazards for Hispanic respondents dropped since age 17; Blacks and Asian Americans had a low and progressive increasing age pattern with a sudden increase in the hazards only for Asians during 17-18. RR for e-cigarette onset on combustible cigarettes varied around 2.00 across ages; while the reverse impact showed a “L” pattern with RR = 3.5 at age 8 down to 1.45 at age 11, followed by an irregular growth to 2.5 at age 17. The estimated hazards of e-cigarette onset by age, including gender and racial/ethnic difference, provide new data in a timely fashion advancing our understanding of tobacco use epidemiology and informing strategic tuning of the tobacco control programs at various levels.

1027-S/P

HIV PREVENTION INTERVENTIONS FOR SUBSTANCE USERS Adel Elkbali* (University of Miami Miller School of Medicine)

Background: Substance use, including intravenous (IV) and non-IV drug use, is associated with higher risk for contracting HIV through unprotected sex or syringe-based exposure. Approximately 81% HIV-positive individuals report illicit drug use, 16.6% reporting via injection. We reviewed primary HIV interventions targeted to IV drug users (IDUs) and non-IDUs (NIDUs). **Methods:** We conducted a PubMed literature review (1998-2013), limiting studies to HIV primary prevention interventions targeting adult HIV-negative substance. Out of 44 articles, we included 14 targeted IDUs (n=5) and NIDUs (n=9). Interventions were compared descriptively across sample sizes, sociodemographic, intervention setting, study design, use of theoretical models, and intervention effects. **Results:** IDU studies had a smaller sample size than NIDU (range: 226-3742 vs. 16-1,686). Compared to NIDU studies, IDU had less ethnic minority sample (78% vs. 60%). No IDU study targeted men who have sex with men, compared with 33% NIDU studies. Both IDU and NIDU studies were conducted in substance abuse treatment centers and included both group- (80% vs. 78%) and individual-based (20% vs. 11%) methods; only 1 (11%) IDU study was couple-based interventions. Quasi-experimental design was used more in NIDU (56%) than IDU (20%) studies while experimental design was used more in IDU (80%) than NIDU (44%). All IDU but 89% NIDU studies used explanatory and behavior-change theoretical models to guide selection of intervention components. Effectively reducing frequency of risky sexual behaviors was seen in 78% NIDU and 20% IDU. **Conclusion:** Overall, the interventions reviewed demonstrate promising results for decreasing risky sexual practices for NIDUs and reducing drug practices for IDUs, thereby reducing HIV transmission risk. Future studies should include HIV testing, and measure HIV seroconversion to fully elucidate intervention effects. Keyword(s): Drug Abuse, HIV/AIDS, Injection Drug Users, Intervention Effectiveness

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IDEAL CARDIOVASCULAR HEALTH OF BRAZILIAN URBAN POPULATION: VIGITEL, 2012 Mariana S Felisbino-Mendes*, P Matozinhos, Mariana S Felisbino-Mendes, Crizian S Gomes, Ann K Janhsen, Isis E Machado Francisco, Lana, Deborah C Malta, Gustavo Velasquez-Melendez (Department of Maternal and Child Nursing and Public Health, Nursing School, Universidade Federal de Minas Gerais – Belo Horizonte (MG), Brazil)

Cardiovascular diseases (CVD) are the leading causes of death worldwide. In this context, the American Heart Association (AHA) developed the concept of ideal cardiovascular health (CVH), in order to improve the ideal CVH and to reduce mortality caused by CVD among populations. Thus, evaluating the CVH metrics status of a population may direct effective public policies development and we aim to estimate the prevalence of behavioral and biological metrics of ideal cardiovascular health in Brazilian urban population, according to sex, age groups and educational level. This is a cross-sectional study, which used data from the Risk and Protection Factors for Chronic Non Communicable Diseases by Telephone Survey (VIGITEL), 2012. The ideal CVH was evaluated according to AHA's recommendations, based on self-reported behavioral and biological metrics: not smoking; body mass index (BMI) lower than 25 kg/m²; perform physical activity; eat fruits and vegetables as recommended (five or more times) and not refer diabetes and hypertension. The score 1 was attributed to each condition at ideal levels and 0 for the opposite. Thus, the ideal CVH ranged from zero (poor) to six (ideal). Ideal CVH was considered when the individuals pre-sented ideal levels for the six metrics. Prevalence and 95% confidence intervals (95%CI) were calculated. We studied 41,134 participants, 48.4% women. Only 3.8% of the population presented all six metrics at optimal levels. The diet was the factor with the lowest level of adequacy (23.6%), followed by physical activity (35.2%) and BMI (48.6%). Women and individuals with higher educational level scored better at ideal CVH and behavioral metrics index ($p < 0.001$). The estimations of the CVH metrics in the Brazilian population show low prevalence rates at ideal levels. These findings may contribute to a better understanding of cardiovascular health among Brazilians living in the urban areas and guide interventions that might aid individuals to attain optimal levels of CVH factors.

1030-S/P

URINARY CADMIUM LEVELS IN FORMER SMOKERS ARE ASSOCIATED WITH ALL-CAUSE-MORTALITY Eric Hecht*, WayWay M. Hlaing, Isildinha M Reis (University of Miami)

BACKGROUND: Former smokers are at higher risk for all-cause mortality than never smokers. Also, a higher concentration of cadmium biomarker level is found in former smokers than in never smokers as tobacco contains significant amounts of cadmium. Because cadmium exposure has been linked with a wide range of conditions including cancer, respiratory, cardiovascular, and renal diseases, we explored the longitudinal association between baseline cadmium level and all-cause mortality among former smokers. **METHODS:** The Third National Health and Nutrition Examination Survey (NHANES III, collected 1988–1994) and the linked mortality file were used for this prospective investigation. The study was restricted to former smokers between the ages of 35–79 years at baseline with available data on baseline urinary cadmium level. Participants were followed through December 31, 2011. Hazard ratios (HR) for all-cause mortality were estimated from Cox proportional hazards regression models. Age, pack-years and duration of smoking cessation were included as covariates. **RESULTS:** On average, former smokers at baseline were 54.9 years of age, had a 20.7 pack-years history of cigarette consumption, and quit smoking 12.8 years prior to study entry. Participants were predominantly men (59.6%) and 42% of the cohort died over the course of the study. The multivariable-adjusted hazard ratios for all-cause mortality comparing the 2nd, 3rd, and 4th quartiles to the referent 1st quartile of cadmium level indicated a dose-response relationship. Risks of all-cause mortality by urinary cadmium quartiles (with referent 1st quartile) were as follows: (2nd quartile, HR 0.98, 95% CI 0.81, 1.18; 3rd quartile, HR 1.09, 95% CI 0.91, 1.31; and 4th quartile, HR 1.21, 95% CI 1.01, 1.45). **CONCLUSION:** In a nationally representative sample of former smokers, higher baseline urinary cadmium level was associated with an increased risk of all-cause mortality.

1029

ASSOCIATIONS BETWEEN MATERNAL DEPRESSIVE SYMPTOMS AND PARENTING PRACTICES IN A STUDY OF PRE-DOMINATELY HISPANIC MOTHERS ENROLLED IN A FAMILY WEIGHT MANAGEMENT STUDY. Camille Gonzalez*, Beth A. Conlon, Carmen R. Isasi, Adriana E. Groisman-Perelstei, Pamela M. Diamantis, Viswanathan Shankar, Judith Wylie-Rosett (Albert Einstein College of Medicine)

Background: Maternal depressive mood may influence parenting practices and in turn the eating behavior of overweight youth. The purpose of this primary care based study was to assess how maternal depressive symptoms may be related to parenting practices (monitoring, discipline, limit setting soda/snack, limit setting of screen media, pressure to eat and reinforcement) and to test the hypothesis that maternal depressive symptoms are associated with less engaged parenting practices. **Methods:** Baseline data from mothers (N=271) enrolled in a family weight management study for overweight youth, conducted in a public hospital outpatient clinic, were evaluated. Depressive symptoms were measured using the 10-item Center for Epidemiologic Studies Depression scale and parenting practices were measured using the 26-item Parenting Strategies for Eating and Activity Scale. Associations were evaluated using parametric and non-parametric tests as appropriate followed by a multivariable logistic regression model. **Results:** Maternal mean age was 36.2 ± 7.2 years; 90.7% had a BMI ≥ 25 ; 74% were Hispanic; and 37% reported depressive symptoms. The logistic regression model showed mothers with elevated depressive symptoms provided less positive reinforcement of their child's healthy behaviors (OR 0.44 95%CI 0.2, 0.8) and less limit setting of soda/snack (OR 0.45 95%CI 0.2, 0.9). There were no associations between maternal depressive symptoms and pressuring of child to eat, limit setting of screen media, discipline, and monitoring of child feeding. **Conclusions:** Mothers with elevated depressive symptoms demonstrated less engaged parenting practices than their counterparts. Maternal depression should be addressed in family weight management programs to help achieve greater parental engagement in implementing recommended lifestyle changes. Intervention research is needed to understand how to improve depressive mood and increase parental engagement in primary care weight management setting.

1031

HOW NUTRITION AND EXERCISE BEHAVIORS INFLUENCE THE PREVALENCE OF NON-ALCOHOLIC FATTY LIVER DISEASE IN MULTIETHNIC OVERWEIGHT YOUTH. Elizabeth Hoy*, Pamela Botero, Tulay Koru-Sengul, Maria Jimenez, Aymin Delgado, Sarah E Messiah (University of Miami)

Background: Nonalcoholic fatty liver disease (NAFLD) is the most common form of chronic liver disease in children/adolescents, and disproportionately affects ethnic minorities. While obesity is strongly associated with the prevalence of pediatric NAFLD, the precise etiology is unknown. This study investigated the relationship between the prevalence of NAFLD and associated lifestyle behaviors (nutrition and exercise habits in particular) among a multiethnic clinical sample of pediatric patients. **Methods:** A retrospective medical chart review was conducted on 130 overweight (body mass index > 85 th percentile for age and sex) patients (74% Hispanic, 26% non-Hispanic) who attended the University of Miami Pediatric Gastroenterology Clinics between July 2013–June 2014. A telephone survey was administered to the parents of these patients between January–June 2015 to obtain lifestyle information (exercise and nutrition habits). Logistic regression analysis generated the odds of having NAFLD in models fitted with lifestyle habits. **Results:** Study participants of Central American descent were almost 4 times more likely (OR 3.9, 95% CI 1.23–12.37) to have NAFLD when compared to Non-Hispanics. Similarly, participants of Central American descent were almost 5 times more likely (OR 4.87, 95% CI 1.11–21.29) to have NAFLD when compared to Non-Hispanics. Participants were more likely to have NAFLD if they (1) ate more Latin fast food (Taco Bell, Pollo Tropical) versus American food (burgers, fries) (OR 4.05, 95% CI, 1.09–15.06); and (2) reported exercising inadequately (< 3 times/week < 1 hour) versus those who reported exercising adequately (≥ 3 times/week ≥ 1 hour) (OR 5.84, 95% CI 1.60–21.2). **Conclusions:** In an ethnically diverse pediatric patient sample, the prevalence of NAFLD was associated with Central American descent, inadequate exercise, and Latin fast food consumption. These early risk factors for NAFLD can inform health professionals about kids who may be at risk for disease development.

1032-S/P

QUANTIFYING SAVINGS FROM QUITTING: AN INDIAN EVIDENCE FOR ADVOCACY

Nolita Saldanha*, Pratap Jena, Sudhir Satpathy (KSPH, HSRII, Premier Research Group, and Nitte University)

Background: Catastrophe health expenses due to tobacco use has been observed across countries and it remains the most frequently used advocacy tool for tobacco control. However direct tobacco use cost has been used very sparingly for strong tobacco cessation advocacy. This study models possible savings from quitting by using economic principles. **Methods:** It was presumed that once a smokers quit, the monthly expenditure on tobacco product can be converted into regular fixed savings deposits with quarterly compound interest of 9 percent based on World Bank data. Additionally inflation rate that might increase tobacco product price over time was factored in. Using two formulas, i.e. 'compound interest' formula, $[A=P(1+r/n)^{nt}]$, and 'future value of a series' for monthly additions $[PMT * (((1 + r/n)^{nt} - 1) / (r/n))]$, the monthly expenditure on tobacco products was modelled as future savings. **Results:** Estimates suggest that, quitting and savings 100 units of money per month can yield 22662, 88728, 265718, 720563, 1863488 and 2965971 units of money at the end of 10, 20, 30, 40, 50 and 55 years respectively. Lifetime savings with abstinence during 15-70 years of life by an average Indian cigarette and bidi smoker can yield 11.84 and 2.77 million Indian National Rupees respectively. Indian cigarette smokers from North East region, urban area, male gender and secondary and above educated groups could save more than their counterparts, while Indian bidi smokers from male gender, rural area, south-west region, and less educated group could save more than their counterparts. **Conclusion:** This mathematical model quantifying monthly tobacco expenditure can be used for tobacco control by highlighting possible savings by an average smoker. This model can accommodate any kind of monetary units for savings estimation and hence can be used by any country for advocacy.

1034-S/P

TOBACCO, ALCOHOL AND HEAD AND NECK CANCER IN THREE BRAZILIAN REGIONS.

Suely Aparecida Kfoury* (Faculdade de Saúde Pública (USP))

Objective. In this case-control study, we compared the probabilistic reasons of risk of smoking and alcohol consumption in the Head and Neck Cancer (HNC) in three Brazilian regions: Midwest, Southeast and South. **Method.** The study included 1.594 cases of HNC and 1.292 hospital controls. Odds ratio and respective intervals with 95% confidence were estimated by unconditional logistic regression with adjustment for age, sex, education, consumption of fruit and vegetables, smoking (for exam of alcohol effect) and alcohol consumption (for exam of smoking effect). It was also calculated the attributable proportion risk (APR) of tobacco and alcohol in the HNC. **Results.** The effect of smoking in HNC was more significant in the population of the Midwest compared to those of the Southwest and South. On the other hand, the alcohol abuse induced major risk of HNC in the population of Southwest and Midwest of Brazil. **Conclusion.** These results suggests distinct profiles of culture and customs in the populations that influence the patterns of consumption of tobacco and alcohol.

1033-S/P

DECISION-MAKING UNDER UNCERTAINTY: THE ASSOCIATION BETWEEN ECONOMIC PREFERENCES AND REPRODUCTIVE BEHAVIOR

Deborah Karasek* (University of California, Berkeley)

It is widely acknowledged that substance use, physical activity, and sexual behaviors result in differential health trajectories over the lifecourse. As epidemiologists seek to develop explanatory models of how interventions may change these behaviors, it is critical to understand the pathways that govern everyday decision-making. There is a long history in social science of examining how economic preferences, specifically how individual approach risk/reward and present/future tradeoffs, correlate with financial decision-making and behavior. Less frequent are analyses that examine how these preferences extend beyond financial behavior to explain health behavior. This analysis examines whether risk tolerance and inter-temporal preferences, or the degree of present bias, are associated with contraceptive use and unintended pregnancy, an area where intention-behavior inconsistencies are widely acknowledged. When a great deal of uncertainty exists in regards to risk of sexual behavior, pregnancy risk, and ability to contracept, individual preferences for risk may help explain variability in outcomes and establish points of intervention. Analysis is ongoing, using data from the National Longitudinal Survey of Youth (NLSY). The NLSY includes questions on hypothetical lotteries that allow for estimation of risk aversion and inter-temporal discounting. Outcomes of interest include unintended pregnancy and consistent contraceptive, which are reported retrospectively over multiple waves. While the data does not allow for examination of fluctuation of preferences over time, I will control for potential confounding variables and multiple pregnancies using Generalized Estimating Equations. I hypothesize that greater risk tolerance and discounting rates will be associated with increased unintended pregnancy and use of less efficacious contraceptive methods. Results of this work will inform a conceptual model for how economic preferences contribute to heterogeneity in reproductive health outcomes.

1036-S/P

PREVALENCE AND TRENDS OF PARTICIPATING IN PHYSICAL ACTIVITY FROM 3 KOREAN SURVEILLANCE SYSTEMS: KNHANES, KCHS, AND KNHSS

JooYongPark*, Aesun Shin, JaeSung Choi, Ji-Yeob Choi (Department of Biomedical Sciences, Seoul National University Graduate School, Seoul, Korea)

Background: Physical activity (PA) levels and trends should be monitored and reported to implement effective non-communicable disease prevention programs. We describe PA prevalence and examine variations in trends for Korean adults using three different sources, i.e., Korea National Health and Nutrition Examination Survey (KNHANES), Korea Community Health Survey (KCHS), and Korea National Health Screening Statistics (KNHSS). **Methods:** Age-standardized prevalence of PA in overall, and by intensity were estimated in both KNHANES and KCHS, considering the sampling design while PA prevalence in KNHSS were directly calculated through the complete enumeration. Trends in PA prevalence were assessed in KNHANES from 2007 to 2013, KCHS from 2009 to 2013, and KNHSS from 2010 to 2013 by joinpoint regression analyses. **Results:** Age-standardized prevalence of moderate and vigorous PA appeared similar for three survey (moderate activity: 11.2%, 12.0% and 7.9% among men; 9.2%, 9.0%, and 6.3% among women; vigorous activity: 19.3%, 17.2%, and 18.4% among men; 12.6%, 9.5%, and 12.0% among women, in KNHANES, KCHS, and KNHSS respectively). However, the prevalence of walking showed differences between KNHANES and KCHS vs. KNHSS (44.5% and 46.9% vs. 29.4% among men; 39.2%, 43.9% vs. 27.3% among women). When separated by age group, there were peaks in moderate and vigorous PA participation in the middle-aged women whereas there were decreasing trends of vigorous and moderate PA as the age increased among men. Between the study periods, the prevalence of moderate activity were decreased in KNHANES, increased in KNHSS and stable in KCHS. **Conclusion:** Prevalences and trends of PA differ in three surveillance systems. Further understanding of characteristics in each database is needed before comparing estimates from different systems.

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ARECA (BETEL) NUT CHEWING AND HEALTH RISK OF CHEWERS IN THE MARIANA ISLANDS Yvette Paulino*, Eric Hurtwitz, Grazyna Badowski, MaryJane Miller, Rachel Novotny, Lynn Tenorio, Lynne Wilkens (University of Guam)

Background Approximately 10-20% of the world's population, predominantly Asians and Pacific Islanders, chew areca (betel) nut. The nut is habitually chewed with other ingredients (e.g. Piper betle, lime, tobacco), and has been linked to chronic disease risk. **Methods** To assess betel nut chewing and health risk, 300 chewers (157 males; 143 females) were recruited in Guam and Saipan, Mariana Islands during January 2011–June 2012. After training and standardization, research assistants conducted measurements for body mass index, and collected information on demographics/socioeconomic status, betel nut chewing, and chronic disease. Latent class analysis was used to identify betel nut chewing patterns. **Results** The mean age was 37.7 years [95% confidence interval: 36.2–39.3]. Two patterns of betel nut chewing were identified. The classes (Class 1; Class 2) differed in preferences for: nut maturity (94% mature; 82% unripe), betel leaf addition (56%; 78%), calcium hydroxide addition (4%; 100%), tobacco addition (14%; 87%), and by-product ingestion (96%; 32%). The chronic disease prevalence was 58%-obesity, 26%-hypertension, 14%-diabetes, 3%-heart attack, and 2%-stroke. Compared to Class 2, prevalence was higher in Class 1 for obesity (54% versus 70%) and hypertension (21% versus 40%). **Conclusion** Obesity, hypertension, and diabetes were the most predominant health concerns. Obesity and hypertension were more prevalent in Class 1 than Class 2. Despite being the fastest growing populations, betel nut behaviors of Asian and Pacific Islanders in the United States remain unknown. Measurements of betel nut prevalence, patterns, and related risks could determine if a health concern exists and inform public policy, if needed.

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INFORMATION SEEKING BEHAVIOR ON BREAST CANCER AND SCREENING IN THE BRAZILIAN NATIONAL CANCER INSTITUTE WEBSITE: AN EXPLORATORY STUDY Paulo Vasconcellos-Silva* Rosane Griep (Brazilian National Cancer Institute)

Strategies have been developed to promote Breast Cancer Screening (BCS) mainly by the broadcasting of pertinent information. Our main objective is to describe the collective interest in the subject observing the evolution of accesses to pertinent pages (National Cancer Institute website) in the first years of Internet popularization. **Methods:** A Log analyzer software recorded the number of accesses on pages of interest to create a time series. BC and BCS pages were tracked along 48 months (2006-2009) and monthly means were compared to annual means by analysis of variance (ANOVA - confidence level 95%). **Results:** A significant increasing in BC pages accesses (polynomial Trend lines: steady growing along all the period) with minor oscillations and scarce accesses to BCS pages. Transient “attention circles” (major increases in BC pages accesses) and statistically significant peaks in BC pages were observed in November 2006-2009 (during “National Day Against Cancer” campaigns) with lower and stable accesses to BCS pages. reports on strong interest related to cancer contrasting to relative indifference on its early detection. Several hypothesis are discussed: lack of a “culture of prevention”; lack of confidence in screening programs; “celebrity effect” influencing searching for information in the context of “personal drama” stressed by media framing; perception of risks and social vulnerability by social segments.

These perceptions are socially constructed and analysis of contextual risk information may be useful in future works."

1038-S/P

DETERMINANTS OF HIGH-SPF SUNSCREEN USE AMONG FRENCH WOMEN Isabelle Savoye*, Marie-Christine Boutron-Ruault, Marina Kvaskoff (Inserm U1018, Centre for Research in Epidemiology and Population Health (CESP), \Lifestyle, genes and health: integrative trans-generational epidemiology\ Team)

Background: Use of sunscreen with a high sun protection factor (SPF) is recommended for the prevention of sunburn and skin cancer. We explored the characteristics and behaviors associated with high-SPF sunscreen use and reapplication of sunscreen during exposure in a population of French women. **Methods:** E3N is a prospective cohort initiated in 1990 that included 98,995 French women born in 1925-1950. In 2008, we sent a specific UV questionnaire to all reported skin cancer cases and 3 controls per case, matched on age, county of birth and education. The study included 1558 cases and 3647 controls and collected data on sunscreen use, including SPF level and renewal of application, and lifetime sun exposure. We explored the profile of sunscreen users among controls using logistic regression models adjusted for pigmentary traits. **Results:** Compared to non-users, women using high-SPF (>30) sunscreen had a higher skin sensitivity to sun exposure (ptrend<0.0001), fairer skin (OR=1.4) and lower numbers of sunburns (ptrend=0.03). They tended to have lower levels of both residential (ptrend=0.0004) and recreational (ptrend<0.0001) sun exposure, were more likely to be physically active (ptrend=0.003) or nulliparous (OR=1.52), and they generally consumed more fruits (ptrend=0.03) and vegetables (ptrend=0.02) than non-users. Those reporting to always renew sunscreen application similarly had a lighter phenotype and lower sun exposure levels than those reporting to never reapply sunscreen; however, they were more likely to report ever use of sunbeds (OR=1.8), to be physically active (ptrend=0.001), leaner (ptrend=0.03), to have ever used oral contraceptives (OR=2.1) or menopausal hormone therapy (OR=1.7) and to consume wine (ptrend=0.004). **Conclusion:** In this French population, high-SPF sunscreen use and reapplication of sunscreen were associated with a sun-sensitive phenotype, low sun exposure levels, low numbers of sunburns, and mostly healthy behaviors.

1040-S/P

SUICIDE IN MARRIED COUPLES IN SWEDEN – IS THE RISK HIGHER IN SAME-SEX COUPLES? Charlotte Bjorkenstam*, Gunnar Andersson, Emma Bjorkenstam, Christina Dalman, Susan Cochran, Kyriaki Kosidou (Department of Epidemiology, UCLA)

Background Minority sexual orientation is a predictor of suicide ideation and attempts though its association with suicide mortality is less clear. The relationship between same-sex marriage and suicide has rarely been studied. **Methods** We performed a population-based register study to analyze suicide risk among same-sex married women and men (n=6 456), as compared to different-sex married women and men (n=1 181 854) in Sweden. We selected all individuals who got married between 1996 and 2009 and followed them with regard to suicide until at most December 31st 2011. Multivariate Poisson regression was used to calculate adjusted incidence risk ratios (IRR) with 95% confidence intervals (CI). **Results** The risk of suicide was higher among same-sex married persons as compared to different-sex married (IRR: 2.8, 95% CI: 1.6-4.9), after adjustment for time at risk and confounding. Among men, suicide risk was significantly higher for same-sex married as compared to different-sex married (IRR: 2.9; 95% CI: 1.5-5.6) whereas the corresponding risk hovered at chance levels (IRR: 2.5, 95% CI: 0.8-7.9) among women. **Conclusions** Even in a country with a comparatively tolerant climate regarding homosexuality such as Sweden, sexual minority individuals have a higher risk for suicide, after adjustment for socioeconomic confounders.

1043-S/P

WHICH TYPES OF PHYSICAL ACTIVITY ARE ASSOCIATED WITH OPTIMAL MENTAL HEALTH AMONG YOUNG ADULTS? Isabelle Dore*, Jennifer O'Loughlin, Louise Fournier (University of Montreal, CHUM Research Centre)

INTRODUCTION: There is growing interest in physical activity (PA) to prevent mental disorders. However, few researchers have examined the relationship between PA and positive mental health. Furthermore, specific PA modalities related to changes in mental health and mental disorders remain unclear. This presentation examines the associations between volume (frequency & intensity) and social context of PA and positive mental health, anxiety and depression among college students. **METHODS:** Cross-sectional data from a longitudinal study conducted in a Quebec college are used for the present analyses; 1527 students completed a questionnaire during class-time in October 2013. Multivariate linear regressions were performed to model the associations between modalities of PA and mental health status while controlling for sex, age, academic program, numbers of years in college, number of job working hours and perceived socioeconomic status. **RESULTS:** A positive association has been observed between volume of leisure-time PA and positive mental health ($\beta = 0.076$, $p = 0.000$) whereas an inverse association has been observed between PA volume and symptoms of anxiety ($\beta = -0.025$, $p = 0.000$) and depression ($\beta = -0.011$, $p = 0.003$). Youth who exercise within an informal group show better positive mental health ($\beta = 2.178$, $p = 0.001$) compare to those who never exercise in this social context. Youth who are part of an organized sport team show higher level of positive mental health ($\beta = 2.690$, $p = 0.006$), lower anxiety symptoms ($\beta = -0.539$, $p = 0.012$) and depressive symptoms ($\beta = -0.515$, $p = 0.002$). **CONCLUSION:** Findings provide insight about the unique associations between specific modalities of PA and positive mental health and anxiety and depressive symptoms. Results suggests that higher volume of PA, as well as PA within informal group and team sport contexts should be encouraged so that young adults may experience better mental health and less anxiety and depressive symptoms.

1042-S/P

EFFICACY OF SOCIAL SKILLS TRAINING IN REDUCING NEGATIVE SYMPTOMS OF SCHIZOPHRENIA IN ADULTS: A SYSTEMATIC REVIEW AND META-ANALYSIS Michael Delgado*, Vivian Nwudu (Florida International University)

The purpose of this study was to assess the evidence for social skills training (SST) as a tool for psychiatric rehabilitation, namely, its efficacy as a form of treatment for negative symptomatology in adults diagnosed with schizophrenia. **Method:** We searched several online databases to identify randomized controlled trials on SST for adults with schizophrenia in both outpatient and inpatient settings for inclusion into the review. Data were extracted from included articles, and a meta-analysis was conducted on 11 studies. **Results:** The effects of SST on negative symptomatology were compared to control conditions in 12 studies, in total containing 724 subjects. One study was excluded from the final analysis because its methodology was suspected of having a high risk for bias. The random effects model meta-analysis indicated a moderate treatment effect size for SST [SMD (95% CI) = -0.615 (-0.340, -0.889)] and substantial heterogeneity ($I^2 = 70.303\%$) among studies. **Discussion:** This analysis of randomized controlled trials suggests that SST is efficacious as a treatment for the negative symptoms of schizophrenia, especially when provided in conjunction with pharmacological treatment. The results indicate that it would be beneficial to include SST-based psychosocial interventions in psychiatric treatment plans, though further research is needed on long-term retention of gains from SST and the efficacy of specific elements of SST.

1044

PRENATAL EXPOSURE TO MATERNAL AND PATERNAL DEPRESSIVE SYMPTOMS AND WHITE MATTER MICROSTRUCTURE IN OFFSPRING Hanan El Marroun*, Ryan Muetzel, Frank Verhulst, Tonya White, Henning Tiemeier (Erasmus MC - Sophia Children's Hospital, Rotterdam)

Rationale: Prenatal depressive symptoms have been associated with multiple adverse outcomes. Previously, we demonstrated that prenatal depressive symptoms were associated with impaired growth of the fetus during pregnancy and increased behavioral problems in children between 1.5 and 6 years of age. **Objective:** In this prospective study, we aimed to assess whether prenatal and postnatal maternal depressive symptoms have long-term consequences on structural brain connectivity in a cohort of children aged 6-10 years. As a contrast, the association of paternal depressive symptoms during pregnancy and structural connectivity was assessed as a marker of background confounding (shared genetic and environmental family factors). **Methods:** We assessed depressive symptoms during pregnancy in both mothers and fathers with the Brief Symptom Inventory (BSI). At approximately 8 years of age, we collected neuroimaging data (diffusion tensor imaging, DTI), using fractional anisotropy and diffusivity (mean, radial and axial) of limbic white matter bundles as outcomes. **Results:** We found that exposure to prenatal maternal depressive symptoms during pregnancy was associated with increased diffusivity in the uncinate fasciculus. Additionally, prenatal maternal depressive symptoms were related to decreased fractional anisotropy and increased diffusivity in the cingulate gyrus. No effects of paternal depressive symptoms on brain morphology were observed. **Conclusions:** Prenatal maternal depressive symptoms were associated with axial diffusivity of the uncinate fasciculus, and fractional anisotropy and radial diffusivity in the cingulate gyrus. These structures are part of the limbic system, which is involved in motivation, emotion, learning, and memory. It is important to prevent, identify and treat depressive symptoms during pregnancy as it may have long-term consequences on child development.

1045

SEX DIFFERENCES IN THE RELATION BETWEEN CHRONIC PHYSICAL ILLNESS BURDEN AND SUICIDAL IDEATION IN A LARGE HISPANIC POPULATION Emily Goldmann*, Eric T. Roberts, Nina S. Parikh, Bernadette Boden-Albala (New York University College of Global Public Health)

Studies have linked physical illness to suicidal ideation. However, little is known about this association in adult Hispanic populations, where suicidal behavior is reported less frequently than in other race/ethnic groups. Additionally, investigations of sex differences in this association are few. We used data from the Washington Heights/Inwood Informatics Infrastructure for Community-Centered Comparative Effectiveness Research (WICER) survey of 3,403 Hispanic adults living in northern Manhattan. Those reporting suicidal ideation (SI) endorsed the last item on the Patient Health Questionnaire (PHQ-9) about thoughts of self-harm or being better off dead. Chronic physical illness burden was measured as the sum of affirmative responses to having ever been diagnosed by a health care professional with hypertension, heart disease, stroke, weak or failing kidneys, cancer, or diabetes (not in pregnancy) and categorized as 0, 1, or 2 or more conditions. Logistic regression models evaluated the association between number of conditions and SI overall and stratified by sex, adjusted for age, education, and marital status; depression score (measured using the first 8 items of the PHQ-9) was added to additional models. The prevalence of SI was 3.6% in the overall sample and increased with number of medical conditions (no conditions=2.8%, one=4.0%, two or more=5.5%, $p=0.01$). Models adjusted for demographics yielded a strong association between number of medical conditions and SI in men (OR=2.5, 95% CI: 1.4-4.5) but not in women (OR=1.2, 95% CI: 0.9-1.6). Adjusting for depression in stratified models, an increase in number of conditions remained strongly associated with SI in men (OR=2.8, 95% CI: 1.2, 7.0) but not in women (OR=0.8, 95% CI: 0.6, 1.2; interaction term for sex in overall adjusted model, $p<0.01$). Findings highlight the importance of including suicidal ideation in mental health screening in health care practice, particularly among men with multiple health conditions.

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RESILIENCE MEDIATES THE RELATIONSHIP BETWEEN SOCIAL SUPPORT AND DEPRESSIVE SYMPTOMS AMONG POLICE OFFICERS FOLLOWING HURRICANE KATRINA Erin C. McCanlies*, Ja Kook Gru, Michael Andrew, John Violantin (National Institute for Occupational Safety and Health)

Police officers in the New Orleans geographic area faced a number of challenges following Hurricane Katrina. This cross-sectional study examined gratitude, resilience, and satisfaction with life as mediators in the association between social support and symptoms of depression in 86 male and 30 female police officers from Louisiana. The Gratitude questionnaire, Connor – Davidson resilience scale, Satisfaction with Life Scale, and the Interpersonal Support Evaluation List were used to measure gratitude, resilience, satisfaction with life, and social support, respectively. Depressive symptoms were measured using the Center for Epidemiologic Studies Depression Scale. Ordinary least square (OLS) regression mediation analysis was used to estimate direct and indirect effects between social support, gratitude, resilience, satisfaction with life, and symptoms of depression. All models were adjusted for age, alcohol intake, military experience, and number of sick days increased since Hurricane Katrina. Mean depressive symptom scores were 9.6 ± 9.1 for females and 10.9 ± 9.6 for males. Mediation analysis indicates that social support indirectly influences symptoms of depression through its effect on resilience (effect=-0.033, 95% CI=-0.079,-0.009); officers with higher social support are more likely to have higher resilience ($a=0.102$), which in turn is associated with fewer symptoms of depression ($b=-0.324$). Neither gratitude (effect=-0.099, 95% CI=-0.202, 0.009) nor satisfaction with life (effect=0.005, 95% CI=-0.071, 0.059) contribute to the indirect effect. These results indicate that resilience mediates the relationship between social support and symptoms of depression. Targeting and building resilience may improve an officer's ability to address symptoms of depression. Further longitudinal research in a larger population will be important to confirm and extend these findings.

1046

THE GULF OIL SPILL AND MULTIPLE DISASTER EXPOSURES: CUMULATIVE RISK, SENSITIZATION, OR HABITUATION? Emily Harville*, Arti Shankar, Leah Zilversmit (Tulane University School of Public Health)

Background: The U.S. Gulf coast has been exposed to multiple disasters over the last ten years, including hurricanes, flooding, and the 2010 oil spill. Exposure to multiple traumas could produce cumulative effects on mental health, could sensitize people to later events, or could habituate people to experiencing such events. **Methods:** 1169 women were interviewed about their experience of the Gulf oil spill; Hurricanes Katrina, Rita, Gustav, Ike, and Isaac; and Mississippi flooding. Experiences of the oil spill were divided into direct contact, traumatic experiences, economic losses, and overall, and experience of natural disaster into experiencing danger, damage, illness/injury, and evacuation. Depressive symptoms were measured using the Edinburgh Depression Scale and PTSD using the Post-Traumatic Checklist. Mental health was modeled using log-Poisson regression with individual, cumulative, and interactive effects of the oil spill and natural disasters as predictors and adjustment for confounders, to determine which model was most consistent with the relationships seen. **Results:** Both oil spill experiences and disaster exposure were associated with depression and PTSD, consistent with a cumulative model [e.g., both high contact with oil and overall disaster exposure were independently associated with depression (adjusted relative risk (aRR) for oil 2.10, 95% CI, 1.49-2.96, aRR 1.03, 1.02-1.04 per indicator for disaster) and PTSD (aRRs 2.03, 1.19-3.45; 1.03, 1.02-1.50, respectively.) No evidence for sensitization was found. **Conclusions:** The cumulative burden of oil spill and natural disasters contributed to experiencing worse mental health, but previous disaster does not appear to have sensitized women in the area to the effects of the oil spill.

1049-S/P

COMMON MENTAL DISORDERS AND EDUCATIONAL ENVIRONMENT' PERCEPTIONS OF UNDERGRADUATE STUDENTS Karen Mendes Graner*, Antonio Bento Alves de Moraes, Gustavo Sáttolo Rolim, Maria Cristina Pereira Lima, Albina Rodrigues Torres, Ana Teresa de Abreu Ramos Cerqueira (São Paulo State University (UNESP))

Background: Common Mental Disorder (CMD) has been identified among health care students and has a significant role in students' learning and wellbeing. Few studies investigate the association between CMD and Educational Environment (EE). **Aim:** To identify the prevalence and risk factors for CMD in sociodemographic and relationship characteristics and EE' perceptions of dental students. **Methods:** This is a cross sectional study with 230 students who answered a (1) questionnaire about sociodemographic and relationship aspects, the (2) Dundee Ready Educational Environment Measure (DREEM), which has five EE' subdomains: perception of Learning (PL), Teacher (PT), Academic Life (PAL), Atmosphere (PA) and Social life (PS), and (3) CMD instrument (Self-Reporting Questionnaire). A descriptive and a logistic regression stepwise analysis for CMD were made considering $p<0.05$ for the final model. **Results:** The prevalence of CMD was 45.2%. Most students with CMD were living with parents (75.0%; $p=0.00$), reported bad/regular academic achievement (71.7%; $p=0.00$), were feeling rejected by friends (73.2%; $p=0.00$) and were not adapted to the city (65.8%; $p=0.01$). CMD was significantly more prevalent ($p<0.05$) among students who reported negative perceptions about global EE (73.7%) and subdomains: PL(66.0%), PT(62.1%), PA(71.4%), PS (76.2%). Logistic regression showed significant association between CMD and PA (OR:0.4, CI: 0.2-0.7), PS (OR:0.4, CI: 0.2-0.7) and feeling rejected by friends (OR:3.0; CI:1.3-6.4). **Conclusions:** Students with CMD had more negative perceptions than positive of the Atmosphere and Social life in Educational Environment. Feeling rejected by friends was a risk factor for CMD demonstrating the need for changes focusing in preventative actions and care by Institution.

1050

EVOLUTION OF DEPRESSIVE SYMPTOMS BEFORE, DURING, AND AFTER MAJOR SOCIAL PROTESTS IN HONG KONG: POPULATION-BASED PROSPECTIVE COHORT STUDY

Michael Ni *, Tom Li, Herbert Pang, Brandford Chand, Betty Yuan, Ichiro Kawachi, C. Mary Schooling, Gabriel Leung (University of Hong Kong)

Background: Despite the extensive history of social movements around the world, the evolution of population mental health before, during and after a social movement remains sparsely documented. We sought to assess the prevalence and determinants of depressive symptoms in response to the “Occupy Central” protests in Hong Kong. **Methods:** Prospective cohort study of 909 adults randomly sampled from the population-representative FAMILY Cohort. We longitudinally administered interviews at six time points from March 2009 to March 2015: twice each before, during and after the Occupy Central protests. The Patient Health Questionnaire-9 (PHQ-9) was used to assess depressive symptoms and probable major depression (PHQ-9 score ≥ 10). We investigated predictors of psychological responses, including exposures to Occupy Central, resilience and social support. **Results:** The absolute prevalence of probable major depression increased by 7% after Occupy Central, regardless of personal involvement in the protests. Higher levels of depressive symptoms were associated with online and social media exposure to protest-related news (IRR 1.28, 95% CI 1.06-1.55) and more frequent Facebook use (IRR 1.38, 95% CI 1.12-1.71). Higher resilience (IRR 0.81, 95% CI 0.70-0.94) and greater family harmony (IRR 0.74, 95% CI 0.61-0.90) before the protests were associated with fewer depressive symptoms, adjusting for socio-demographics and baseline mental health history. **Conclusions:** The Occupy Central protests resulted in substantial and sustained psychological distress in the community.

1051-S/P

ASSOCIATIONS OF SELF-REPORTED AND OBJECTIVELY MEASURED SLEEP DISTURBANCES WITH DEPRESSION AMONG PRIMARY CAREGIVERS OF CHILDREN WITH DISABILITIES

Olivia R. Orta*, Clarita Barbosa, Juan Carlos Velez, Bizu Gelaye, Xiaoli Chen, Lee Stoner, Michelle A. Williams (Harvard T.H. Chan School of Public Health, Harvard University, Boston, Massachusetts)

Objective: Disturbed sleep is an important determinant of adverse physical and psychiatric health outcomes. We sought to assess the association between sleep disturbances and depression using both self-reported and actigraphy-measured sleep traits. **Methods:** A cross-sectional study was conducted among 175 women primary caregivers of children with disabilities receiving care at a rehabilitation center in Punta Arenas, Chile. The 8-item Patient Health Questionnaire (PHQ-8) was used to ascertain participants' depression status. The Pittsburgh Sleep Quality Index (PSQI) was used to define subjective, or perceived, sleep disturbances and sleep quality. Wrist-worn actigraphy monitors, worn for 7-consecutive nights, were used to characterize objective sleep disturbances and sleep quality. Interviewer-administered questionnaires were used to collect information on sociodemographic and lifestyle factors. Linear regression models were fit using continuous sleep parameters as the dependent variables, and depression status as the independent variable. Multivariable models adjusted for body mass index (BMI), marital status, smoking status, education level, and children's disabilities. **Results:** Approximately 26.3% of women in this population had depressive symptoms consistent with major depression. Depressed women were statistically significantly more likely to endorse poor sleep quality as compared with non-depressed counterparts. However, differences in sleep quality were not consistently noted when objective measures of sleep traits were analyzed for the two study groups. Self-reported ($\beta = -0.71$, $SE = 0.25$; $P = 0.006$) and objectively measured ($\beta = -0.42$, $SE = 0.19$; $P = 0.026$) sleep duration were both inversely associated with depressive symptoms. **Conclusion:** Research strategies that allow for integrating multiple methods for assessing both perceived and objective measures of sleep traits are encouraged.

1052-S/P

DSM-IV AND DSM-5 ADHD PREVALENCE AMONG 12-YEAR-OLD STUDENTS IN BRAZIL: CONTEXTUAL FACTORS AND COMORBID PATTERNS

Marcos Ribeiro*, Thiago Fidalgo, Melanie Askari, Zila Sanchez, Silvia Martins, Sheila Caetano (Universidade Federal de São Paulo)

Attention deficit hyperactivity disorder (ADHD) is the most prevalent youth psychiatric disorder. It is highly comorbid with anxiety (Generalized Anxiety Disorder-GAD; Post Traumatic Stress Disorder-PTSD), mood (Major Depressive Disorder-MDD) and disruptive disorders (Oppositional Defiant Disorder-ODD; Conduct Disorder-CD). ADHD is associated with low socioeconomic status (SES), but few studies have addressed this in low and middle-income countries. Our aim was to measure the prevalence of ADHD and comorbid psychiatric disorders according to the Diagnostic and Statistical Manual of Mental Disorders – Fourth and Fifth Editions (DSM-IV and DSM-5). Data came from an epidemiological study including 180 12-year-old students in nine public schools from two São Paulo city neighborhoods. Psychopathology was assessed by the Kiddie Schedule for Affective Disorders and Schizophrenia For School-Age Children /Present and Lifetime Version. Data were analyzed using weighted logistic regression with neighborhood stratification. Weighted ADHD prevalence was 9.4% (DSM-IV) and 13.3% (DSM-5). Males had higher prevalence (74.7%) as compared to females (25.3%) in DSM-5 criteria ($p = 0.002$), but not in DSM-IV (63.9% vs. 36%; $p = 0.186$). ADHD was significantly associated with low SES by DSM-IV (86.9%; $p = 0.005$) and DSM-5 (82.2%; $p = 0.005$). When controlling for SES and neighborhood, DSM-IV ADHD in girls was significantly associated with GAD ($aOR = 20.81$; $p = 0.010$), but not DSM-5 ADHD. DSM-5 ADHD was significantly associated with GAD in both boys and girls ($aOR = 9.49$; $p = 0.041$; $aOR = 20.8$; $p = 0.010$, respectively). It was significantly associated with MDD in boys by DSM-5 ($aOR = 10.7$; $p = 0.019$). Most new cases diagnosed by means of DSM-5 criteria undiagnosed by DSM-IV were of the inattentive subtype (72.7%, $p = 0.05$). ADHD in youth in São Paulo is highly comorbid with anxiety and mood disorders and DSM-5 identified cases not identified by DSM-IV.

1053

NATIONAL ESTIMATES OF DSM-5 MAJOR DEPRESSIVE DISORDER: RESULTS FROM THE NEWEST EPIDEMIOLOGIC SURVEY ON ALCOHOL AND RELATED CONDITIONS OF THE UNITED STATES

W. June Ruan*, S. Patricia Chou, Bridget Grant (NIH/NIAAA)

PURPOSE: The objective of this study was to present nationally representative findings on the prevalence, sociodemographic correlates, psychiatric comorbidity and treatment of major depressive disorder MDD by Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V) criteria. **METHODS:** The study was based on a representative US noninstitutionalized civilian adult (≥ 18 years) sample ($N = 36309$). Face-to-face interviews were conducted in the 2012-2013 National Epidemiologic Survey on Alcohol and Related Conditions III (NESARC-III). **RESULTS:** The prevalence of 12-month and lifetime DSM-V MDD were 10.4% and 20.6%, respectively. Prevalence was generally highest for women (13.4% and 26.1% respectively), Native American (15.9% and 28.2% respectively), respondents, and younger (11.2% and 22% respectively), previously married (13.8% and 25.9% respectively) and low income (14.1% and 22.5%) adults. Significant associations were found between both current and lifetime MDD and other substance use disorders, dysthymia, most of anxiety disorders, PTSD and personality disorders (except schizotypal), with odds ratios ranging from 1.2 (95%CI, 1.03-1.47) to 13.5 (95%CI, 11.02-16.50). 69.4% of respondents with lifetime MDD received treatment. Women were more likely to receive treatment than men (73.9% vs 60.9%). About 12.0% and 14.5% of men and women with MDD attempted suicide, whereas a majority of individuals with lifetime MDD had suicide ideation. **CONCLUSION:** MDD is a complex, highly prevalent, highly comorbid disorder, and is associated with significant morbidity and mortality. The emergence of depressive episodes are multifactorial with interactions between many sources of vulnerability. The NESARC-III data indicate an urgent need to educate the public and policy makers about MDD and its comorbid psychiatric disorders, and treatment alternatives. The current investigation also sheds lights on prevention strategies for suicide, which is the 10th leading cause of death in the United States.

1054

DEPRESSION AND FALLS: FINDINGS FROM THE 2014 BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM Kelly Ylitalo*, Carrie Karvonen-Gutierrez (Baylor University)

Objective: Depression and falls are common health conditions among adults in the United States. Both are relatively underdiagnosed, particularly among mid-life adults. The objective of this study is to examine the relationship between depression and falls among mid-life and older men and women in the United States. **Methods:** We utilized data from the 2014 Behavioral Risk Factor Surveillance System, a nationally representative sample of noninstitutionalized adults in the United States. Adults aged 45 years (n=342,420) self-reported falls and injuries from falls during the previous 12 months. Adults self-reported depression as an affirmative response to the question “ever told that you have a depressive disorder, including depression, major depression, dysthymia, or minor depression?” Weighted multivariate logistic regression was used to evaluate the association between depression and falls (any vs. none, for both non-injurious and injurious), adjusting for sociodemographic, medical, and behavioral confounding variables, stratified by sex and age group. **Results:** Among U.S. adults 45 years, 27.5% reported at least one fall during the previous 12 months; 16.3% reported a fall without an injury and 11.1% reported a fall with an injury; 18.6% reported depression. The association between depression and falls was consistent across all sex and age groups. Adults reporting depression had twice the odds of an injurious fall within the previous 12 months (e.g., among mid-life women, OR=2.14; 95% CI: 1.96, 2.34). Adults reporting depression also had increased odds of a non-injurious fall within the previous 12 months, although the magnitude was attenuated compared to injurious falls (e.g., among mid-life women, OR=1.45; 95% CI: 1.33, 1.58). **Conclusion:** Depression is associated with falls among men and women in the United States. Depression may be a modifiable risk factor for falls, and more research is needed to understand the relationship and direction of this association.

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INEQUALITY IN LOW BIRTH WEIGHT RATES IN PORTO ALEGRE, BRAZIL: ASSOCIATION WITH TYPE OF HOSPITALS. Marilyn Agranonik*, Clécio Homrich da Silva Antonio, Augusto Moura da Silva, Marcelo Zubaran Goldani (Fundação de Economia e Estatística - RS)

Background: Despite of the social and health conditions improvements, the low birth weight (LBW) rate remains an important problem in Brazil. This study evaluated the association of type of health insurance and LBW rates, in light of the changes in demographic patterns and in health sector funding. **Methods:** All live births registered between 1996 and 2013, in the city of Porto Alegre were included. Data were obtained from the Information System on Live Births (SINASC). Trends were assessed using regression models. Poisson regression was used to calculate the relative risk for LBW. **Results:** In the analysis, 354679 live births were included. During the period, there were significant reduction in live births and changes in health insurance with a 55% increase in deliveries in private hospitals. CS rates increased 47%, in the period, reaching 51% of all deliveries and 84.4% in private hospitals. LBW rates increased in private related with vagina delivery. In opposition, LBW rates decreased in public hospitals for CS babies and remained stable for those born by vaginal delivery. Increases in CS were associated with rising of LBW rates during the period. Improvements in maternal education in all types of hospital and reduction in the number of adolescent mothers in public and mixed hospitals were the main factors associated with a reduction in LBW rates. Increases in prenatal coverage were associated with rising of LBW rates in private hospital and reduction in LBW in public and mixed hospitals. **Conclusion:** There is significant in terms of health funding in Brazil with increased in deliveries in private hospitals. LBW rates remained stable despite significant increase in private hospital counterbalanced by a significant decrease in public hospitals. In addition, social improvements and increase prenatal care access reduced the risk for LBW in public and mixed hospitals.

1062-S/P

POSTPARTUM MATERNAL MORTALITY AND CESAREAN DELIVERY: A POPULATION-BASED STUDY IN BRAZIL Ana Paula Esteves-Pereira*, Catherine Deneux-Tharaux, Marcos Nakamura-Pereira, Monica Saucedo, Marie-Hélène Bouvier-Colle, Maria do Carmo Leal (Department of Epidemiology and Quantitative Methods in Health, Sérgio Arouca National School of Public Health, Oswaldo Cruz Foundation, Rio de Janeiro, Brazil)

Objective: Cesarean delivery rates continue to increase worldwide and reached 57% in Brazil in 2013. It is unlikely that such a rapid change in obstetrical risk happened to justify such an increase, yet instead, it suggests an enlargement of the range of cesarean indications to non-medical purposes. Although the safety of this surgery has improved in the last decades, this trend is a concern because it carries potential risks to women's health and may be a modifiable risk factor of maternal mortality. This paper aims to investigate the risk of postpartum maternal death directly associated with cesarean delivery in comparison to vaginal delivery in Brazil. **Methods:** This was a population-based case-control study performed in eight Brazilian states. To control for indication bias, deaths due to antenatal morbidity were excluded. We included 73 cases of postpartum maternal deaths from 2009-2012. Controls were selected from the "Birth in Brazil Study", a 2011 nationwide survey including 9221 postpartum women. We examined the association of cesarean section and postpartum maternal death by multivariate logistic regression, adjusting for confounders. **Results:** After controlling for indication bias and confounders, the risk of postpartum maternal death was almost three-fold higher with cesarean than vaginal delivery - adjusted odds ratio (adjOR) of 2.9 and 95% confidence interval (CI) of 1.6-5.1. This was mainly due to deaths from postpartum hemorrhage (adjOR 3.04 95% CI 1.4 - 6.6) and the combination of deaths from pulmonary embolism, amniotic fluid embolism and complications of anesthesia (adjOR 10.9 95% CI 2.2 - 55.3). **Conclusion:** Cesarean delivery is an independent risk factor of postpartum maternal death, in a context where most cesareans are performed before the onset of labor. Clinicians and patients should consider this fact in balancing the benefits and risks of the procedure.

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NUMBER OF SIBLINGS AND LATER CHILDLESSNESS IN WOMEN Olga Basso*, Aimee D'Aloisio, Clarice Weinberg, Dale Sandler (Dept. of Obstet-Gynecol & Dept. of Epidemiol, Biostat, Occ. Health, Montreal, QC H3A 1A2, Canada)

Women from large families tend to have more children, starting at a younger age. Despite an overall decline in fertility, few remain childless. We explored the extent to which number of siblings predicts childlessness. We used data from the Sister Study, a cohort of women with a sister with breast cancer recruited between 2003 and 2009. This preliminary analysis included 41,342 singleton women who were at least 45 years old at baseline and who reported not having being adopted. Due to the study design, all participants had at least one sister. Women from larger families reported a younger age at first pregnancy and ultimately had more children in all birth cohorts. The proportion of childless women increased steadily by birth cohort, from 9% among those born in 1930-34 to 21.5% among those born in 1960-64. In the earlier birth cohorts (1930-1944), we saw no association between number of siblings and childlessness, with 12.3% of women with 1-2 siblings being childless, compared with 11.5% with 3 siblings, and 11.1% with 4 or more siblings. In the later birth cohorts (1945-1964), i.e. among those with better access to birth control, having fewer siblings predicted childlessness with, respectively, 23.5%, 21% and 17.5%, of those with 1-2, 3, and 4+ siblings having no children. Among those from the more recent birth cohorts, the association remained significant after adjusting for 5-year birth cohort, attained household education when the woman was 13, and woman's own education. Compared with women with 4 or more siblings born from 1945 and onward, those with 1 or 2 siblings more frequently reported seeking help for infertility (18% vs. 15%) and more had elective termination of the first pregnancy (17% vs. 13%); mean age at termination was slightly lower in those with 4 or more siblings. Although women's decisions clearly play a role in childlessness, women from smaller families may have slightly lower fecundity.

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COMPARING FERTILITY STATUS OF CANCER SURVIVORS AND WOMEN WITHOUT CANCER Penelope Howards*, Amy Fothergill, Melanie Jacobson, Jessica Spencer, Ann Mertens (Emory University)

Advances in cancer therapy have led to improved survival of young adult women diagnosed with cancer, but some treatments have long-term health effects on the reproductive system. Most prior research on fertility in cancer survivors has been clinic rather than population based. The FUCHSIA Women's Study recruited reproductive-aged, women (22-45 years), diagnosed with malignant cancer or ductal carcinoma in situ between the ages of 20-35 years, who were at least 2 years post-diagnosis from the Georgia Cancer Registry (n=1282). Comparison women who had not had cancer were frequency matched to survivors on age and residence (n=1073). All study participants were interviewed about their reproductive histories, and a subset (n=750) had a blood draw to measure anti-Müllerian hormone (AMH), a measure of ovarian reserve. Cancer survivors treated with chemotherapy (36%) or radiation (37%) were more likely to report having unprotected intercourse for 12 months or more without becoming pregnant than comparison women (33%). The first infertile period was after cancer diagnosis for 27% of sub-fertile survivors treated with chemotherapy and 28% of those treated with radiation. Approximately, 43% of women treated with chemotherapy, 37% of those treated with radiation, and 10% of the comparison women had AMH levels (ng/ml) below the age-specific 10th percentile published in a population-based study of women with known fertility. The predicted mean level of AMH for a 37 year old woman was lower for cancer survivors treated with chemotherapy or radiation than comparison women when controlling for race (chemotherapy only: 1.7 (95% CI 1.1-2.3); radiation only: 2.1 (95% CI 1.5-2.8) both: 1.4 (95% CI 0.9-1.9); neither: 2.8 (95% CI 2.4-3.3); comparison women: 2.5 (95% CI 2.3-2.8)). In this population-based study, cancer survivors treated with chemotherapy or radiation were more likely to report a history of infertility and have lower AMH than comparison women.

1064-S/P

SLEEP QUALITY BUT NOT DURATION IS ASSOCIATED WITH TESTOSTERONE LEVELS: A PILOT STUDY OF MEN FROM AN URBAN FERTILITY CLINIC Linda Kahn*, Pam Factor-Litvak, Mark Sauer (Columbia University, Department of Epidemiology)

Prior research suggests that poor sleep quality and short sleep duration are associated with reduced testosterone (T) in men. T levels peak during the first REM cycle, approximately 3-4 hours after falling asleep, and remain elevated until awakening. Men with extreme sleep deprivation and those who do not attain deep sleep are vulnerable to low T, which may increase their risk of clinical symptomatology and reduced fecundity. In this pilot study, we tested associations between sleep quantity/quality and serum T. Men (n=65) age 30-50 years were recruited from the Center for Women's Reproductive Care at Columbia University and given a self-administered survey that asked about sleep quantity, sleep quality, and use of sleep medication. Those who reported <6.5 hours of sleep/night were coded as having short sleep duration (SSD) and those who reported "very bad" sleep quality or use of any sleep medication within the past month were coded as having poor sleep quality (SQ). Blood samples were taken simultaneously. The outcome measure, serum T (ng/dL), was log-transformed to normalize its distribution. Linear regression was performed 1) unadjusted, 2) semi-adjusted for age (continuous), income (categorical), and alcohol consumption (dichotomous), and 3) fully adjusted for the above covariates plus body mass index (BMI). In an analysis of 59 complete cases, SSD was not significantly associated with T in any of the three models. However, poor SQ was inversely associated with T in both unadjusted and semi-adjusted models (= -0.35, 95% CI [-0.58, -0.12]; semiadj=-0.38, 95% CI [-0.62, -0.14]). The relationship was attenuated but still statistically significant in the fully adjusted model, fulladj=-0.31, 95% CI [-0.56, -0.07], implying partial confounding by BMI. Our study provides additional evidence for an association between poor SQ and reduced serum T levels. These results suggest that sleep hygiene may be a valuable addition to the clinical management of men with low T.

1067-S/P

ADVERSE DELIVERY OUTCOMES IN PREGNANT WOMEN WITH MULTIPLE SCLEROSIS IN THE UNITED STATES Sarah C MacDonald*, Thomas F McElrath, Sonia Hernández-Díaz (Department of Epidemiology, Harvard T.H. Chan School of Public Health)

OBJECTIVE: To describe the risk for adverse outcomes at delivery admission in a large population-based sample of pregnant women with multiple sclerosis in the United States. **BACKGROUND:** Women with multiple sclerosis are thought to have relatively uncomplicated deliveries. However, their risk for many serious but rare complications such as chorioamnionitis and postpartum hemorrhage has not been addressed in sufficiently large studies. **METHODS:** We used delivery hospitalizations within the 2007-2011 Nationwide Inpatient Sample to identify a retrospective cohort of pregnancies. Women with multiple sclerosis and perinatal outcomes were identified by International Classification of Diseases, Ninth Revision, Clinical Modification codes recorded during the admission for delivery. Sampling weights were applied to achieve nationally representative estimates and to calculate odds ratios adjusted for sociodemographic characteristics. **RESULTS:** A weighted sample of 12,037 women with multiple sclerosis and 20,506,880 women without multiple sclerosis was obtained. The risk of chorioamnionitis in women with multiple sclerosis was 1.5% (OR=1.00 [95% CI, 0.71-1.41]). Approximately 2.4% of women with multiple sclerosis experienced postpartum hemorrhage due to atony (OR=1.24 [95% CI: 0.96-1.61]) and 0.8% experienced postpartum hemorrhage unrelated to atony (OR=1.21 [95% CI: 0.79-1.85]). 42.5% of women with multiple sclerosis were delivered via cesarean delivery (OR=1.27 [95% CI: 1.17-1.38]), 9.5% delivered preterm (OR=1.32 [95% CI: 1.15-1.51]), and 1.1% of vaginal deliveries involved a hospital stay of more than six days (OR=1.69 [95% CI: 1.03-2.77]). **CONCLUSIONS:** Women with multiple sclerosis are not at a significantly increased risk of chorioamnionitis nor postpartum hemorrhage. However heightened risks for cesarean delivery, preterm labor, and long hospital stays suggest that their risk for some delivery complications may be elevated.

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TIME TRENDS IN ADOLESCENT ATTITUDES TOWARDS OVERPOPULATION AND "POPULATION CONTROL" FROM 1976 TO 2013 Katherine Keyes*, Dahsan Gary, Heidi Jones (Columbia University)

In the 1960s and 70s, concerns about the impact of population growth on the environment led to calls to limit family size as a public policy, i.e. "population control." However, the population control movement also included proponents of eugenics which primarily targeted limiting family size among disadvantaged groups. In the 1990s, the reproductive justice movement changed the emphasis from population control to one of reproductive choice as a human right. Adolescents' attitudes toward "population control" as well as concerns about overpopulation provide a lens into the extent to which population-level social norms reflect this history. Data were drawn from Monitoring the Future, including 214,523 12th grade students sampled to be nationally representative each year from 1976 through 2013. Question wording and questionnaire placement never varied across the 37 years. Each population question was measured on a Likert scale and then dichotomized for analysis. Joinpoint regression models were used estimating slopes for the trend over time. The proportion of adolescents who worry about "population growth" has declined significantly and precipitously, from 87.6% (men) and 93.8% (women) in 1976 to 68.9% (men) and 61.8% (women) in 2013. The trend was best represented by four slopes for men and five slopes for women, indicating significant and substantial permutations in attitudes across the decades. Concomitantly, the proportion of adolescents who agree that 'the government should avoid making policy decisions about population growth' has significantly increased, and the proportion who believe that 'the US government should help countries control their populations' has significantly decreased. In conclusion, adolescent attitudes about overpopulation and the role of the government to address population growth have changed over time, suggesting that social norms are increasingly focused on individual choice over fertility intentions.

1069-S/P

EXPOSURE TO PHYTOESTROGENS IN UTERO AND AGE AT MENARCHE IN A CONTEMPORARY BRITISH COHORT Kristin Marks*, Terry Hartman, Ethel Taylor, Michele Marcus (Emory University, Rollins School of Public Health, Department of Epidemiology, and Centers for Disease Control and Prevention, National Center for Environmental Health, Health Studies Branch)

Phytoestrogens are estrogenic compounds that occur naturally in plants. Phytoestrogens can cross the placenta, and animal studies have found associations between in utero exposure to phytoestrogens and markers of early puberty. We investigated the association between in utero exposure to phytoestrogens and early menarche (defined as <11.5 years at onset) using data from a nested case-control study within the Avon Longitudinal Study of Parents and Children, a longitudinal study involving families living in the South West of England. Concentrations of six phytoestrogens were measured in maternal urine samples collected during pregnancy. Logistic regression was used to explore associations between quartiles of phytoestrogen concentrations with menarcheal status, with adjustment for maternal age at menarche, maternal education, pre-pregnancy BMI, maternal age at delivery, child birth order, duration of breastfeeding, childhood BMI Z-score, and child ethnicity. Among 370 mother-daughter dyads, maternal geometric mean (95% confidence interval (CI)) creatinine-corrected concentrations (in µg/g creatinine) were as follows: daidzein 184 (162-208), enterodiol 71.5 (64.6-79.1), enterolactone 755 (674-846), equol 5.65 (4.91-6.49), genistein 63.5 (54.9-73.4), and O-desmethylanagolensin (O-DMA) 11.2 (9.34-13.5). In preliminary analyses comparing in utero phytoestrogen exposure in the highest quartile (Q4) to the lowest quartile (Q1), no significant associations with onset of menarche were found. Higher O-DMA levels were nonsignificantly associated with early menarche (odds ratio (OR) = 1.51; CI: 0.65-3.29). O-DMA is an intestinal bacterial metabolite of daidzein; not all individuals harbor bacteria capable of metabolizing daidzein to O-DMA. These findings suggest that in utero exposure to phytoestrogens may not be associated with earlier age at menarche. Future analyses will examine the associations between phytoestrogens and age at menarche through survival analysis techniques.

“-S/P” indicates work done while a student/postdoc

1070-S/P

CONCORDANCE BETWEEN SELF-REPORTED PRE-PREGNANCY WEIGHT, HEIGHT, AND BODY MASS INDEX, AND SIMILAR MEASURES OBTAINED AT THE EARLIEST PRENATAL STUDY CONTACT AMONG PERUVIAN PREGNANT WOMEN

Barnabas Natamba*, Bizu Galaye, Michelle A Williams (Harvard University)

The extent to which self-reported weight and height among women living in low and middle income countries may underestimate maternal pre-pregnancy nutritional status is unknown. We compared the concordance between self-reported pre-pregnancy and measured anthropometrics at the earliest prenatal study contact and assessed the extent to which these measures influenced the estimation of maternal nutritional status. Data were from the Pregnancy Outcomes Maternal and Infant Study (ProMIS), a cohort study involving pregnant women at the Instituto Nacional Materno Perinatal (INMP) in Lima, Peru. 2,423 women aged 18 to 49 y with self-reported pre-pregnancy weight and height and these indices measured at the first study contact (gestational age 4-18 weeks) were included in this analysis. We assessed the extent to which self-reported and measured weight, height and BMI differed from each other; the concordance between measured and self-reported BMI using scatter and Bland-Altman plots; and the agreement among measured and self-reported BMI categories using the weighted kappa statistic. On average, measured weight was 0.27kg higher than self-reported weight ($p<0.05$), measured height was 2cm lower than self-reported height ($p<0.001$), and correspondingly measured BMI was 0.71 kg/m² higher than self-reported BMI ($p<0.001$). Scatter (Pearson's correlation co-efficient=0.846, $p<0.0001$) and Bland-Altman plots indicated strong concordance between measured and self-reported BMI. There was a tendency to overestimate the percentage of pregnant women with normal nutritional status and to underestimate those who are overweight or obese when using self-reported anthropometrics. However, there was strong agreement (91.2%) in the proportion of women classified in each BMI category when using self-reported or measured BMI (weighted kappa=0.634). In this setting or other similar contexts, self-reported anthropometrics may be a reasonable proxy for pre-pregnancy weight and height where measured values are unavailable.

1072-S/P

PREGNANCY OUTCOMES AMONG WOMEN WITH SUBCLINICAL HYPOTHYROIDISM OR THYROID AUTOIMMUNITY

Torie Plowden*, Enrique Schisterman, Lindsey Sjaarda, Shvetha Zarek, Robert Silver, Keewan Kim, Kara Michels, Noya Galai, Alan DeCherney, Sunni Mumford

Background: Overt thyroid dysfunction is associated with adverse obstetrical outcomes. Less is known regarding subclinical hypothyroidism (SCH) and thyroid autoimmunity and their relationship to obstetric complications. Our objective was to examine the association between anti-thyroid antibodies, SCH and preterm delivery (PTD), gestational diabetes (GDM), and preeclampsia. **Methods:** Ancillary prospective cohort study of a multi-center, randomized, placebo-controlled trial of preconception low-dose aspirin to prevent pregnancy loss among healthy fertile women ($n=1228$). At baseline, TSH, free thyroxine (fT4), anti-thyroglobulin antibody (anti-TG) and anti-thyroid peroxidase antibodies (anti-TPO) were measured. All women with elevated or missing fT4 were excluded from analysis. Relative risk (RR) and 95% confidence intervals (CIs) for PTD, GDM and preeclampsia were estimated using generalized linear models adjusting for age and body mass index. Women were grouped by TSH < 2.5 mIU/L or TSH > 2.5 mIU/L. Women who were positive for anti-TG, anti-TPO or both were classified as having thyroid autoimmunity. **Results:** Women who became pregnant during the study with TSH $>$ and < 2.5 mIU/L had similar rates of preterm delivery (RR 0.77; 95% CI 0.4, 1.48), gestational diabetes (RR 1.22; 95% CI 0.51, 2.91) or preeclampsia (RR 1.12; 95% CI 0.66, 1.92) after adjusting for both age and BMI. Similarly, women with and without thyroid autoimmunity had no differences in risk of preterm delivery (RR 1.27; 95% CI 0.65, 2.46), gestational diabetes (RR 1.41; 95% CI 0.54, 3.69), or preeclampsia (RR 1.07; 95% CI 0.56, 2.03). **Conclusion:** Among women with 1 to 2 prior pregnancy losses, SCH, and thyroid autoantibodies were not associated with increased risks of preterm delivery, gestational diabetes or preeclampsia. Support: Intramural Research Program, DIPHR, PRAE, NICHD, NIH

1071-S/P

TRANSGENERATIONAL TRANSMISSION OF PRETERM BIRTH RISK: THE ROLE OF RACE AND SOCIO-ECONOMIC NEIGHBORHOOD CONTEXT

Collette Ncube*, Daniel Enquobahrie, Jessica Burke, Steven Albert (Department of Epidemiology, School of Public Health, University of Washington, Seattle, WA)

Objectives: We investigated associations of mothers' gestational age at birth (MGA) and preterm birth (PTB) status with infants' PTB risk. We also examined whether these relationships differ by mothers' race and generational socio-economic neighborhood context. **Methods:** Participants were 6,592 non-Hispanic (NH) white and NH black infants (born 2009-2011) and their mothers (born 1979-1998) in Allegheny County, Pennsylvania. Birth records were used to determine gestational age at birth, PTB status (< 37 completed weeks), and PTB subgroups, late PTB (34-36 weeks) and early PTB (< 34 completed weeks). Census data on tract racial composition and household income were used to characterize residential race and economic environment. Adjusted binomial and multinomial logistic regression models were used to calculate Odds Ratios (ORs), Relative Risk Ratios (RRR) and 95% confidence intervals (CIs). Stratified analyses were conducted to assess effect modification. **Results:** Overall, 8.21%, 6.63% and 1.58% infants had PTB, LPTB, and EPTB, respectively. Maternal PTB status was associated with 46% higher infant PTB (95% CI:1.08-1.98), EPTB (95% CI:0.80-2.69), and LPTB (1.04-2.04) risk. A one-week increase in MGA was associated with 4-6% decreased risk of PTB (OR=0.95; 95% CI:0.91-0.99), late PTB (RRR=0.94; 95% CI:0.90-0.99) and EPTB (RRR=0.96; 95% CI:0.88-1.05). Maternal PTB-infant PTB associations, particularly LPTB, were stronger among NH blacks, and mothers who lived in neighborhoods with high percentage of NH black residents at their own birth and their infants' birth or who moved to neighborhoods with a higher percentage of NH black residents at their infant's birth, as compared to percentage of NH black residents at the time of their own birth. **Conclusions:** Maternal PTB is associated with increased risk of infant PTB, particularly LPTB. These associations may differ by maternal race and generational socio-economic neighborhood context.

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MECHANISMS LINKING SUBJECTIVE REPORTS OF NEIGHBORHOOD DANGER AND SAFETY AND PRETERM DELIVERY AMONG AFRICAN AMERICAN WOMEN

Shawnita Sealy-Jefferson*, Jaime Slaughter-Acey, Carmen Giurgescu, Cleopatra H. Caldwell, Dawn P. Misra (Virginia Commonwealth University)

Perceptions of neighborhood danger and safety have been shown to predict preterm delivery (PTD) rates among African American women with less than a college education, however the mechanism underlying this association is unknown. Data from the Life-course Influences on Fetal Environments (LIFE) Study (2009-2011) of African American women residing in the Detroit-metropolitan area were used to examine potential mediation of the association between perceived danger and safety and PTD (defined as birth before 37 completed weeks of gestation), by depressive symptomology, among women with 12 years of education ($n=365$). A validated scale was used to measure women's perceptions of their neighborhood danger and safety (higher=better). Depressive symptomology was assessed with the Center for Epidemiologic Studies Depression Scale (CES-D). Preterm delivery occurred in 16% ($n=64$) of the study sample. Statistical mediation was assessed using an unadjusted logistic regression-based path analysis for estimating direct and indirect effects, and their associated bootstrap 95% confidence intervals. In the total effect model, perceptions of neighborhood danger and safety were inversely associated with PTD rates ($p=0.02$), however, there was no direct effect of perceived danger and safety on PTD rates ($p=0.08$). The indirect effect of perceived danger and safety on PTD, through CES-D was significant ($p=0.03$). The results of this study suggest that the association between perceptions of neighborhood danger and safety and PTD among African American women with 12 years of education operates, at least partially, through depressive symptomology.

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PRECONCEPTION ASPIRIN IMPROVES LIVE BIRTH RATES IN LEAN, BUT NOT OVERWEIGHT-OBESE, WOMEN WITH HIGHER INFLAMMATION Lindsey Sjaarda*, Rose Radin, Neil Perkins, Robert Silver, Joseph Stanford, Jean Wactawski-Wende, Noya Galai, Brian Wilcox, Enrique Schisterman (Epidemiology Branch, Division of Intramural Population Health Research, Eunice Kennedy Shriver National Institute of Child Health and Human Development, Rockville, MD, USA.)

Inflammation is linked to reproductive disorders, and is strongly associated with excess body weight. We reported increased live birth among women randomized to receive low dose aspirin (LDA) having higher concentrations of the inflammation marker C-reactive protein (CRP), as part of the Effects of Aspirin in Gestation and Reproduction (EAGeR) trial. However, it is unclear whether CRP was a marker of overweight/obesity or an indicator of some other source of inflammation. Thus, we examined the effect of LDA vs. placebo on clinical pregnancy and live birth among women attempting spontaneous pregnancy after a history of pregnancy loss as part of the EAGeR trial with higher CRP (as defined by us previously: CRP ≥ 1.98 mg/L), further stratified by BMI class (normal [NW], BMI <25 kg/m² vs. overweight/obese [OW/OB], BMI ≥ 25). Log binomial models were employed to calculate RR, 95% CI for LDA vs. placebo among four groups: 1) NW women with CRP <1.98 (n=470), 2) NW women with CRP ≥ 1.98 (n=73), 3) OW/OB women with CRP <1.98 (n=204), and 4) OW/OB women with CRP ≥ 1.98 (n=235). NW women with CRP ≥ 1.98 exhibited significantly increased live birth with LDA vs. placebo (LDA 76% vs. placebo 48%, RR: 1.59, 95%CI: 1.01, 2.50). Yet, LDA did not increase live birth in OW/OB women with CRP ≥ 1.98 (LDA 49% vs. placebo 42%, RR: 1.14, 95%CI: 0.86, 1.52). Women with lower CRP (CRP <1.98) had similar live birth rates whether NW (LDA: 59%, placebo: 57%) or OW/OB (LDA: 56%, placebo: 57%). Results were similar across groups for clinically-confirmed pregnancy, and no effects of LDA were observed on pregnancy loss for any group. Furthermore, substituting a different measure of adiposity, the waist:hip ratio (above vs. below the median), in lieu of BMI categories produced similar results. Therefore, the effect of aspirin on improving reproductive success may work through modulating inflammatory pathways separate from those associated with excess weight.

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HOW DO LIMITS OF VIABILITY VARY INTERNATIONALLY? - A POPULATION BASED STUDY OF 12 EUROPEAN REGIONS. Lucy Smith*, Beatrice Blondell, Patrick Van Reempts, Elizabeth Draper, Bradley Manktelow, Henrique Barros, Marina Cuttini, Jennifer Zeitlin (University of Leicester, UK)

Advances in resuscitation and care have now reached a stage where preterm babies who were once seen as non-viable now have significantly improved survival, suggesting a need for reconsideration of the limits of viability. We explore this in terms of births by gestation and birth weight across 12 geographic regions in Belgium, France, Italy, Portugal and the United Kingdom participating in the EPICE study. All live births and fetal deaths between 22+0 and 25+6 weeks gestation born in 2011-2012 excluding terminations of pregnancy were included. The main outcome measures were: percentage of births reported live; provision of antenatal steroids, surfactant and respiratory support; and survival (at discharge) and two major composite morbidities (neurologic and respiratory). At 22 weeks gestation the percentage of births reported as live born was consistently low irrespective of birth weight. Despite variation in intervention rates, survival to discharge was universally poor. At 23 weeks, patterns were similar to 22 week gestation births for babies below 500g. However, for births of 500g and over, countries varied in the percentage reported as live (33.3% to 69.6%; $P<0.0001$), levels of intervention and survival to discharge. Similar international variation in management was seen for babies born at 24 and 25 weeks gestation weighing under 500g, with the reported percentage of live births ranging from 10.7% to 57.1% ($P=0.010$). However despite variation in intervention levels, outcomes were extremely poor (4% survival). For 24 and 25 week births of 500g and over there was a consistently high level of reported live births (74.4% to 80.2%; $P=0.656$), intervention and survival. In conclusion, wide international variation existed in the pragmatic definition of viability based on both gestational age and birth weight. Survival rates suggested that for babies of 23 weeks gestation and over, birth weight may be a better indicator of viability than gestation for decision-making.

1077-S/P

URINARY BIOMARKERS OF PRECONCEPTION PARACETAMOL EXPOSURE AND TIME-TO-PREGNANCY Melissa Smarr*, Melissa M Smarr, Katherine L Grantz, Rajeshwari Sundaram, José M Maisog, Masato Honda, Kurunthachalam Kannan, Germaine M Buck Louis (NICHD/NIH)

Paracetamol/acetaminophen (APAP) is a commonly used analgesic among women and men of all ages. Maternal APAP use has an anti-androgenic effect on male reproductive development; studies investigating couple fecundity are lacking. In a novel analysis of preconception urinary APAP biomarkers and couple fecundity, measured as prospectively assessed time-to-pregnancy (TTP), we analyzed data from a prospective cohort of 501 couples attempting pregnancy. To assess fecundity as a couple-dependent outcome, Cox's proportional odds models for discrete survival time were used to estimate fecundability odds ratios (FORs) and 95% confidence intervals (CIs). Missing chemical and covariate data ($\approx 12\%$) were imputed. Models controlled for each partners' preconception urinary biomarkers, creatinine, body mass index, serum cotinine levels, race/ethnicity, household income, female age and the difference between female and male age, given their high correlation. FOR estimates less than 1.0 denote diminished fecundity (a longer TTP). Models were performed to examine urinary paracetamol biomarkers as continuous and dichotomized exposure at the 75th percentiles for female (200.6 ng/mL) and male (55.8 ng/mL) partners, to estimate couple fecundity among highly exposed individuals. Among the 501 enrolled couples, 347 (69%) had an observed human chorionic gonadotropin confirmed pregnancy. Exposure biomarkers were detected in 93-100% of female and male urine samples; urinary APAP was significantly higher for female than male partners (Median=26.6 ng/mL and 13.2 ng/mL, respectively; $p<0.0001$). We observed no association between female APAP levels and couple fecundity. Male urinary APAP concentration above 55.8 ng/mL was associated with a 32% reduction in couple fecundity, compared with lower levels [aFOR= 0.68; 95% CI= (0.49, 0.95)]. Our findings may have both clinical and public health relevance, given the prevalent use of paracetamol among reproductive aged individuals trying for pregnancy.

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TRAJECTORIES OF PRENATAL WEIGHT GAIN AMONG LOW BIRTHWEIGHT AND PRETERM BIRTH INFANTS: A MULTI-LEVEL ANALYSIS Kohta Suzuki*, Rei Sukahara, Zentaro Yamagata (University of Yamanashi)

Some guidelines have been established to control maternal weight gain during pregnancy in Japan. Although prenatal weight gain may be associated with fetal growth, the difference of the weight gain trajectories of low birthweight (LBW) and preterm birth (PTB) infants compared with those of normal birthweight and term infants have not been clarified. Thus, this study aimed to describe prenatal weight gain trajectories for LBW and PTB infants. From three hospitals in Yamanashi Prefecture, prenatal check-up data from 932 women were collected. Mean number of check-ups during pregnancy was 11.2. Of these women, 454 (48.7%) were primipara. Mean maternal age at delivery was 31.0 years. Weight gain during pregnancy was defined as the difference between pre-pregnancy maternal weight and weight at the last check-up before delivery. Mean weight gain during pregnancy was 10.1 kg. Multilevel analysis (random intercepts and slopes model) was conducted to determine the estimates of slopes in each gestational period for LBW, PTB, and normal birthweight infants. As a result, significant interaction between gestational duration and LBW on prenatal weight gain was observed. The prenatal weight gain trajectory among women who gave birth to LBW infants was lower after the first trimester. Moreover, maternal weight constantly increased during the second and third trimesters. On the other hand, the trajectory of women who gave birth to PTB infants was mostly similar to that of women who gave birth to term infants. In conclusion, this is the first study to describe prenatal weight gain trajectories among LBW and PTB infants using multilevel analysis. The trajectory of prenatal weight gain among LBW infants was different from that of normal birthweight infants. These results may contribute to the ability to predict perinatal outcomes like LBW by prenatal weight gain. A further study to clarify the effect of prenatal weight gain on birthweight needs to be conducted.

1080- S/P

PRENATAL POLYBROMINATED DIPHENYL ETHER (PBDE) EXPOSURE AND BODY MASS INDEX IN CHILDREN UP TO 8 YEARS OF AGE Ann Vuong*, Joseph Braun, Andreas Sjodin, Glenys Webster, Kimberly Yoltan, Bruce Lanphear, Aimin Chen (University of Cincinnati College of Medicine)

Prenatal exposure to some endocrine disruptors has been associated with increased risk of childhood obesity. However, epidemiologic studies on polybrominated diphenyl ethers (PBDEs) are limited despite animal studies indicating their potential roles as obesogens. We investigated whether maternal concentrations of BDE-28, -47, -99, -100, -153, and PBDEs during pregnancy were associated with anthropometric measures in children aged 1-8 years. We examined 318 mother-child pairs in the Health Outcomes and Measures of the Environment Study, a birth cohort that enrolled pregnant women from 2003-2006 in the Greater Cincinnati Area (Ohio, USA). Serum PBDEs were measured at 16±3 weeks gestation. We measured child length/height (1-8 years), weight (1-8 years), body mass index [BMI] (2-8 years), waist circumference (4-8 years) and body fat percentage (8 years). Age- and sex-specific length/height, weight, and BMI z-scores were calculated based on CDC growth curves published in 2000. To account for repeated anthropometric measurements, we used linear mixed models and generalized estimating equations to estimate their associations with prenatal PBDEs. We found no statistically significant associations between prenatal PBDEs and length/height or weight z-score. However, a 10-fold increase in maternal serum BDE-153 was associated with lower BMI z-score (=-0.36, 95% CI -0.60, -0.13) at 2-8 years, smaller waist circumference (=-1.81 cm, 95% CI -3.13, -0.50) at 4-8 years, and lower percent body fat (=-2.37%, 95% CI -4.21, -0.53) at 8 years. A decrease in waist circumference at 4-8 years was observed with a 10-fold increase in BDE-100 (=-1.50 cm, 95% CI -2.93, -0.08) and PBDEs (=-1.57 cm, 95% CI -3.11, -0.02). A 10-fold increase in BDE-153 was associated with higher odds of having a BMI 15th percentile (OR=2.18, 95% CI 1.16, 4.08). Prenatal exposure to PBDEs may be associated with decreased child adiposity, including BMI, waist circumference, and body fat percentage.

1082-S/P

SERUM BRAIN-DERIVED NEUROTROPHIC FACTOR CONCENTRATIONS IN PREGNANT WOMEN WITH ANTEPARTUM POST-TRAUMATIC STRESS DISORDER WITH AND WITHOUT DEPRESSION Na Yang*, Bizu Gelaye, Qiuyue Zhong, Marta B. Rondon, Sixto E. Sanchez, Michelle A. Williams (Peking University; Harvard T.H. Chan School of Public Health)

Objective: There is accumulating evidence for the role of brain-derived neurotrophic factor (BDNF) in the pathophysiology of depression. The role of BDNF in the pathophysiology of post-traumatic stress disorder (PTSD) remains controversial; and no study has assessed BDNF concentrations among pregnant women with PTSD. We examined early-pregnancy BDNF concentrations among women with PTSD with and without depression. **Methods:** A total of 2,928 women attending prenatal care clinics in Lima, Peru, were recruited. Antepartum PTSD and depression were evaluated using PTSD checklist-civilian version (PCL-C) and Patient Health Questionnaire-9 (PHQ-9) scales. BDNF concentrations were measured in 944 participants using a competitive ELISA. Logistic regression procedures were used to estimate odds ratios (OR) and 95% confidence intervals (95%CI). **Results:** Antepartum PTSD (37.4%) and depression (27.6%) were prevalent in this cohort of low-income pregnant Peruvian women. Approximately 19.9% of participants had comorbid PTSD-depression. Mean serum BDNF concentrations were lower among women with comorbid PTSD-depression as compared with women without either condition (mean ± SD: 20.8± 5.7 vs. 21.9 ± 6.5 ng/mL, P=0.06). Compared to the referent group (those without PTSD and depression), women with comorbid PTSD-depression were 1.7-fold (95%CI: 1.08-2.66) more likely to have low (< 18.8ng/mL) BDNF concentrations. We observed no evidence of reduced BDNF concentrations among women with PTSD alone. **Conclusion:** BDNF concentrations in early pregnancy were only minimally and non-significantly reduced among women with antepartum PTSD. Reductions in BDNF concentrations were most pronounced among women with comorbid PTSD-depression.

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SEASON OF CONCEPTION, SMOKING AND PREECLAMPSIA IN NORWAY Clarice Weinberg*, Min Shi, Olga Basso, Lisa DeRoo, Quaker Harmon, Allen Wilcox, Rolv Skjaerven (National Institute of Environmental Health Sciences)

Background: Preeclampsia is a dangerous and unpredictable pregnancy complication. A seasonal pattern of risk would suggest potentially preventable environmental contributors. **Methods:** Using harmonic Cox regression applied to births from the Medical Birth Registry of Norway for deliveries between 1999 and 2009, we assessed the relationship between risk of preeclampsia and estimated day of the year of conception. **Results:** We found strong seasonal variation, with higher risk in spring conceptions and lower risk in autumn conceptions, with an amplitude of about 20%. The pattern did not depend on latitude, and was similar in primiparas and multiparas. Similar seasonality was seen in separate analyses of nonsmoking women, women who continued to smoke throughout pregnancy, and in quitters, with smokers showing no evident diminution of the amplitude. **Conclusions:** These results suggest that there is a seasonal driver for preeclampsia in Norway, which is not modulated by latitude or smoking.

1083-S/P

PRENATAL MATERNAL BEREAVEMENT AND ALL-CAUSE MORTALITY IN OFFSPRING: A NATIONWIDE COHORT STUDY FROM DENMARK AND SWEDEN Yongfu Yu*, Sven Cnattingius, Erik Thorlund, Parnar Jørn Olsen, Naiqing Zhao, Jiong Li (Section for Epidemiology, Department of Public Health, Aarhus University, Aarhus, Denmark)

Background Increasing evidence indicates that early life events could induce persistent negative effects on individual's physiology and risk of disease. Stress reaction due to bereavement during pregnancy may affect fetal development and cause negative impacts on offspring health, whereas little is known about the long-term effects of prenatal stress on the risk of death in later life. We aimed to examine the association between exposure to maternal bereavement during pregnancy and mortality in offspring. **Methods** The population-based cohort study included all children born in Denmark from 1973 to 2004 (n=1,944,899), and Sweden from 1973 to 2006 (n=3,308,609). We categorized them as exposed to bereavement during prenatal life if their mothers lost an elder child, husband, sibling, or parent during the period from one year before conception to the child's birth. The outcome of interest was all-cause mortality. Log-Linear Poisson regression was used to estimate mortality rate ratios (RRs) with 95% confidence interval to assess the effect of prenatal stress on offspring mortality. **Results** Exposure to prenatal stress was associated with an 11% increased risk of all-cause mortality in offspring (RR: 1.11, 95% confidence interval [CI]: 1.04–1.19). The association was more marked in children born to a mother who lost an elder child or spouse (RR: 1.33, 95%CI: 1.18-1.49). The magnitude of association differed in different age groups of offspring. We also found that the second trimester may be the most sensitive period of exposure (RR: 1.21, 95%CI: 1.03-1.43). **Conclusion** Our results suggest that maternal bereavement before child birth may increase offspring mortality risk. Pregnant women exposed to stress may be in need of social care and support to minimize stress to improve offspring health.

TRENDS IN BIRTH WEIGHT AMONG TERM NEWBORNS IN THREE BRAZILIAN CITIES: DIRECTION, MAGNITUDE AND ASSOCIATED FACTORS IN EIGHT BIRTH COHORTS

Antonio Silva*, Carolina Carvalho, Marco Barbieri, Viviane Cardoso, Rosângela Batista, Lamy-Filho, Cecília Ribeiro, Marlos Domingues, Bernardo Horta, Aluisio Barros (Federal University of Maranhao, Brazil)

Background: Diverging trends in birth weight (BW) have been spotted over time and factors that explain these trends still have not been completely elucidated. Objective: evaluate changes in mean BW of term newborns, using data from eight Brazilian birth cohorts and to identify associated factors. **Methods:** all eight cohorts are population-based studies (Ribeirão Preto in 1978/79, 1994 and 2010; Pelotas in 1982, 1993 and 2004; and São Luís in 1997/98 and 2010). Only full-term, singleton livebirths were selected for analysis. An indicator variable called "cohort" was created to measure "time/cohort effect" in each of the cities. Factors that would possibly account for changes in mean BW over time were then included in sequential multiple linear regression models. Interactions between the variable "cohort" and all other variables were tested to determine if the effect of each variable was different for each year. **Results:** Mean BW reduced in the first study period (-89g in Ribeirão Preto 1978/79-1994 and -27.7g in Pelotas 1982-1993) and increased in more recent times (+30.2g in Ribeirão Preto from 1994-2010 and +24.7g in São Luís 1997-2010). However, mean BW did not change in Pelotas 1993-2004. In the first period, in Ribeirão Preto, mean BW reduction was steeper among high schooling mothers and among those born by cesarean section. In Pelotas this reduction occurred only among vaginal deliveries. In the second period, increases in mean BW were explained by steeper rises in mean BW among low schooling mothers compared to their counterparts in Ribeirão Preto and São Luís. Only in São Luís a steeper mean BW increase was also observed among babies delivered by cesarean section. **Conclusions:** BW decreased in the first study period then increased thereafter. Apart from these diverging trends over different time periods, the variables that were able to explain these trends in multivariable models varied over time or changed the direction of their influence."

1090- S/P

PREDOMINANCE OF PREDIABETES AMONG BANGLADESHI FIELD WORKERS Manisha Das*, Ramendu Parial (University of Bangladesh)

Background: Prediabetes (PD) is a high-risk condition for developing diabetes and its complications, due to which much attention has been given to prevention and identifying at-risk individuals prior to diagnosis. **Subjects and Methods:** A cross-sectional comparative study was conducted with 1854 apparently healthy subjects (58.79% male), age between 30 to 60 years, from three remote villages of Bangladesh. Personal history was obtained, as well anthropometric and biochemical parameters were measured following standard protocols. Data were analyzed using statistical package for social sciences (SPSS) for Windows version 17. Ethical permission was taken (Memo No 21/320/IAMEBBC/IBSc) and guidelines for biomedical research involving human subjects were strictly followed throughout the study. **Results:** Out of the total subjects 58 (3.12%) were found to have type 2 diabetes (T2D), 357 (19.25%) were PD (14.1% impaired fasting glucose, IFG; 65.5% impaired glucose tolerance, IGT and 20.4% had combined IFG-IGT) and 77.63% were normal glucose tolerant (NGT). Body mass index, BMI ($t=2.367$, $p<0.014$) and waist hip ratio, WHR ($t=4.156$, $p<0.001$) were significantly high in T2D, however, significantly low in PD (BMI, $t=2.034$, $p<0.01$; WHR, $t=1.768$, $p<0.023$) compared to NGT subjects. Significant association was found with positive family history of diabetes (chi square, $2/p=5.729/<0.008$) and hypertension ($2/p=2.312/<0.012$), also with the habit of tobacco chewing ($2/p=2.993/p<0.015$) and taking rice three or more times per day ($2/p=6.970/<0.003$) in the study subjects. Pearson correlation showed positive correlation of blood glucose with rice intake ($p<0.001$), tobacco chewing ($p<0.006$), triglyceride ($p<0.001$) and cholesterol ($p<0.001$) and negative correlation with high density lipoprotein ($p<0.031$) and WHR ($P<0.04$). **Conclusion:** Substantial numbers of Bangladeshi field workers are suffering from undiagnosed prediabetes with significantly lower BMI and WHR.

1092-S/P

THIRD-DEGREE FAMILY HEALTH HISTORY AND PERCEPTION OF DISEASE RISK Liana Romero*, Vasileios Margaritis, Aaron Mendelsohn (Walden University)

Chronic diseases are a significant cause of illness and mortality in the United States. Hereditary predisposition to chronic diseases is a useful indicator for identifying people at risk for disease development. An ideal tool for determining this predisposition is the CDC, NIH, and AAFP recommended third-degree family health history (FHH). The aim of this quantitative, cross-sectional study based on the theoretical frameworks of social constructivism and the health belief model was to assess the possible influence between the completed third-degree FHH and the participant's perception of disease risk. Two-hundred seventy-three participants were recruited from health care facilities and from the general population using convenience sampling. A statistically significant association between the presence of heart disease, stroke, breast cancer, ovarian/cervical cancer, prostate cancer, colon cancer, and diabetes, and the perception of risk for the particular disease was noted. A familial history of stroke appeared to be the strongest predictor of perception of disease risk. Moreover, increasing age, particularly within the age range of 40 to 57, was associated with increasing levels of perception of disease risk for heart disease, stroke, and prostate cancer. Individuals from the general population significantly indicated higher than average risk for colon cancer compared to those from health care facilities. Social change implication of this study may be the widespread implementation of a familial health history questionnaire that leads to an impactful, higher degree of disease risk awareness, prompting preventive action on the part of the individual, and leading to improved individual and population health.

1091-S/P

LOW-DOSE CT LUNG CANCER SCREENING: PERCEPTIONS OF PRIMARY CARE PHYSICIANS IN A COMMUNITY-BASED HEALTH SYSTEM Jennifer Ersek*, Jan Marie Eberth, Kathryn Patronik, Edward Kim (University of South Carolina/Levine Cancer Institute)

PURPOSE: The Centers for Medicare and Medicaid Services (CMS) recently issued coverage recommendations for lung cancer (LC) screening in high-risk patients. The purpose of this study was to assess perceptions and practice patterns of LDCT screening among primary care physicians (PCPs) at a community-based health system (CBHS). **METHODS:** A 32 question, electronic survey assessing LDCT risk/benefit perceptions, insurance reimbursement, and practice patterns was administered post-CMS coverage decision announcement at Carolinas HealthCare System. PCPs were also asked if patients should be screened with CXR, LDCT, or should not be screened based on clinical vignettes describing patient eligibility. **RESULTS:** 57 PCPs responded from May-June 2015. 28% of PCPs incorrectly recommended no screening or CXR for patients meeting eligibility criteria (28%) and 40% of PCPs answered correctly that LDCT was covered by CMS. PCPs reported that LDCT reduced LC mortality (66%) and increased early stage detection (85%). PCPs also reported that LDCT lead to unnecessary diagnostic procedures (87%), increased psychological stress/anxiety (62%), and increased cancer risk by increased radiation exposure (43%). 52% of PCPs reported discussing the risks/benefits with their patients and then letting the patient decide whether or not to screen, 24% discussed the risks/benefits and then recommended screening, and 22% did not discuss the risks/benefits of LDCT. 35% of PCPs made 0 referrals for LDCT screening in the prior year (35%) and 28% of PCPs made 5+ referrals. **CONCLUSIONS:** There was variation in clinical utilization of LDCT. Reasons may include lack of education by PCPs on the types of patients eligible for screening and insurance reimbursement/coverage. CBHSs should consider incorporating education on LDCT into competency programs and alerts within the electronic medical record. LC screening decision aids may help PCPs and patients discuss the risks/benefits of LDCT and decide if screening is appropriate together.

1100-S/P

GETTING UNDER THE SKIN": HUMAN SOCIAL GENOMICS IN THE MULTI-ETHNIC STUDY OF ATHEROSCLEROSIS"

Kristen Brown*, Sharon Kardia, Ana Diez-Roux, Yongmei Liu, Jennifer Smith, Belinda Needham, Steve Cole, Bhramar Mukherjee, Erin Ware, Teresa Seeman (University of Michigan)

Background: The contribution of social exposures to health is well documented, but underlying mechanisms are still not well established. Altered gene expression is one potential mechanism. We assessed whether gene expression sensitive to social exposures in previous small studies is associated with social and psychosocial factors in a large, ethnically diverse sample. **Methods:** We identified 1,360 genes from the literature that showed a relationship between gene expression and social exposures. Psychosocial exposures (loneliness, chronic burden, perceived stress, social support, and discrimination) were assessed via questionnaire in 1,264 adults from the Multi-Ethnic Study of Atherosclerosis. Gene expression was measured in monocytes using the Illumina 12v4 chip. The association between each exposure and the entire set of gene expression levels from all previously implicated genes was tested using a global test (Global ANCOVA). When the Global ANCOVA test result was $p < 0.05$, we used multivariable linear regression to test the association between the exposure and each gene expression level separately. Gene Ontology enrichment analyses were conducted to identify the biological classifications of genes that showed evidence of sensitivity to social exposures in the linear regression analyses. **Results:** In Global ANCOVA analyses, loneliness and discrimination were significantly associated with gene expression in the set of studied genes ($p = 0.004$ and $p = 0.019$, respectively). No association was observed for chronic burden, perceived stress, or social support. Multivariable linear regression analyses indicated that of the 1,360 genes assessed, loneliness was associated with expression of 491 and discrimination was associated with 456 (FDR=10%). For both loneliness and discrimination, bioinformatic analyses indicated that "response to stimulus" (GO:0050896) genes were enriched. **Conclusion:** Expression of some genes may be particularly sensitive to psychosocial exposures.

1102-S/P

DECREASING MORTALITY OF SUICIDE IN JIADING DISTRICT, SHANGHAI, IN 2002-2014

Zhu Chenghua*, Zhu Chenghua, Shao Yueqin, Zhang Yiying, Shi Guozheng, Yu Hongjie, Chen Zheng, Wang Na, Jiang Qingwu (Fudan University)

A decrease in the mortality of suicide has been reported in several countries. However, population based registry data was limited, especially in some area being in the process of urbanization. The authors investigated the changing pattern of suicide mortality in Jiading District, Shanghai, using data derived from the Shanghai Vital Registry for the period from 2002 to 2014. Crude and age-standardized mortality rates were calculated for men and women separately. Percent change (PC %) and annual percent change (APC %) were estimated for suicide mortality. In total, there were 1321 suicide deaths for the study period, accounting for 2.41% (1321/54875) of all-cause deaths and 36.33% (1321/3636) of death from external causes of morbidity. 72.07% (952/1321) of suicide decedents reported previous psychiatric history. Women living in Jiading experienced a higher risk for suicide deaths than men, especially for deaths from suicide with psychiatric history (male/female ratio=0.48). The age-standardized mortality of suicide in Jiading decreased from 5.95 per 100 000 in 2002 to 3.95 per 100 000 in 2014 in men and from 6.04 per 100 000 in 2002 to 2.26 per 100 000 in 2014 in women, respectively. PC % and APC % of suicide were -38.82% and -4.90% for men and -60.63% and -7.08% for women, respectively. The authors concluded that the mortality of suicide had declined in Jiading during 2002 to 2014. Reasons for this decrease are not known. Future studies will focus on changes in potential psychiatric risk factors and/or social factors.

1101-S/P

EDUCATIONAL AND OCCUPATIONAL SOCIAL TRAJECTORIES AND NEWLY DIAGNOSED TYPE II DIABETES IN THE BRAZILIAN LONGITUDINAL STUDY OF ADULT HEALTH (ELSA-BRASIL)

Sandhi Maria Barreto*, Lidyan Camelo, Luana Giatti, Rosane Griep, Dóra Chor, Bruce Duncan, Maria Inês Schmidt, Sandhi Maria Barreto (Universidade Federal de Minas Gerais)

BACKGROUND: We investigated the association of educational and occupational social trajectories across the life course with newly diagnosed type II diabetes (T2D) independently of the clinical predicted risk of diabetes. **METHODS:** Our analytical sample comprised 13629 participants from ELSA-Brasil baseline (2008–2010) without previously diagnosed diabetes. Using maternal education and participant's own education dichotomized (high versus low) we derived four possible educational trajectories: high-stable (reference category), upward, downward, and low-stable. The same was done using family head's occupational social class and participant's own occupational social class to create the occupational trajectory. Logistic regressions were performed adjusting for clinical predicted risk of T2D, stratified by sex. **RESULTS:** Educational and occupational mobility (upward or downward) was observed in approximately one third of participants, and among these individuals there was a predominance of upward social trajectory. In the final models, educational downward and low-stable trajectories were associated with 40% and 70% (p -value <0.05) more chances of presenting newly diagnosed T2D, respectively in both sex. However, only low-stable occupational trajectory remained statically associated with T2D in men (OR: 2.0; 95%CI: 1.6-2.5) and women (OR: 1.5; 95%CI: 1.2-1.9). Educational and occupational upward trajectories were not associated with T2D. **CONCLUSIONS:** Exposure to social adversities early in life adds vulnerability for T2D among those with low SEP in adulthood (low-stable trajectory). However, the effect of social adversities early in life seems to be reversed by improvement in social conditions in adulthood, since there was no statistical difference between upward and high-stable trajectories in relation to chances of newly diagnosed T2D. Thus, promoting upward social mobility as well as improvements in social conditions across the life course are essential to prevent T2D.

1103

NEIGHBORHOOD-LEVEL INCOME AND MARITAL STATUS IN THREE LARGE CHINESE CITIES: ASSOCIATIONS WITH DSM-IV MENTAL DISORDERS FROM THE WORLD MENTAL HEALTH SURVEYS

Alexandre Chiavegatto Filho*, Laura Sampson, Silvia Martins, Yueqin Huang, Yanling He, Sing Lee, Chiyi Hu, Alan Zaslavsky, Ronald Kessler, Sandro Galea (University of Sao Paulo)

Introduction. The rapid growth of urban areas in China in the past few decades has introduced profound changes in family structure and income distribution that could plausibly influence mental health in Chinese cities. Our objective was to examine the association of area-level income and percentage of married individuals with DSM-IV mental disorders in Shanghai, Shenzhen and Beijing. **Methodology.** We analyzed data from the World Mental Health surveys, comprised of two household surveys of community-dwelling adults, one from Beijing and Shanghai and the other from Shenzhen, performed in 2002-2003 and 2008, respectively. A total of 4,104 individuals were interviewed on socioeconomic characteristics and assessed for DSM-IV mental disorders using the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). Area of residence was defined by the strata used for sampling based on local approximations for neighborhood ($n=143$ areas of residence). **Results.** The weighted prevalence in the overall sample for 12-month mental disorders was 8.44% and for lifetime mental disorders 13.62%. After controlling for individual factors, living in areas with higher proportion of married individuals was associated with lower odds of both 12-month and lifetime mental disorders (OR = 0.64, 95%CI: 0.45-0.91, and OR: 0.52, 95%CI: 0.35-0.79). Living in an area with high per capita income was significantly associated with lower odds of 12-month, but not lifetime, mental disorders (OR: 0.68, 95%CI: 0.48-0.98, and OR: 0.94, 95%CI: 0.68-1.31, respectively). The results remained consistent even when analyzing only individuals with a previous history of mental disorders. **Conclusion.** The association of area-level income and percentage of married individuals with individual odds of mental disorders highlights the importance of neighborhoods for mental health. Underlying social structures that influence mental health may be particularly important in rapidly growing contexts.

1104-S/P

SUSTAINED POVERTY AND INCREASES IN BODY MASS INDEX OVER TIME: SEX AND RACE DIFFERENCES IN THE CARDIA STUDY. Tali Elfassy*, Maria Glymour, Kiarri Kershaw, Mercedes Carnethon, Cora Lewis, Adina Zeki Al Hazzouri (University of Miami)

Limited research exists regarding the impact of long-term poverty on BMI changes, especially in minority groups. We examined the associations of sustained poverty on increases in BMI in 4,732 black and white adults of the Coronary Artery Risk Development In Young Adult study. Income was collected at six examinations between 1990 (baseline) and 2010. Using US Census Bureau information and household size, sustained poverty was defined as the percent of examinations that the participant had a household income less than 200% of the federal poverty level for the corresponding year. Mutually exclusive categories were: 'never', '<1/3 of the time', '1/3 of the time', or 'always'. Linear mixed models with random intercepts were used to model baseline BMI and annual increases in BMI by categories of sustained poverty. Overall, BMI increased 4.1 kg/m² from 26.2 in 1990 to 30.2 in 2010, with an average increase of 0.21 kg/m² per year ($p<0.01$). However, trajectories of BMI varied by poverty group, sex, and race (p for interaction <0.01). In models adjusted for baseline age and education, time-dependent smoking, and physical activity, and time weighted average depressive symptoms, estimated mean baseline BMI was higher in women who were always vs. never in poverty: 29.5 vs. 27.8, $p=0.01$ in Blacks and 26.7 vs. 24.1, $p=0.01$ in Whites. This was reversed in men, those who were always vs. never in poverty had lower BMI at baseline: 26.0 vs. 27.2 in Blacks ($p=0.06$) and 24.0 vs. 25.8 in Whites ($p<0.05$). Annual increases in BMI were slower in those who were always vs. never in poverty in black women: 0.22 vs. 0.28 ($p<0.01$), black men: 0.14 vs. 0.21 ($p<0.01$), and white women: 0.11 vs. 0.19 ($p<0.01$), yet trended faster in white men: 0.19 vs. 0.16 ($p=0.27$). In summary, though overall BMI increased in all groups, sustained poverty was associated with differences in baseline BMI and BMI rate of change; such associations manifested differently by sex and race.

1106-S/P

DOES ACCULTURATION TO THE UNITED STATES EXACERBATE GENETIC SUSCEPTIBILITY TO INCREASED BODY MASS INDEX AMONG HISPANIC/LATINO ADULTS?: THE POPULATION ARCHITECTURE USING GENOMICS AND EPIDEMIOLOGY (PAGE) STUDY Lindsay Fernández-Rhodes*, on behalf of the PAGE Study Obesity Working Group (University of North Carolina at Chapel Hill)

Exposure to the United States (US) cultural and lifestyle factors has been posited as why more acculturated US Hispanic/Latinos carry a greater cardiometabolic (CM) burden than their peers. Although efforts are ongoing to describe the genetic determinants of body mass index (BMI) in this ethnic minority, little is known if acculturation as a proxy of obesogenic environments modifies BMI genetic susceptibility. We examined if acculturation exacerbates genetic risk factors for increased BMI in US Hispanic/Latinos. The Population Architecture using Genomics and Epidemiology (PAGE) Study includes 18,634 Hispanic/Latino adults (age: 20-79; BMI: 18.5-70.0kg/m²) from three observational studies genotyped using the Metabochip array (Illumina, Inc). BMI models were adjusted for age, sex, ancestry, center, relatedness or sampling design (Horvitz-Thompson estimators) as necessary. We estimated the differences between the genetic effects (additive genetic model) of single nucleotide polymorphisms at 31 BMI loci validated in European descent populations (minor allele $>1\%$) between strata of acculturation proxies: preference at examination for English versus Spanish, and nativity in US states/District of Columbia versus not. We observed interactions with language at three loci and nativity interactions were consistent for each locus. For example at KCNJ11, a known diabetes locus, the increase in BMI per risk allele (rs542274-C) was 0.41kg/m² (95% confidence interval, CI=0.22, 0.60; $n=7,284$) in those who preferred English at examination compared to 0.12kg/m² (95% CI=-0.05, 0.29; $n=11,343$) in those who preferred Spanish, which reflected a positive acculturation interaction (Int=0.29kg/m², 95% CI=0.03, 0.55) with English language that was consistent with US nativity (Int=0.26kg/m², 95% CI=-0.05, 0.56). Future research will endeavor to replicate these findings and describe their relevance to other CM factors, like diabetes, that contribute to disparities in Hispanic/Latino health.

1105- S/P

DOES CYTOMEGALOVIRUS INFECTION CONTRIBUTE TO SOCIOECONOMIC DISPARITIES IN ALL-CAUSE MORTALITY? Lydia Feinstein*, Christian E Douglas, Rebecca C Stebbins, Graham Pawelec, Amanda M Simanek, Allison E Aiello (University of North Carolina at Chapel Hill)

Low socioeconomic status (SES) is strongly associated with seropositivity for and worse immune control of the herpesvirus cytomegalovirus (CMV), a pathogen that once acquired persists as a latent infection and is capable of reactivation over time. In addition, CMV is increasingly being implicated in aging of the immune system and evidence suggests the virus may play a key role in numerous chronic disease outcomes, including cardiovascular disease, cognitive decline, and depression. Taken together, these findings suggest that CMV seropositivity may partially contribute to socioeconomic disparities in mortality at the population level. Using data from adults 25 years of age and older who participated in the National Health and Nutrition Examination Survey (NHANES) III (1988-1994), we used Cox regression and a new inverse odds ratio weighting technique to quantify the proportion of the association between SES and all-cause mortality that was attributable to mediation by CMV seropositivity. Moreover, we examined whether the pathways linking SES, CMV seropositivity, and mortality were modified by age. SES was assessed as household income (income-to-poverty ratio 1.30; >1.30 to 1.85; >1.85 to 3.50; >3.50) and education ($<$ high school; high school; $>$ high school). Adjusting for covariates, we found strong associations between low SES and increased mortality: hazard ratio (HR) 1.80; 95% confidence interval (CI): 1.57, 2.06 comparing the lowest versus highest income groups and HR 1.29; 95% CI: 1.13, 1.48 comparing $<$ high school versus $>$ high school education. A total of 65% of individuals were CMV seropositive, and CMV seropositivity accounted for 6-15% of the SES-mortality associations. Age modified the associations between SES, CMV, and mortality. Our findings suggest that interventions targeting the linkages between SES, CMV, and mortality may reduce persistent socioeconomic disparities in mortality and should be designed to address specific age-related mechanisms.

1107-S/P

HOW DOES RELATIVE INCOME DEPRIVATION DURING CHILDHOOD IMPACT ADOLESCENT MENTAL HEALTH? TESTING THE CRITICAL PERIOD AND ACCUMULATION OF RISK HYPOTHESES. Genevieve Garipey* (McGill University)

INTRODUCTION: Growing up in impoverished environment is linked to poor mental health in youths, but this process is still not well understood. There may be periods when children are particularly sensitive to income deprivation. The cumulative exposure to relative poverty may be what matters to mental health. This study tested the critical period and accumulation of risk models as pathways linking early life relative income deprivation to adolescent mental health. **METHODS:** We used data from the 2002 and 2007 Child Development Supplements (CDS) of the US Panel Study of Income Dynamics (PSID) ($n=2234$ adolescents). The PSID collected yearly information on household income dating back to the birth year of adolescents. We estimated relative household income deprivation using state- and year-specific household income quintiles. Adolescent positive mental health was measured from a 12-item tool (score range 3-18). We used marginal structural modelling (MSM) to test sensitive periods. We modeled the number of years spent in the two poorest income quintiles to test the accumulation of risk model. Models were adjusted for family socioeconomic factors and year of birth. **RESULTS:** Findings indicated that each increase in household income quintile during early childhood was associated with a 0.27 point (95% CI: 0.08, 0.47) higher score on positive mental health during adolescence. MSM analysis however revealed that this effect was not direct (0.14, 95% CI: -0.22, 0.50), suggesting that early childhood was not a uniquely sensitive period. Analyses of relative income during mid and late childhood did not find any effect. Each childhood year spent in the poorest income quintiles was associated with a 0.14 point (95% CI -0.22, -0.07) lower positive mental health score at adolescence. **CONCLUSION:** Evidence from the study suggests that it is the cumulative exposure to relative poverty during childhood that impacts adolescent mental health, and not the specific time period of exposure.

“-S/P” indicates work done while a student/postdoc

1108-S/P

THE SOCIAL NEIGHBORHOOD ENVIRONMENT AND OBJECTIVE MEASURES OF SLEEP; DIFFERENCES BY RACE/ETHNICITY IN THE MULTI-ETHNIC STUDY OF ATHEROSCLEROSIS Dayna Johnson*, Guido Simonelli, Kari Moore, Rui Wang, Martha Billings, Michael Rueschman, Ichiro Kawachi, Susan Redline, Ana Diez Roux, Sanjay Patel (Brigham and Women's Hospital and Harvard Medical School)

Evidence suggests that the neighborhood environment contributes to sleep health. However, the literature is limited in examining objective measures of sleep. This study investigated associations of the neighborhood social environment with objective measures of sleep; and explored effect modification by race/ethnicity in the Multi-Ethnic Study of Atherosclerosis (MESA). A racially/ethnically diverse population of men and women (N=1949) aged 54-93 in the MESA Sleep Cohort underwent 1-week actigraphy between 2010 and 2013. Measures of sleep duration, timing and disturbances were averaged over all days. Neighborhood characteristics were assessed via questionnaires and aggregated at the neighborhood (census tract, N=783) level using empirical Bayes estimation. Multilevel linear regression models were used to assess the association between the neighborhood social environment and each sleep outcome. Neighborhood social environment characterized by a combined score of high levels of social cohesion and safety were associated with sleeping an average of 9.4 minutes (95% Confidence Interval: 5.4, 13.5) longer and with earlier average sleep midpoint of 5.8 minutes (1.7, 9.9), after adjustment for age and sex; the association persisted after adjustment for socioeconomic status and comorbidities. Race modified the association between social neighborhood environment and sleep duration, $P < 0.05$. Among African Americans, higher social cohesion/safety was associated with sleeping 12.3 minutes (5.1, 19.5) longer. There was no association between neighborhood factors and sleep in other racial/ethnic groups. Neighborhood factors were not associated with sleep disturbances. A supportive neighborhood social environment was associated with greater objectively measured sleep duration and earlier sleep timing. African Americans may be more vulnerable to the influence of an adverse neighborhood environment on sleep. Intervening on the neighborhood environment may improve sleep and subsequent health outcomes.

1111

UNEMPLOYMENT AND PRETERM DELIVERY DURING THE GREAT RECESSION Claire Margerison-Zilko*, Yu Li, Zhehui Luo (Michigan State University)

Objectives. We know little about the impact of the economy on fetal health in the context of the Great Recession. A critical challenge lies in distinguishing effects of economic conditions on fetal health from effects on conception, pregnancy termination, and fetal loss (i.e., selection effects). We examine associations between economic conditions during pregnancy and preterm delivery (PTD), accounting for selection. **Methods.** We linked individual U.S. vital statistics birth records (1989-2013, $n=88,467,274$) to monthly, state-level unemployment rates (Bureau of Labor Statistics). We estimated associations between average unemployment in mid-pregnancy (second trimester) and odds of PTD (< 37 weeks gestation), adjusting for month, year, and state fixed effects. We also adjusted for unemployment in the 6 months prior to conception and maternal age, race/ethnicity, marital status, education, and parity, variables which may affect selection. We also estimated the association between exposure to the Great Recession during pregnancy (2008-2010 compared to pre-Recession, 1989-2007) and PTD. **Results.** Preliminary findings indicate that mid-pregnancy unemployment was associated with reduced odds of PTD (OR:0.84; 95% CI: 0.84, 0.84), while the Recession incurred a 5% increase in odds of PTD, net of unemployment. **Conclusions.** Rising unemployment in mid-pregnancy appeared protective against PTD, findings consistent with prior work suggesting that population-level stressors are associated with loss of less-healthy gestations, resulting in improved rates of adverse birth outcomes. Exposure to the Recession during pregnancy, however, may have increased odds of PTD. Next steps will examine differences in these findings by maternal race/ethnicity, education, and parity.

1109

IS LIFETIME SOCIOECONOMIC STATUS RELATED TO STRESS REACTIVITY? EVIDENCE FROM THE MULTI-ETHNIC STUDY OF ATHEROSCLEROSIS Felice Le-Scherban*, Allison B. Brenner, Margaret T. Hicken, Paula McKinley, Belinda L. Needham, Teresa Seeman, Richard P. Sloan, Xu Wang, Ana V. Diez Roux (Dornsife School of Public Health, Drexel University, Philadelphia, PA)

Background: It has long been hypothesized that an important pathway through which low socioeconomic status (SES) harms health is by causing chronic exposure to stressors, coupled with a lack of resources for dealing with them, that results in dysregulation of the physiologic stress response systems. No previous studies have tested this hypothesis by investigating cortisol reactivity to acute stress in relation to lifetime SES in adults. Blunted reactivity and slow recovery in response to an acute stressor could signal dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis and have been associated with obesity and chronic illness. **Methods:** We used data on 888 adults aged 54 years and over from a multi-ethnic, multi-site study in the United States to examine associations between lifetime SES and cortisol reactivity to a laboratory stress challenge. Informed by life course theory, we hypothesized that higher cumulative lifetime (i.e., child and adult) SES would be associated with greater reactivity (larger increase in cortisol) in response to the challenge and a faster recovery rate (rate of decline in cortisol) following the challenge. **Results:** In demographics-adjusted multilevel piecewise linear regression models, high childhood SES was associated with a 14% (5%–22%) faster recovery rate compared to low childhood SES. High adult SES was associated with a 16% (6%–26%) faster recovery rate and a 20% (9%–30%) lower level of cortisol at the end of the recovery period. Compared to participants with persistent low SES, those with persistent high SES had a 29% (17%–39%) faster recovery rate. Differences in reactivity by child and adult SES were small. **Conclusions:** Our results support the hypothesis that low SES throughout life affects the HPA axis, and in turn the ability to recover from exposure to acute stressors. This may be a key mechanism that helps explain how socioeconomic disparities contribute to disparities in chronic disease.

1112-S/P

OBJECTIVE MEASURES VERSUS RESIDENT PERSPECTIVE ON ABANDONED HOMES AND SELF-RATED HEALTH Elizabeth McClure*, Evette Cordoba, Christian Douglas, Lydia Feinstein, Sandro Galea, Allison Aiello (University of North Carolina at Chapel Hill)

Proliferation of abandoned homes has become an important problem in Detroit. Growing urban health literature suggests that abandoned homes may be associated with poor health. Using data from the Detroit Neighborhood Health Study (N=959), we compared two measures of abandoned homes rated by objective and subjective assessment, and their relation to self-rated health. Trained raters assessed block group segments for presence of abandoned homes, and this score was aggregated to a percentage in the neighborhood, which was dichotomized at 5% for this analysis. In the same year, participants completed surveys asking whether they noticed vacant homes in the neighborhood. Self-rated health was measured in 5 categories and dichotomized as excellent/very good/good versus fair/poor. We assessed associations between objective and subjective measures of abandoned homes in the neighborhood using logistic generalized estimating equations (GEE) to account for participant similarities within neighborhoods. Next, we evaluated whether each measure (objective and subjective) was independently associated with health ratings, then examined whether discordance in objective (5% abandoned homes) versus subjective (abandoned homes present) was associated with self-rated health using logistic GEE. Objective and subjective reports of abandoned homes in the neighborhood were strongly associated (OR=4.33, 95% CI=3.47-5.39). More abandoned homes by objective assessment were significantly associated with better self-rated health (OR=0.67, 95% CI=0.59-0.76), while subjective reports were not (OR=0.95, 95% CI=0.67-1.33). Participants who reported noticing abandoned homes while observers recorded few abandoned homes had lower self-rated health (OR=3.13, 95% CI=2.64-3.70). The discordance in objective and subjective measures of abandoned homes and their association with self-rated health raises questions about whether absolute or perceived features of the built environment matter most for health.

1113

LEVERAGING SOCIAL MEDIA DATA FOR NEIGHBORHOOD CHARACTERIZATION Quynh Nguyen*, Suraj Kath, Dapeng Li, Feifei Li, Hsien-Wen Meng, Ken Smith, James A. VanDerslice, Ming We (Department of Health Promotion and Education, College of Health, University of Utah)

Purpose: The dearth of data on contextual factors limits the investigation of multilevel effects on health. **Methods:** HashtagHealth contains novel neighborhood characteristics constructed from publicly available Twitter data, collected between February-August 2015 (over 70 million tweets and with plans for ongoing data collection). We implemented a bag-of-words algorithm to track the frequency of food and exercise terms and to estimate the sentiment of words across a tweet. Utilizing the geo-coordinates of where tweets were sent, we spatially joined them to their 2010 census tract locations. Neighborhood-level happiness, food, and exercise were computed by averaging values of tweets by the census tract. Quality control activities comparing manually labeled tweets and algorithm-labeled tweets suggested adequate levels of agreement: 73% for happiness; 83% for food, and 83% for exercise. We tested associations between Twitter-derived variables and demographic characteristics for three counties—Salt Lake, San Francisco, and New York. **Results:** Tweets were more likely to be neutral or positive rather than negative in sentiment. About 5% of the tweets were food-related, of which about 16% mentioned healthy foods and 8% mentioned fast food restaurants. Half of food tweets could be characterized by 25 popular food terms, including coffee, beer, wine, pizza, ice cream, and chicken. About 1.7% of tweets mentioned physical activity and about 75% of these could be characterized by 10 terms including walking, running, dancing, and hiking. Happy tweets, healthy food references, and exercise references were less frequent for census tracts with higher proportions of racial/ethnic minorities, young individuals, and greater economic disadvantage. **Conclusion:** HashtagHealth leverages social media as a Big Data resource to provide greater understanding of the well-being and health behaviors of communities—information that has been previously difficult and expensive to obtain consistently across geographies.

1115

IS NEIGHBORHOOD DISADVANTAGE ASSOCIATED WITH DISRUPTIVE BEHAVIOUR IN MIDDLE-INCOME COUNTRIES? Mariangela rado*, Sílvia Martins, Zila Sanchez, Solange Andreoni, Thiago Fidalgo, Sheila Caetano (Universidade Federal de São Paulo)

Preventive Medicine São Paulo, a city with 12 million inhabitants, experienced an unplanned urbanization process associated with persistent social inequalities and high level of exposure to traumatic events. We estimated the prevalence of disruptive behaviour disorders (DBD) and its association with neighborhood conditions (5 items from the Chicago Community Survey), family structure, parental smoking and drinking habits, exposure to traumatic events, and offspring lifetime alcohol use in two contrasting urban areas in São Paulo. Data was collected from a stratified school-based sample of 180 12 years-old students attending public school and their parents in two areas: Vila Mariana (middle-class central area) and Capão Redondo (poor outer-city area). DBD was assessed with the Kiddie Schedule for Affective Disorders and Schizophrenia. Estimates were derived via weighted logistic regression models. The prevalence of DBD was 7.9% (IC 95%: 5.4; 11.5). There were statistically significant differences ($p < 0.05$) in socioeconomic status and neighborhood disadvantage between students in Vila Mariana vs. Capão Redondo. As expected, a higher proportion of upper-class students attended schools in Vila Mariana. Students in Capão Redondo referred higher proportion of social support and religious commitment in their neighborhood and lower complaints of police intimidation. Parental heavy alcohol drinking, [aOR= 4.43 (IC 95%:1.73;11.39)], child's alcohol use [aOR= 6.26 (IC 95%: 2.14; 18.28)], exposure to mugging [aOR=3.15 (IC 95%:1.27; 7.83)] and not living with the biological father [aOR= 0.35 (IC 95%: 0.13; 0.93)] were all significantly associated with DBD. For 12 years-old students attending public schools in São Paulo city, not living with the biological father was related to lower prevalence of DBD. This finding should be investigated in larger study. Funding source: Columbia University President's Global innovation Fund (PI: Martins).

1114

EDUCATIONAL ATTAINMENT AND DEPRESSIVE SYMPTOMS: EXAMINING MEDIATION BY LITERACY Thu Nguyen*, Eric Tchetgen Tchetgen, Ichiro Kawachi, Stephen Gilman, Stefan Walter, Maria Glymour (University of California, San Francisco)

Background: Higher educational attainment has been consistently associated with lower levels of depressive symptoms. The reasons for this association are not fully understood, but one benefit of educational attainment is literacy skills, which have also been linked with better mental health. Therefore, we investigated the potential mediating effect of literacy in the association between education and depressive symptoms using a novel approach. **Methods:** The Inverse Odds Ratio Weighting (IORW) approach developed by Tchetgen Tchetgen was used to estimate total, direct, and indirect effects of educational attainment on depressive symptoms. We also used the Baron and Kenny approach to estimate total and mediated effects, but unlike IORW, it relies on a key assumption of no exposure-mediator interaction. Participants were Health and Retirement Study participants born in the U.S. between 1900 and 1947 ($n=16,718$). Literacy was measured with a brief vocabulary assessment. **Results:** A one standard deviation difference in educational attainment (~3 yrs) was associated with a 0.35 point decrement in the Center for Epidemiological Studies-Depression (CES-D) score (95% CI: -0.38, -0.32). This decrease represents a 0.22 standard deviation difference in depressive symptoms. Using IORW, the estimated effect of education on depressive symptoms mediated through literacy was -0.10 (95% CI: -0.18, -0.01), which represents 28% of the total effect. The Baron and Kenny estimate of the indirect effect was -0.03 (95% CI: -0.04, -0.02), signifying 9% of the total effect. This estimate was more precise, less pronounced but statistically consistent with the result obtained using IORW. **Conclusion:** Literacy partially mediated the effects of education on depressive symptoms in a cohort of older Americans. Investment in literacy may reduce inequalities in mental health.

1116-S/P

EQUALLY INEQUITABLE? A CROSS-NATIONAL COMPARATIVE STUDY OF RACIAL HEALTH INEQUALITIES IN THE UNITED STATES AND CANADA Chantel Ramraj*, Faraz Vahid Shahidi, William Jr. Darity, Ichiro Kawachi, Daniya Zuberi, Arjumand Siddiqi (Division of Epidemiology, Dalla Lana School of Public Health, University of Toronto)

Objective: Prior studies have suggested that racial inequalities in health vary in magnitude across societies. This paper uses the largest nationally representative samples available to compare racial inequalities in health in the United States and Canada. **Methods:** Data were obtained from ten waves of the National Health Interview Survey ($n=162,271,885$) and the Canadian Community Health Survey ($n=19,906,131$) from 2000-2010. For each country, logistic regression was used to calculate differences across racial groups in the odds of reporting a range of health outcomes. **Results:** Racial inequalities in health outcomes were observed in both the United States and Canada. After adjusting for covariates, black-white and Hispanic-white disparities were larger in the United States compared to Canada, while aboriginal-white inequalities were larger in Canada relative to the United States. Socioeconomic factors appear to offer a better explanation for racial inequalities in the United States than in Canada. **Conclusion:** While racial inequalities in health exist in both the United States and Canada, the magnitudes of these inequalities as well as the characterization of racial groups involved differ across the two countries. This suggests that the relationship between race and health varies as a function of societal context.

1118

UNTANGLING THE DISASTER-DEPRESSION KNOT: THE ROLE OF SOCIAL TIES AFTER THE DEEPWATER HORIZON OIL SPILL Ariane L. Rung*, Symielle Gaston, William T. Robinson, Edward Trapido, Edward S. Peters (Louisiana State University Health Sciences Center School of Public Health)

Evidence shows that psychosocial factors such as social capital and social support are inversely associated with common mental disorders, but less is known about this relationship within a disaster context. This study examines the influence of these factors on depression following the 2010 Deepwater Horizon Oil Spill. As part of the Women and their Children's Health Study, 2852 women in 7 coastal Louisiana parishes were interviewed by telephone and assessed for depression (measured by the CESD), social support, and social capital. Exposure to the oil spill was defined as physical exposure to the oil (measured through 6 survey items) and economic exposure to the oil spill (4 survey items). Social capital was defined as structural social capital (frequency of participation in 9 neighborhood organizations) and cognitive social capital (responses to questions on social cohesion and informal social control). Social support was assessed through 6 survey items on received and perceived support. A structural equation model was developed to examine the effects of oil spill exposure as well as social capital and social support constructs on depression. Model fit indices were acceptable. Social capital was found to act through social support, which had a significant inverse effect on depressive symptoms. Similarly physical exposure acted through economic exposure, resulting in an increase in depressive symptoms. Finally, social support partially mediated the effect of economic exposure on depressive symptoms, suggesting that part of the negative effect of exposure on depression is due to its negative effect on social support. Understanding the mechanisms that influence depression may help explain how individuals are able to maintain their mental health after a crisis and suggest possible interventions to alleviate mental health distress.

1120-S/P

PERCEIVED DISCRIMINATION AND DEPRESSIVE SYMPTOMS AMONG LATINOS IN THE SACRAMENTO VALLEY Julia Ward*, Allison Aiello, Lydia Feinstein, Anissa Vines, Mary Haan (Department of Epidemiology, University of North Carolina, Chapel Hill)

There is growing evidence that discrimination may contribute to poor mental health among Latinos in the United States. However, few studies have assessed this association in adult Latinos, a population suffering a disproportionate burden of poor mental health outcomes compared to non-Hispanic Whites. Using data from the NINOS Lifestyle and Diabetes Study, we examined the association between perceived discrimination and depressive symptoms among 630 Mexican-American adults (mean age = 52.8 ± 12.2 years) living in the Sacramento Valley. Perceived discrimination was defined as responding "sometimes" or "often" to at least one item on the 9-item Everyday Discrimination Scale. High depressive symptoms were defined as scoring 10 on the CESD-10. We examined the odds of high depressive symptoms for levels of perceived discrimination with multiple logistic regression, adjusting for age, sex, education, acculturation, and birth country. General estimating equations were used to account for family clustering. Prevalence of perceived discrimination and high depressive symptoms in the study population were 49.4% and 29.2%, respectively. The odds of high depressive symptoms in participants experiencing discrimination were 2.53 (95%CI: 1.71, 3.75) times the odds of high depressive symptoms in participants reporting never or rarely experiencing discrimination. Additionally, perceived discrimination may differentially affect those with high vs. low education (interaction p-value=0.02); the discrimination-depressive symptom association was stronger in individuals with >12 years of education (OR: 3.67, 95%CI: 2.18, 6.16) than in those with 12 years of education (OR: 1.53, 95%CI: 0.84, 2.76). Discrimination may be an important driver of poor mental health outcomes in Latinos in the United States, particularly among those with high education. These results suggest that effortful coping may play a key role in Latino mental health.

1119-S/P

IMPACT OF OPENING MULTIPLE STUDY CENTERS ON RECRUITMENT OF UNDERREPRESENTED GROUPS IN A CLINICAL STUDY Zhuoyu Sun*, Lucy Gilbert, Antonio Ciampi, Olga Basso (McGill University)

Certain segments of the population, such as individuals who are older, living in rural areas, or of lower socio-economic status (SES), are typically underrepresented in clinical studies. The DOvE (Diagnosing Ovarian cancer Early) study in Montreal, Canada, aims at ruling out ovarian cancer in women with certain symptoms. In an effort to facilitate participation of all segments of the population, we gradually established five strategically located satellite centers in the city. Here, we examined whether women attending the ad-hoc clinics differed from those attending the main center (a large centrally located university hospital). This analysis included participants enrolled between May 2011 and September 2015. We used chi-squared tests to compare differences among women attending different centers. In total, 1252 and 1010 women attended the main and satellite centers, respectively. Compared to the main center, satellite centers attracted significantly more Francophones (56.7% vs. 34.0%), women over 65 years (31.6% vs. 25.6%), those with a secondary school or lower level of education (38.0% vs. 26.6%), unemployed or retired women (47.2% vs. 32.9%), a higher proportion of women living in suburban/rural areas (35.3% vs. 26.3%) and individuals from more materially deprived areas (15.1% vs. 9.6% in the most materially deprived group). Overall, women were more likely to attend the satellite centers if they were parous (89.4% vs. 84.4%), had undergone a tubal ligation (29.3% vs. 19.9%) or a hysterectomy (14.7% vs. 8.5%), and reported fewer than 4 symptoms (39.7% vs. 32.4%). Satellite centers appear to have been effective in facilitating participation of older women with lower SES and those living in suburban or rural areas. Although these women may be at lower overall risk of ovarian cancer, satellite centres brought DOvE participants closer to the demographic characteristics of the target population.

1121-S/P

EMOTIONAL STRESS AND CIGARETTE SMOKING IN LESBIAN, GAY, AND BISEXUAL (LGB) ADULTS Hui Xie*, Hotaka Maeda, Shin-ye Kim (Joseph J. Zilber of Public Health, University of Wisconsin-Milwaukee)

Objectives: Cigarette smoking rates among lesbian, gay, or bisexual (LGB) individuals has been consistently higher than the non-LGB population. Despite the fact that smokers often report cigarettes use help relieve stress, stress level for smokers is greater than among non-smokers. This study aimed to examine the association between emotional stress, sexual orientation and smoking status in the US. **Method:** Data was derived from the National Health Interview Survey 2013 (CDC, 2015), a nationally representative sample of adults aged 18 and over. People who were self-identified as lesbians, gays, or bisexual, or heterosexual were included via using computer-assisted personal interviewing (CAPI). Also, 30-day prevalence of smoking status, emotional-related items were assessed. A moderator analysis was used to estimate the association between emotional stress and minority sexual orientation depending on smoking status. **Results:** Of 32551 participants, 804 (2.47 %) were LGBs. The percentage of smokers were 27.73% for LGBs and 17.79% for heterosexuals. After adjusting demographic variables, gays/ lesbians and bisexuals both were at elevated risk of emotional stress than heterosexuals current smokers ($b = -.194$, $p = .0311$; $b = -.766$, $p < .0001$). Bisexual current smokers were worse on emotion stress compared to former smokers by -3.719 ($p = .0068$). Bisexual former smokers are as good as heterosexual current smokers ($b = 0.717$, $p = .0273$). **Conclusion:** The results suggest bisexual people have significantly different emotional stress regard smoking status. Different from previous LGB health studies, our findings address a predictive factor of quitting smoking in emotional stress in bisexual group. Future studies could focus on assessing psychological well-being in bisexual individuals or communities and address emotional changes during quitting smoking cessation program targeted at bisexuals or gay people.

1130-S/P

ALCOHOL USE AND RISKY SEXUAL BEHAVIOR AMONG YOUNG PEOPLE IN GHANA, GUYANA AND HONDURAS

Lynette Ametewee*, Prince Adu, Angela Hilmer, Monica Swahn (Georgia State University)

Purpose: The increase in alcohol use leading to risky sexual behavior in Africa and the Americas results in the spread of sexually transmitted diseases such as HIV/AIDS. Limited policies to prevent abuse of alcohol among young people in these regions contribute to this growing public health problem. However, few studies, if any have looked at sexual behavior and alcohol use among young people in Africa and the Americas. This study examined associations between alcohol use and risky sexual behavior among young people in Ghana, Guyana and Honduras. **Methods:** Analyses were based on the Global School-Based Student Health Survey (GSHS) conducted among students 13-15 year old students in Ghana in 2012 (n=1648), Guyana in 2010 (n=2392) and Honduras in 2012 (n=1772). Logistic regression was used to test associations between alcohol use and risky sexual behavior whilst controlling for other confounders. **Results:** Prevalence estimates (percentages) and 95% confidence intervals are presented below. Alcohol use in Ghana (15.4; CI=12.4-19), Guyana (39.2; CI=35.6-42.9) and Honduras (15.8; CI=13.3-15.8). Sexual intercourse among students before age 14 was Ghana (71.6; CI=58.4-82.0), Guyana (71; CI=64.3-76.8) and Honduras (64.8; CI=55.5-73.1). Differences were recorded in condom use during the last sexual encounter with Ghana (46; CI=31.3-61.3) and in Guyana (62.7; CI=57.8-67.3) and Honduras (61.8; CI=55-68.3). High risk patterns were illustrated by similarities and differences among young people in the three countries. **Conclusion:** Limited resources and lack of enforcement of policies are barriers to enforcement of alcohol-related policies to prevent risky sexual behavior in Africa, Latin America and the Caribbean. Given the strong link between alcohol abuse and risky sexual behaviors, regional comparisons are important to inform development of targeted strategies to prevent alcohol use, risky sexual behaviors and other consequences among vulnerable youth in Africa and the Americas.

1132-S/P

DEPLOYMENT AND ALCOHOL TRAJECTORIES IN A MILITARY COHORT: USE OF PROPENSITY SCORE TECHNIQUES TO ACCOUNT FOR EXPOSURE-RELATED COVARIATES

David Fink*, Katherine Keyes, Gregory Cohen, Laura Sampson, Joseph Calabrese, Marijo Tamburrino, Israel Liberzon, Sandro Galea (Columbia University)

Several studies have documented a strong positive correlation between military deployment and alcohol misuse. Military personnel who are deployed to a combat zone often are exposed to stress and traumatic events that are not germane to civilian life. Furthermore, it is well known that persons exposed to stress and traumatic events often use alcohol to cope with excess internal and external demands. However, alcohol use tends to follow a prototypical trajectory with alcohol use initiating in adolescents, increasing steadily until a peak is reached, typically, in the mid- to late-twenties, and slowly declines in the years after this peak. Because younger male service members are more likely than any other demographic group to deploy and alcohol tends to follow a prototypical trajectory with age, the differences in alcohol use between deployed and non-deployed service members may reflect natural increases in alcohol use that is often occurring among younger males. Therefore, we use prospective data from a military cohort to examine differences in alcohol use trajectories between deployed and non-deployed respondents. First, we estimated the propensity of being deployed, conditional on potential sociodemographic and military confounders, and used nearest-neighbor matching (4:1) to achieve balanced distribution of covariates between deployers and non-deployers. Next, we estimated alcohol use trajectories using latent class growth analysis. We found a five-class model fit these data best. The results indicated largely equivocal alcohol trajectories among deployers and non-deployers; however, we confirmed our hypothesis that substantial heterogeneity in alcohol trajectories is present within the larger military population. Our findings suggest that longitudinal studies on alcohol use should prioritize person-centered analyses, over variable-centered analyses, to fully account for between person differences in life course alcohol use trajectories.

1131-S/P

EARLY ALCOHOL USE AND PROBLEM DRINKING AMONG YOUNG PEOPLE IN GHANA, GUYANA AND HONDURAS

Lynette Ametewee*, Prince Adu, Angela Hilmer, Monica Swahn (Georgia State University)

Purpose: Alcohol use is an increasing problem in Africa and the Americas. Adverse health outcomes from alcohol abuse remain a public health burden due to limited policies, lack of enforcement and weak health infrastructure. However, few studies, if any have looked at patterns of alcohol abuse, problem drinking and health risk factors among young people in Africa and the Americas. This study examined associations between early alcohol initiation and problem drinking among young people in Ghana, Guyana and Honduras. **Methods:** Analyses were based on the Global School-Based Student Health Survey (GSHS) conducted among students 13-15 year old students in Ghana in 2012 (n=1648), Guyana in 2010 (n=2392) and Honduras in 2012 (n=1772). Logistic regression was used to test associations between early alcohol use and problem drinking whilst controlling for other confounders. **Results:** Prevalence estimates (percentages) and 95% confidence intervals are presented below. Early alcohol use specifically among students who used before age 14 in Ghana (86.1; CI=74.9-92.8), Guyana (79; CI=75.7-82) and Honduras (77.1; CI=73.1-80.8). Prevalence of alcohol use in the past month in Ghana (15.4; CI=12.4-19), Guyana (39.2; CI=35.6-42.9) and Honduras (77.1; CI=73.1-80.8). Boys who consumed alcohol were more likely to be drunk in Ghana (11.3; CI=9.1-13.9), Guyana (34.7; CI=29.4-40.4) and Honduras (10.7; CI=8.1-13.9). Similar and different patterns observed demonstrated high risk patterns among young people in the three countries. **Conclusion:** Limited resources are barriers to enforcement of alcohol policies in Africa, Latin America and the Caribbean. Regional comparisons are important to illustrate the importance of developing evidence-based and tailored prevention strategies for reducing alcohol use and its consequences among vulnerable youth in Africa and the Americas.

1134-S/P

AVERAGE DURATION FROM AGE OF ONSET TO HEAVIEST USE OF ILLICIT DRUGS AMONG DRUG USERS

Shivani R. Khan*, Linda B. Cottler, Hannah Crooke, Sadaf Milani, Catherine W. Striley (University of Florida)

Aims: Since the majority of drug-related events occur due to heavy use, it is important to determine length of time for progression from drug initiation to its heaviest use to determine average age of riskiest use. These analyses investigated mean duration from age of onset to the commencement of heaviest use for seven illicit drugs (marijuana, cocaine, heroin, prescription opioids, stimulants, sedatives and hallucinogens) among a sample of community-recruited drug users from a midwestern city. **Methods:** The Prescription Drug Misuse, Abuse and Dependence Study (R01DA020791; Cottler LB, PI) recruited 419 current and past year drug users, 18 to 65 years of age, residing in the St. Louis area to understand the factors associated with prescription drug misuse. Mean, standard deviation, maximum and minimum were calculated for age of onset and age when the heaviest use began of each drug. Mean difference between age of onset and age at heaviest use for each drug was also calculated. **Results:** Among the participants, on average, marijuana, stimulant and hallucinogen use started at 15 to 18 years of age developing into the heaviest use in 3 to 5 years. Similarly, the mean age of onset for cocaine, heroin, prescription opioid and sedative use was between 21 to 25 years of age developing into the heaviest use in 5 to 7 years. **Conclusion:** In this sample of drug users, it took a significant number of years to progress from drug initiation to heaviest use. Marijuana, stimulants and hallucinogens are more common during adolescence and take a shorter duration to develop into period of heaviest use than other illicit drugs. Determining time span from drug initiation to period of heaviest use informs public health professionals when interventions may be especially helpful to reduce future adverse drug-related events.

1135-S/P

CANNABIS USE AND PROBLEMS IN THE UNITED STATES: INITIAL FORECASTS BEFORE POLICY CHANGE

Catalina Lopez-Quintero*, Rebecca Brosig, James Anthony (Michigan State University)

In debates about cannabis policy change, underage cannabis smoking often surfaces as a major concern. We quantified epidemiological facets of underage cannabis smoking, with strengths of 10 replication samples, drawn in 2002-2011 to be nationally representative of young people in United States communities. Several points of departure for cannabis policy-makers stand out as consequences of past policy: (1) Peak onset of cannabis smoking has been occurring well before the 21st birthday, by which time 50% have tried the drug at least once. (2) Within one year after onset, roughly one in 20 adolescent users develop a cannabis dependence syndrome; one in three self-identify with a cannabis problem-experience. These epidemiological estimates can aid decisions regarding allocation of public health resources for preventive and therapeutic purposes.

1138

PREVALENCE AND PREDICTORS OF SMOKELESS TOBACCO USE AMONG HIGH SCHOOL MALE ADOLESCENTS IN KARACHI, PAKISTAN

Shafquat Rozi*, (Department of Community Health Sciences, Aga Khan University, Stadium Road, Karachi, Pakistan)

Objective: To estimate the prevalence of and identify the factors associated with the use of smokeless tobacco among high school adolescents in Karachi, Pakistan. **Methods:** A cross-sectional study was conducted among high school adolescents in three towns of Karachi. Two-stage cluster sampling stratified on school type was employed to select schools and students. We interviewed 772 male students from 17 public and 16 private schools. A structured questionnaire was used to collect data on socio-demographic factors, history of smoking by the students, their friends and family members. Information regarding use of smokeless tobacco by students and their families were also gathered. **Results:** Prevalence of smokeless tobacco among adolescents was 16.1% (124/772) (95%CI: 13.5%–18.9%). On multiple logistic regression analysis, the factors significantly related with smokeless tobacco use among adolescents included school types (adjusted OR=6.3; 95%CI: 3.2-12.6), adolescents smoking (adjusted OR=3.2; 95%CI: 1.9-5.4), being a non-viewer of anti-tobacco advertisement on electronic media (adjusted OR=1.5; 95%CI: 1.0-2.4), family history of tobacco use (adjusted OR=3.9; 95%CI: 2.2-6.8), use of betel quid (adjusted OR=2.9; 95%CI: 1.7-5.0) and use of areca nut (adjusted OR=3.2; 95%CI: 1.9-5.1). **Conclusion:** A 16.1% prevalence of smokeless tobacco among school adolescents and influence of family tobacco use in initiating tobacco in this age group warrants the need for health promotional activities and tobacco control efforts in Pakistan. Study results also confirm the association of smoking with smokeless tobacco habit of adolescents.

1136-S/P

TRENDS OVER TIME IN PREVALENCE OF MARIJUANA USE AND IMPACT ON VIRAL LOAD SUPPRESSION AMONG PERSONS LIVING WITH HIV/AIDS (PLWHA)

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Objective: To evaluate 5-year trends in the prevalence of marijuana use among PLWHA who are in medical care in Florida and to examine the association between marijuana use and HIV viral suppression. **Methods:** We used data from five repeated cross-sections (2009 – 2013) of the Medical Monitoring Project (MMP), a surveillance project of PLWHA who are engaged in care. We used weighted logistic regression models to determine the association between frequency of marijuana use and persistent viral suppression (defined as HIV-1 RNA value of < 200 copies/ml in all lab tests) in the past 12 months. **Results:** Among the whole sample (N=2,066), prevalence of marijuana use declined from 21.8% in 2009 to 19.7% in 2013. In contrast, prevalence of daily marijuana use increased from 6.2% in 2009 to 7.5% in 2013 among the whole sample, and increased from 28.5% in 2009 to 38.1% in 2013 among marijuana users. Of 1,902 receiving antiretroviral therapy, 72% were virally suppressed and 20% reported marijuana use. In unadjusted analysis, daily marijuana use as compared to non-use was significantly associated with reduced odds of viral suppression [Odds Ratio=0.68; 95% confidence interval CI: 0.46, 0.99]. In multivariable analysis, adjusted for age, gender, race/ethnicity, homelessness, survey year, depressive symptoms, duration of HIV, alcohol, smoking and other illicit substance use, there was no statistically significant association between daily marijuana use (AOR=0.86; 95% CI: 0.58, 1.26) as compared to non-use on viral suppression. **Conclusion:** Results of this analysis suggest an increase in daily marijuana use among marijuana users from 2009 to 2013. Our findings suggest that other factors are in need of investigation in the association between marijuana use and viral suppression.

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THE EPIDEMIOLOGY OF NONMEDICAL PRESCRIPTION OPIOID USE AND DSM-5 NONMEDICAL PRESCRIPTION OPIOID USE DISORDER: RESULTS FROM THE NATIONAL EPIDEMIOLOGIC SURVEY ON ALCOHOL AND RELATED CONDITIONS-III

Tulshi Saha* (NIH/NIAAA)

Purpose. Current epidemiologic data on nonmedical prescription opioid use (NMPOU) and DSM-5 nonmedical prescription opioid use disorder (NMPOUD) are needed using a reliable, valid and uniform data source. This study describes 12-month and lifetime prevalences, correlates, psychiatric comorbidity, treatment and disability of NMPOU and DSM-5 NMPOUD. **Methods.** This study uses data from the 2012-2013 National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III). **Results.** Prevalences of 12-month and lifetime NMPOU were 4.1% and 11.3%, exceeding those in the 2001-2002 NESARC (1.8%, 4.7%). In the NESARC-III, 12-month and lifetime rates of DSM-5 NMPOUD were 0.9% and 2.1%. NESARC-III DSM-IV NMPOUD rates (0.8%, 2.9%) substantially exceeding those in the 2001-2002 NESARC (0.4% and 1.4%). Rates of NMPOU were higher in men; prevalences of NMPOU and NMPOUD, mainly higher in 18-to-64 year-olds, Whites and Native Americans, individuals with lower incomes and less education, and those previously married. Twelve-month and lifetime rates of NMPOU, but not NMPOUD, were lower among Northeastern and Southern residents. Strong associations (odds ratios [ORs] 6.8–17.7) of 12-month and lifetime NMPOU and NMPOUD with and other nonmedical prescription drug use disorders were observed; smaller, but significant, associations (ORs=1.2–6.9), with other drug, alcohol, and nicotine use disorders, posttraumatic stress disorder and borderline, schizotypal and antisocial personality disorders, persistent depressive and major depressive disorders (for NMPOU) and bipolar I disorder (for NMPOUD). Disability, including that due to pain, increased with NMPOU frequency and NMPOUD severity. Only 5.5% and 17.7% of individuals with 12-month NMPOU and NMPOUD sought treatment. **Conclusion.** NMPOU and NMPOUD have considerably increased over the past decade, are highly disabling and associated with a broad array of risk factors and comorbidities, and largely go untreated in the U.S.

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SOCIODEMOGRAPHIC FACTORS ASSOCIATED WITH SMOKING RISK PERCEPTIONS AMONG YOUTH IN BRAZIL

Gabriela Wagner* Zila Sanchez, Thiago Fidalgo, Silvia Martins (Universidade Federal de São Paulo, SP, Brazil)

Since 1989 there has been a decline in tobacco consumption in Brazil as result of nationwide government anti-smoking interventions and strategies, but little is known about smoking risk perceptions (SRP) among youth in Brazil. We examined the sociodemographic factors (SF) associated with SRP in youth living in two very different neighborhoods in the city of São Paulo, Brazil: a middle-class central area [Vila Mariana (VM)], and a poor-outer city area [Capão Redondo (CR)]. For this purpose we used data from a cross sectional survey of 180 12 year-old public school-attending youth and their parents. All answered questions about SF, neighborhood characteristics and risk perception of tobacco use. The SRP was evaluated through self-reports of interviewees and the respondents were categorized as high risk (HR), light to moderate risk (LMR) and no risk (NR). Descriptive analysis was carried out and comparisons were made using Pearson's chi-square test with the RaoScott correction. Weighted multiple polynomial analyses taking into account school clustering stratified by neighborhood were used for the analysis of factors associated with SRP, with HR as the dependent variable. Among VM youth, 65.0% considered smoking a high risk behavior, 26.3% LMR, and 8.7% no risk. Among CR youth 76.1% considered smoking a HR behavior, 18.9% LMR, and 5.0% NR. There were more boys than girls that considered smoking a HR behavior [68.6% for girls and 83.7% for boys ($p=0.055$)]. In VM, LMR was negatively associated with ethnicity [OR=0.25(0.10-0.65) for mulattos and OR=0.14(0.02-0.72) for others] and NR was positively associated with having a smoking mother [OR=4.16 (1.10-15.9)]. In the CR youth group, LMR was only negatively associated with male sex [OR=0.40(0.19-0.90)]. Youth attending public schools in the poor neighborhood appear to have greater perception of the risks caused by than youth in public schools in the middle-class neighborhood.

1141

REDUCING ALCOHOL USE AMONG UNIVERSITY STUDENTS: A MULTISITE EVALUATION OF A WEB-BASED PERSONALIZED SOCIAL NORMS FEEDBACK IN GERMANY

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Introduction: Licit and illicit substance use by young adults and university students is a public health concern. Previous research indicates that overestimations of peer substance use rates are a predictor for increased personal substance use among university students, including consumption of alcohol. U.S.-American 'social norms'-interventions which have focused upon addressing misperceptions by providing feedback on actual peer consumption rates to students have been successful in reducing personal substance use. The aim of the INSIST study was to investigate such an intervention in a large German student sample. **Methods:** We evaluated the efficacy of a web-based personalized normative feedback aimed at reducing substance use among German university students. Eight universities in four regions in Germany took part in the study. In each region, one site served as an intervention and one site as a control university. 4,569 students (58% female) completed the web-based baseline and 1,295 (59% female) the follow-up survey about personal and perceptions of peer alcohol use. Intervention group participants ($n=438$) received the web-based gender-specific feedback that contrasted personal and perception of peer use with the assessed use of same-sex students of the respective university from the baseline questionnaire. Data were analyzed using Generalized Linear Mixed Models. **Results:** Relative to control, normative feedback was associated with a higher odds for not increasing the number of alcoholic drinks (AOR: 1.59, 95% CI: 1.16-2.17) between baseline and follow-up. Furthermore, students of the intervention sites showed a higher odds for not increasing their frequency of drunkenness (AOR: 1.37, 95% CI: 1.09-1.72) relative to control. **Conclusion:** The INSIST study was the first evaluation of a social norms intervention in Germany. Personalized and gender-specific online social norms programs may be useful in reducing alcohol use among university students in Germany. Funding: MoH, Germany

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MENTAL HEALTH AND FIREARM VIOLENCE: FROM EVIDENCE TO ACTION

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Firearm injury is one of the leading causes of death worldwide. Recent mass shootings have led to a call for preventing the “dangerously mentally ill” from legally purchasing a firearm. There is little evidence, however, whether such adjudications are effective in reducing the risk for firearm violence. We simulated the number of deaths that would be prevented under firearm disqualification criteria at opposite ends of the disqualification spectrum: a) hospitalization for a psychiatric disorder; or b) meeting criteria for any psychiatric disorder. We constructed an agent-based computational model of firearm-related victimization and perpetration in New York City, and used 26 parameters from more than 27 data sources and 30 studies to calibrate the model. We simulated the number of firearm-related homicide and suicide deaths under three alternative conditions: a) no disqualification criteria; b) firearm disqualification based on psychiatric inpatient status; c) firearm disqualification based on meeting criteria for any psychiatric disorder. Removal of firearms from psychiatric inpatients resulted in a 4% reduction in firearm-related homicides, from 4.7 (3.9, 5.4) to 4.5 (3.8, 5.2). Removal of firearms from anyone in the community meeting criteria for a psychiatric disorder resulted in a 13% reduction (to 4.1; 95% CI: 3.4, 4.7) in firearm-related homicides. Removing firearms from psychiatric inpatients had no population-level impact on firearm-related homicide. We would have to remove firearms from all individuals with psychiatric disorders to have a small (non-significant) impact on firearm-related homicide—an unfeasible proposition that raises serious concerns about stigma.

1152- S/P

ADVERSE CHILDHOOD EXPERIENCES: PREVALENCE AND RELATED FACTORS IN A COHORT OF BRAZILIAN ADOLESCENTS

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Background: Adverse childhood experiences (ACEs) can affect people's health and wellbeing not only at the time the ACE is experienced, but also later in life. The majority of studies about ACEs have been carried out in high-income countries, and little is known about its prevalence in low and middle-income countries. Thus, this study aimed to assess the prevalence of ACEs, its sociodemographic correlates, and the interrelationship between multiple types of ACEs in adolescents of a Brazilian birth cohort. **Methods:** Data from 3,951 adolescents (75.3% of the original cohort) from the 1993 Pelotas Cohort were analyzed. Seven types of ACEs were assessed up to 18 years old: physical abuse, sexual abuse, physical neglect, emotional neglect, domestic violence, parental separation and parental death. First, the prevalence of each ACE was assessed and then an ACE score was generated. The associations between potential risk factors and the ACE score were evaluated, as well as the interrelationships between multiple types of ACEs. **Results:** The most common ACE was parental separation (42%), followed by emotional neglect (19.7%) and domestic violence (10.3%). About 85% of the adolescents experienced at least one ACE, and females reported a higher number of adversities. Several socioeconomic, demographic and family characteristics were related to the occurrence of ACEs, e.g. non-white skin color, low family income, low maternal schooling, absence of mother's partner, maternal smoking, and poor maternal mental health. A strong interrelationship was observed among the ACEs, indicating a clustering of risk. **Conclusion:** This study showed a high prevalence of at least one ACE, largely driven by a high rate of parental separation. Females have a higher occurrence of ACEs, and several socioeconomic and demographic risk factors are related with its occurrence. A strong interrelationships among the ACEs was observed, highlighting that these events do not occur independently.

1151

THE RELATIONSHIP BETWEEN ALCOHOL OUTLET DENSITY AND VIOLENCE IS EXPLAINED BY COMMERCIAL ACTIVITY

Anthony Fabio*, John Gianakis, Dara Mendez, Tiffany Gary-Webb (University of Pittsburgh)

Violence is linked with alcohol consumption. Studies have shown that alcohol use reduces self-control, ability to assess risks and increases violence. Additionally, violence is not randomly distributed but clusters in neighborhoods with certain characteristics. Though previous studies have addressed whether alcohol outlet density (AOD) is related to violence, results are inconsistent. One major limitation is lack of substantive adjustment for important risk factors such as commercial activity. Routine activity theory states violence occurs when there is an accessible target, absence of guardians and presence of motivated offenders. Areas of high AOD may attract motivated offenders, have high rates of accessible targets, and lower rates of capable guardians. However, this may be due in part to alcohol outlets being more likely to exist in areas of high commercial activity. We conducted a factor analysis on data from police, Neilson consumption, commercial establishment and US census data to develop a proxy for commercial activity. Distinct indices were constructed for neighborhoods by the principal components analysis extraction method extracting components with an eigenvalue of ≥ 1 . Six principal components accounted for 85% of the variance which included neighborhood-level measures of 1)socioeconomic position, 2)commercial activity, 3)alcohol consumption, 4)young and transitioning community, 5) alcohol expenditure, and 6) aged community. Univariate association between both on- and off-premise AOD and violence using negative binomial regression was significant ($\beta = 0.002$ $p = .0007$, $\beta = 0.001$ $p = .0003$). However, after adjustment with the indices of commercial activity, this association was no longer significant for on- and off-premise density respectively ($\beta = -0.001$ $p = .6457$, $\beta = -0.012$ $p = .3837$). Our data suggest that there is no association between AOD and violence and that previous findings of an association may be due in part to lack of adjustment for commercial activity.

1153

VIOLENCE AGAINST WOMEN: A CASE-CONTROL STUDY WITH VICTIMS TREATED AT EMERGENCY SERVICES

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Objectives: To investigate risk factors for violence against women among victims treated in public emergency services in Brazil. **Methods:** This is a case-control study conducted with data from the Brazilian Surveillance System for Violence and Accidents (VIVA), 2011. Women with 18 years-of-age or more that were victims of domestic and family violence were selected (cases) and compared to those who suffered accidental injuries (controls). The study included 69 emergency services located in 24 Brazilian State capitals and the Federal District. Crude and adjusted odds ratios (OR) were estimated through non-conditional logistic regression. **Results:** 623 cases and 10,120 controls were included. Almost all victims suffered physical violence (97.4%). The main means of aggression were physical strength or beating (60.7%), sharp object (20.9%), and blunt object (11.9%). The main aggressors were males (71.7%), 51.5% were partners or ex-partners. In the adjusted analysis, risk factors for violence against women were: younger age (18-29 years), lower education (OR 1.96; 95%CI 1.62-2.37), not having a paid job (OR 1.34; 95%CI 1.12-1.61), alcohol consumption by the victim in the previous 6 hours (OR 4.49; 95%CI 3.59-5.59), having previously sought treatment for the same reason in other service (OR 1.28; 95%CI 1.05-1.57), occurrence during weekends (OR 1.33; 95%CI 1.10-1.59), and from 6pm to 12pm (OR 2.02; 95%CI 1.57 a 2.61) or from 12pm to 6am (OR 2.82; 95%CI 2.06-3.88) compared to the mornings. **Conclusion:** Violence against women is a multifactorial problem. Alcohol consumption was the most strongly associated factor to violence against women. This study indicates the need to adequate victim care services, especially regarding working hours and training of personnel, in order to increase the victim's access.

1154- S/P

IS THE INTRODUCTION OF VIOLENCE AND INJURY OBSERVATORIES ASSOCIATED WITH A REDUCTION OF VIOLENCE IN ADULT POPULATIONS? A SYSTEMATIC REVIEW

Ardil Jabar*, Mark Engel (University of Cape Town)

The violence and injury observatories developed in Colombia and found throughout the Americas and Western Europe aim to maximise inter-institutional cooperation, information-sharing, analysis and security policy development initiatives to enhance governance with a view to preventing crime and violence at local and regional levels. Here, we present the first systematic review of the evidence from existing studies, on the contribution of violence and injury observatories towards violence prevention. **Methods and analysis:** Using a protocol, we conducted a comprehensive literature search for studies published over the last 25 years. Data extraction was done using a standardised data extraction form, and study quality was assessed using a validated quality assessment tool. The review protocol has been registered in the PROSPERO International Prospective Register of systematic reviews, registration number 2014:CRD42014009818. **Results:** Of the 687 records retrieved, four studies comprising observational and longitudinal study designs met with the inclusion criteria. Assault rates were standardised in order to make data comparable across studies. The latest census data to calculate population estimates were used to derive denominators. The Gutierrez-Martinez study reported total homicides only, while the other three studies reported total assaults only. The Gutierrez-Martinez study reported a decrease in total homicides in all six intervention sites over the three year study period with a total average decrease of 49.5%. All three of the remaining studies saw a decrease in assault rates over the respective study time periods, with an average decrease of 31%. **Conclusion:** The results represent the initial analysis of the review with plans to extend the search to include more databases and include Spanish studies. There is a paucity of evidence for the effectiveness of violence and injury observatories and their influence on violence in an adult population, which highlights the importance of our prospective study.

1157

TRANSGENDER PEOPLE AND THE EXPERIENCE OF VIOLENCE: A GLOBAL CHALLENGE

Maria Amelia Veras*, Marcia Regina Giovanetti, Gustavo Santa Roza Saggese, Daniel Dutra Barros, Ricardo Barbosa Martins, Luiz Fabio Deus, José Luiz, Gomez, Adriana Cezaretto, Claudia Renata dos Santos Barros (Faculdade de Ciências Médicas da Santa Casa de São Paulo - Departamento de Saúde Coletiva)

Background: A growing body of international data shows alarming levels of discrimination and physical violence, including homicides, experienced by transgender people, leading to several undesirable health outcomes. **Objective:** to estimate the rate of life course physical assault and associated factors among transgender people. **Methods:** Data from Muriel Project, that seeks to describe SES characteristics, access to health care and other basic rights, violence, discrimination, and self-reported HIV status among transgenders in 7 municipalities of the State of São Paulo. A consecutive quota sampling of trans people reached by the health care system or social welfare services was face-to-face interviewed. **Outcome:** physical assault reported at least once in their life course. The independent variables explored: assigned sex at birth, education, marital status, working situation, housing and skin color/race; presence of body modifications, gender confirmation surgery, and level of satisfaction with support from friends. Multiple Poisson regression model included all variables with $p < 0.20$ at the univariate analysis, at $\alpha = 0.5$. **Results:** We interviewed 673 people. 92.4% (616) reported being male at birth; mean age was 32 (9.87) years. 60% were single, 43% self-reported to be of mixed (black and white) color/race, and 82% completed high school. Life course experience of physical violence was 62% and self-reported HIV infection was 21%. Factors associated with physical violence include body procedures (PR=1.29) and being older (PR=1.01). University education level and being satisfied with support from friends were protective factors, PR of 0.73 and 0.85, respectively. **Conclusion:** This study confirms high levels of physical violence among transgender in Brazil, which may contribute to prevent access to preventive measures and health care and ultimately to the high prevalence of HIV infection. It demands structural interventions and a set of specific public policy.

1156- S/P

THE ASSOCIATIONS BETWEEN DRUG/ALCOHOL USE AND EMOTIONAL ABUSE: WHO PERPETRATES EMOTIONAL ABUSE AGAINST LATINA WOMEN?

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Introduction: Emotional abuse is the most prevalent form of violence against Latinas. Among Latinos, the prevalence of illicit drug abuse is 8.3% and the prevalence of alcohol use is 41.8%. Excluding intimate partner violence, the literature is unclear about who is perpetrating emotional abuse against Latinas. We examined dimensions and characteristics of Latino mothers' and their adult daughters' exposure to emotional abuse and the associations between heavy alcohol use and illicit drug abuse with emotional abuse. **Methods:** This 5-year longitudinal study included 112 Latino mothers and 121 Latino daughters. Data were collected between 2005 and 2007 (Wave 1) and between 2010 and 2011 (Wave 2) in South Florida. Analyses included chi-square test and logistic regression. **Results:** A higher proportion of daughters than mothers were exposed to emotional abuse at Wave 1 (29.8% vs. 19.6%) and at Wave 2 (19.0% vs. 13.4%). More than half of the women who reported current or previous emotional abuse at Wave 1 reported ongoing emotional abuse at Wave 2, suggesting that emotional abuse is chronic in nature among Latina women. This percentage was higher for daughters than for mothers (69.0% vs. 53.6% respectively). Among emotionally abused women, 33.3% of mothers and 36.1% of daughters were abused by 2 or more people. Nearly half of the mothers (48.0%) were emotionally abused by their son/daughter; 36.1% of daughters were emotionally abused by their mother. Mothers who abused drugs were more likely to be emotionally abused (OR=3.86; 95% CI=1.32, 11.34). **Conclusions:** Findings suggest that when examining Latinas' exposure to emotional abuse, the focus should be directed at emotional abuse perpetrated by husbands/partners as well as other family members/social actors. The high prevalence of maternal emotional abuse from adult Latino daughters and vice versa is a new area of concern. Future studies should focus on Latina substance abuse and its associations with emotional abuse.

1160-S/P

PREVALENCE OF ILLICIT DRUG USE, ALCOHOL USE, AND DEPRESSION AMONG FEMALE PRISONERS IN LIMA, PERÚ.

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Background The female prison population in Lima can be considered a high risk population for several risk factors. This was an exploratory study aimed at determining the prevalence of illicit drugs and alcohol use (substance use), and depression among female inmates in Lima, Perú. **Methods** A cross-sectional, pilot study of 249 female inmates recruited from the largest female prison in Lima, Perú was conducted between May to August 2015. Eligible women completed computer assisted self-interviews. Illicit drug use, alcohol use and depression were measured by DAST-10, WHO- Alcohol Use Disorders Identification Test (AUDIT), and CESD-10 scales respectively. Statistical analysis were conducted using SPSS 22.0 **Results** Out of 66 participants who ever reported illicit drug use including pre-incarceration use, 24 (36.4%) women were reported continuing using drugs in the prison. Of the 66 women, 9 (13.6%) women reported low-level drug use, 28 (42.4%) reported moderate level drug use, 23 (34.9%) substantial drug use and 6 (9.1%) reported severe level drug use. Out of 249 participants, 37 (14.9%) were teetotaler. Among the 212 who reported ever using alcohol, 181 women reported frequent alcohol use in which 57 (31.5%) were non-problematic drinker, 96 (53.0%) were hazardous drinkers and 28 (15.5%) were alcohol dependent. 18 (9.9%) reported alcohol use during incarceration. Out of the 249 participants, 168 (67.5%) women were depressed and only 34 (13.6%) participants were able to answer at least 80% of HIV knowledge questions correctly. **Conclusion** Incarcerated women in Lima have high rates of substance use and depression. Additionally, this population has poor knowledge of HIV/AIDS transmission. The findings suggest an urgent need for psycho-social services and support as well as health promotion and information dissemination among female prisoners who are sexually active in prison and are allowed conjugal visits.

1162- S/P

HERPES SIMPLEX VIRUS-2 SEROPREVALENCE AND ULTRASOUND DIAGNOSED UTERINE FIBROIDS IN A LARGE POPULATION OF YOUNG AFRICAN-AMERICAN WOMEN-

Kristen Moore* (NIEHS and UNC Chapel Hill)

For decades reproductive tract infections (RTI) have been hypothesized to play a role in uterine fibroid development. The few previous studies conducted used self-reported RTI history and had inconsistent findings. We investigated this hypothesis further using serology, a immunological measure of past exposure. We focused on herpes simplex virus type 2 (HSV-2) because prior published data have suggested a possible association, and serology for HSV-2 is much more sensitive than self-report. We used cross-sectional enrollment data from African-American women ages 23-34 who were screened for fibroids with a standardized ultrasound examination at their enrollment into a prospective study of fibroid incidence and growth (recruitment 2010-2012). Age- and multivariable-adjusted logistic regression were used to estimate odds ratios (ORs). Of 1,696 participants, 1,658 had blood drawn and HSV-2 serology results; 22% had fibroids. There was no significant association between HSV-2 seropositivity and fibroid presence (multivariable-adjusted OR: 0.94 95% confidence interval: 0.73, 1.20); nor were there any associations with size of largest fibroid, number of fibroids, or total fibroid volume. Our data provide no evidence for the influence of HSV-2 exposure on fibroid risk in young African-American women. Further study of other serologically measured RTIs is warranted.

1161- S/P

VEGETABLE PROTEIN INTAKE AND RISK OF EARLY MENOPAUSE

Maegan Boutot*, Brian Whitcomb, Kathleen Szegda, Alexandra Purdue-Smithe, JoAnn E. Manson, Susan E. Hankinson, Bernard Rosner, Elizabeth R. Bertone-Johnson (Department of Biostatistics & Epidemiology, School of Public Health & Health Sciences, University of Massachusetts Amherst, Amherst, MA)

Early menopause, or the cessation of ovarian function prior to the age 45, affects 5-10% of Western women and is associated with increased risk of adverse health outcomes, including premature mortality and cardiovascular disease. Recent literature suggests that vegetable protein intake may prolong female reproductive function, but no study has evaluated the association between this exposure and early menopause. Therefore, we evaluated the relationship between vegetable protein intake and early menopause in the Nurses' Health Study II Cohort. Women included in analyses were premenopausal at baseline (1991) and followed for 20 years. Cases (n=2,077) were defined as women experiencing natural menopause before age 45; women were excluded if early menopause was a result of hysterectomy, oophorectomy or radiation treatment. Non-cases were women who had not experienced menopause by age 48 (n=44,638). We used logistic and Cox proportional hazard regression to evaluate relations between protein intake as a percentage of total calories at different ages and incident early menopause, accounting for potential confounding factors. In analyses adjusting for age, smoking and other dietary and behavioral factors, higher vegetable protein intake at age 40 was associated with lower risk of early menopause over the next five years (P for trend = 0.008). Compared to women with the lowest intake (quintile median = 3.85% of calories), women with the highest intake (median= 6.71%) had an odds ratio (OR) of 0.77 (95% confidence interval (CI) = 0.64 – 0.93). In contrast, animal protein intake at age 40 was unrelated to risk of early menopause (OR for quintile 5 (median=18.37% of calories) vs. 1 (9.18%) = 0.96, 95% CI= 0.79-1.16). This study suggests that high vegetable protein intake may be inversely associated with incidence of early menopause. Additional prospective studies of this relation are warranted.

1163- S/P

CORRELATION OF PREMENSTRUAL SYNDROME AND PREMENSTRUAL DYSPHORIC DISORDER WITH EATING DISORDERS IN A NATIONAL SAMPLE

Carrie Nobles*, Luana Marques (Massachusetts General Hospital)

Objective: Bulimia nervosa (BN) and binge eating disorder (BED) effect 1.5% and 3.5% of women, respectively, and are associated with significant impairment in occupational and social functioning, decreased quality of life and increased risk of chronic health conditions. Premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) are comprised of cyclical psychological symptoms, including disturbances in mood and affect, as well as physiological symptoms, including bloating and changes in appetite, which may serve as triggers for binge eating and/or purging. Little past research has evaluated the independent association of PMS and PMDD with eating disorders. **Methods:** Participants were drawn from the nationally-representative Collaborative Psychiatric Epidemiological Surveys, conducted from 2001-2003. Weighted multivariable logistic regression modeled the association between lifetime PMS and PMDD and lifetime odds of eating disorders. **Results:** Among 8,694 women participating in CPES, 133 (1.0%) had BN and 185 (1.8%) BED. Additionally, 3,489 (42.4%) had PMS and 366 (4.2%) PMDD. After adjustment for age, race/ethnicity, income, education, age at menarche, birth control use and comorbid mental health conditions (major depressive disorder, dysthymia, bipolar disorder, social phobia and substance use disorder), PMDD was associated with a greater than 5-fold odds of BN (OR 5.5, 95% CI 2.2, 19.2) and PMS with a 2-fold greater odds of BN (OR 2.3, 95% CI 1.1, 4.9). Additionally, in weighted linear regression, women with PMDD reported a longer duration of BN symptoms, although these results were attenuated after adjustment (mean difference 5.8 years, 95% CI -1.2, 12.7). PMDD and PMS were not significantly associated with BED in multivariable models. **Conclusions:** Women with PMS and PMDD have a higher odds of BN, independent of comorbid mental health conditions. Future research should investigate whether PMS and PMDD affect the onset and duration of eating disorders.

1164- S/P

KNOWLEDGE AND PRACTICE OF LACTATIONAL AMENORRHEA AS A FAMILY PLANNING METHOD AMONG MOTHERS ATTENDING IMMUNISATION CLINIC AT STATE HOSPITAL, ADEOYO, IBADAN Lois Olajide*, TaiwoObembe (University College Hospital)

Background: Worldwide, about 40% of all pregnancies are unintended as a result of low utilisation of modern contraceptive methods. This has been attributed to opposition to contraceptive use on personal and religious grounds. Lactational Amenorrhea Method (LAM), a natural method, despite its advantages has not been fully investigated. This study was therefore designed to assess the knowledge, perception and practice of LAM as a family planning method among mothers of children attending immunisation clinic at the State Hospital, Adeoyo, Ibadan. **Methods:** A cross-sectional study of mothers attending the immunisation clinic was used to recruit 331 women using a systematic sampling technique over three weeks. Data on socio-demographic characteristics, knowledge, perception and practice of LAM were obtained using pre-tested and validated interviewer-administered questionnaires. Data were analysed using descriptive statistics, Chi-square test and logistic regression models at 5% level of significance. **Results:** Mean age was 29.8 ± 5.0 years. Most (97.6%) were aware of family planning but only 44.4% were aware of LAM. Among the respondents who were aware of LAM, 68% had poor knowledge while 91.8% had negative perception about its effectiveness as a family planning method. Thirty-four percent of the respondents practiced LAM. Not being married, good knowledge and positive perception were significantly associated with the practice of LAM. Single mothers were 10 times more likely to practice LAM compared to the married (AOR: 9.84; CI= 2.17-44.68). Mothers with good knowledge of LAM were about 10 times more likely to practice LAM than their counterparts (OR: 9.74; CI= 4.13-22.97). **Conclusion:** Despite the proven, cost-effective family planning of LAM in resource poor areas, its knowledge and practice is still low in this environment. **Recommendation:** There is a need to scale up information about this method so as to improve its use. **Keywords:** Lactational Amenorrhea Method, Family planning, Immunisation

1167- S/P

VITAMIN D AND CALCIUM INTAKE AND RISK OF EARLY MENOPAUSE Alexandra Purdue-Smithe*, Brian Whitcomb, Kathleen Sze-gda, Maegan Boutot, JoAnn E. Manson, Susan E. Hankinson, Bernard Rosner, Elizabeth R. Bertone-Johnson (Department of Biostatistics & Epidemiology, School of Public Health & Health Sciences, University of Massachusetts Amherst, Amherst, MA)

Early menopause, defined as the cessation of ovarian function before the age of 45, affects roughly 10% of women and is associated with higher risk for cardiovascular disease and other conditions. Few modifiable risk factors for early menopause have been identified but emerging data suggest that high vitamin D intake may reduce risk. We therefore evaluated how dietary vitamin D and calcium intake were associated with incidence of early menopause in the Nurses' Health Study 2. Intakes of vitamin D and calcium from foods and supplements were measured every 4 years by food frequency questionnaire. Cases of incident early menopause were identified from amongst all participants who were premenopausal at baseline in 1991; over 20 years of follow-up, 2,077 women reported natural early menopause before age 45. To reduce potential misclassification, we limited non-cases to women reporting menopause at age 48 or later (n=44,638). We used logistic and Cox proportional hazard regression to evaluate relations between vitamin D and calcium intake at different ages and incident early menopause, accounting for potential confounding factors. After adjusting for age, smoking, and other factors, high intake of vitamin D from food sources was associated with lower risk of early menopause (odds ratio (OR) comparing quintile 5 (median=413 IU/day) vs. 1: 0.84, 95% confidence interval (CI): 0.73-0.96, P-trend <0.01). High calcium intake from food sources (quintile 5 median=1298 mg/day) was also associated with lower risk (OR: 0.78, 95% CI: 0.68-0.90, P-trend <0.01). Results were stronger for nutrient intake measured at age 35 than for intake measured at age 40. Neither vitamin D nor calcium from supplements was associated with risk. Findings suggest that foods high in vitamin D and calcium may be associated with lower risk of early menopause. Further evaluation of how these nutrients impact ovarian function is warranted, including prospective studies of 25-hydroxyvitamin D levels to assess vitamin D status.

1166-S/P

SOCIO - DEMOGRAPHIC PROFILE AND CARDIOVASCULAR RISK IN CARRIER WOMEN HYPERTENSION Amanda Pasklan*, Ana Hélia Sardinha, Jucian Nascimento (Universidade Federal do Maranhão)

It is intended as objective of this study is to analyze the socio-demographic profile and its relation to cardiovascular risk in hypertensive women according to Framingham risk score. It is an analytical descriptive study with 88 hypertensive women in the city of Sao Luis / Ma, Brazil, in 2011, with the approval of the ethics committee in research, protocol number 23115/007 640 / 2009-93. It was observed in the sociodemographic and economics characteristics that most women were race non-white (81%), aged above 50 (75%) patients with incomplete primary education (44.32%), without fixed income (94.32%), married (40.91%), with up to two children (30.68%). It found statistical association cardiovascular risk with age, marital status and number of children. In all the variables there was a higher concentration of patients at average risk rating, with greater expressiveness in the following categories: mixed race, age 61-67 years old, illiterate, has no training, widows and more than 10 children. It is observed that as the stratification of risk, medium risk had a higher percentage in 43.18% of clients, followed by 40.91% in low-risk and high risk in 15.91%. Since the absolute risk of developing cardiovascular disease by 10 years, the most significant percentages were 15% in the category; 17% and 3% 15.91%; And 10.23; 10.23% of patients, respectively. it can be seen that 63% of patients are in the classification of hypertension in systolic blood pressure and 56% in diastolic blood pressure is observed even greater number of hypertensive patients classified as medium risk, however, when performed dependency test cardiovascular risk in all the variables, considering a 5% significance level was not found statistical association. The cardiovascular risk found to be statistically associated with the age, marital status, number of children. It emphasizes the important inclusion of public policy involved in women's health, in relation to hypertension and risk factors known.

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ADIPOSIITY AND RISK OF EARLY MENOPAUSE Kathleen Sze-gda*, Brian Whitcomb, JoAnn Manson, Susan Hankinson, Bernard Rosner, Alexandra Purdue-Smith, Maegan Boutot, Elizabeth Bertone-Johnson (University of Massachusetts, Amherst)

Up to 10% of women experience early menopause, a natural cessation of ovarian function prior to the age of 45, which has been associated with increased risk for cardiovascular disease, osteoporosis and other health conditions. Current knowledge of modifiable factors that reduce risk for early menopause is limited. As some studies suggest body mass index (BMI) may be associated with risk, we examined associations between adiposity and risk of early menopause among participants from the Nurses' Health Study II Cohort. Information on height, weight and menopausal status was self-reported biennially from 1989 to 2011. A total of 2,890 incident cases of early natural menopause were identified among women who were premenopausal at baseline; cases were excluded if early menopause was due to hysterectomy, oophorectomy or radiation treatment. To reduce potential misclassification, non-cases were limited to women reporting menopause at age 48 or later (n=52,475). We used logistic and Cox proportional hazard regression to evaluate relations between BMI at different time periods and incident early menopause. In multivariable models that included smoking and other covariates, associations between BMI at baseline (ages 24-42) and early menopause were u-shaped, with underweight women (BMI < 18.5kg/m²) and obese women with a BMI ≥ 35 each having approximately 30% greater risk (Underweight Odds Ratio [OR]= 1.34; 95% Confidence Interval [CI]=1.11, 1.61; Obese OR=1.29; 95% CI=1.08, 1.56) than normal weight women (BMI 18.5 – 22.5). In contrast, overweight women (BMI 25-29.9) had a lower risk (OR=0.82; 95% CI=0.73, 0.92). We also observed a u-shaped relation for BMI at age 18 and at age 35, but associations were attenuated for BMI at age 40. In adjusted analysis that simultaneously included BMI at ages 18, 35 and 40, only BMI at age 35 remained associated with early menopause. Findings suggest that the association of adiposity and early menopause is not linear and varies by age.

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DAIRY INTAKE AND REPRODUCTIVE FUNCTION AMONG PREMENOPAUSAL WOMEN: THE BIOCYCLE STUDY Keewan Kim*, Kara A. Michels, Torie C. Plowden, Ellen N. Chaljub, Jean Wactawski-Wende, Sunni L. Mumford (Division of Intramural Population Health Research, Eunice Kennedy Shriver National Institute of Child Health & Human Development)

Background: Dairy intake is reported to be associated with infertility; however, little is known regarding associations with reproductive hormones. We assessed whether dairy food intake and nutrients were associated with reproductive hormones and anovulation among healthy women. **Methods:** We measured serum reproductive hormones up to eight times per menstrual cycle for up to two cycles from 259 regularly menstruating women in the BioCycle Study. Dairy intake was assessed via 24-hour dietary recalls up to four times per cycle. Dairy nutrients include dairy fat, lactose, calcium, phosphorus, and vitamin D. Dairy foods were grouped into milk, cheese, butter, cream, yogurt, and ice cream categories. Except for total dairy intake, consumption of specific dairy foods was dichotomized as 0 or >0 servings. Linear mixed models were used to evaluate the associations between dairy nutrients or food intakes and hormone levels, and generalized linear models were used for anovulation. All models were adjusted for total energy, protein, and fiber intakes, age, body mass index, race, and physical activity. **Results:** All dairy nutrients were inversely associated with serum estradiol and free estradiol levels, and none were associated with anovulation. Except for dairy fat, all nutrients were inversely associated with sex hormone-binding globulin. Total dairy intake was inversely associated with estradiol and free estradiol levels. No specific dairy food categories were associated with hormones. We detected associations between yogurt (relative risk [RR] 1.92, 95% confidence interval [CI] 1.04, 3.53) and cream (RR 1.63, 95% CI 0.96, 2.77) intakes and an increased risk of anovulation. **Conclusions:** Our study demonstrated associations between yogurt and cream intakes and an increased risk of impaired ovulatory function among healthy women. These results necessitate further study with a broader panel of reproductive outcomes.

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INCREASING 25-HYDROXYVITAMIN D (25(OH)D) DECREASES THE OCCURRENCE OF LONG MENSTRUAL CYCLES Anne Marie Jukic*, Anne Steiner (Yale School of Public Health)

In rodents, vitamin D deficiency has been associated with prolonged estrous cycles; however there are no prospective human studies. We used data from a prospective cohort study of time to pregnancy to examine vitamin D and menstrual cycle length. Women ages 30-44 enrolled early in their attempt to become pregnant, and provided a blood sample that was spotted and stored frozen. Women kept daily diaries that included menstrual bleeding, for up to four months. 25(OH)D was measured using liquid chromatography tandem mass spectrometry. We built a predictive model of 25(OH)D that extrapolated levels based on season and supplement use. We used this model to estimate changes in 25(OH)D across the menstrual cycles. We analyzed the association between 25(OH)D and log-transformed cycle length with a linear mixed model, and with long (>35 days) or short (<26 days) menstrual cycles using generalized linear models. Potential confounders included cycle of study entry, age, race, body mass index, recent birth control use, and exercise. 495 women contributed 1345 menstrual cycles. About 30% of women had either deficient (<20ng/ml) or insufficient (20-30ng/ml) 25(OH)D. Menstrual cycles were 2% shorter (95% CI: -3.7, -0.52) for women with sufficient 25(OH)D. A 10ng/ml increase in 25(OH)D was associated with a 13% decrease in the odds of long menstrual cycles (OR(CI): 0.87 (0.73, 1.04)). Cycles in which 25(OH)D was at least 40ng/ml (compared with 30ng/ml or less) were less likely to be long (odds ratio(CI): 0.63 (0.38, 1.03)) and slightly more likely to be short (OR(CI): 1.39 (0.86, 2.23)). In a population of naturally-cycling women higher 25(OH)D was associated with lower odds of long menstrual cycles. Vitamin D supplementation may shorten or regulate menstrual cycles. The association was strongest for high levels of 25(OH)D (at least 40ng/ml) suggesting that the optimal 25(OH)D level for reproductive function may be higher than the current recommendations for sufficiency.

1183

RELIGIOUS AND SPIRITUAL COPING AND RISK OF HYPERTENSION IN THE BLACK WOMEN'S HEALTH STUDY Yvette Cozier*, Jeffrey Yu, Lauren Wise, Tyler VanderWeele, Tracy Balboni, Lynn Rosenberg, Julie R Palmer, Alexandra Shields (Slone Epidemiology Center at Boston University, Boston MA)

African American women have 2-3 times the incidence of hypertension of white women, and their age at onset is on average a decade earlier. Psychosocial stress is a critical pathway that can lead to hypertension, likely due to dysregulation of the neuroendocrine system. Religion and spirituality (R/S) may be important resources for coping with stress by promoting social cohesion, social support, and abstention from poor health behaviors. We assessed the association between R/S and incident hypertension in the Black Women's Health Study, which has followed approximately 59,000 U.S. black women since 1995 with mailed biennial questionnaires. The 2005 follow-up questionnaire contained four R/S questions assessing the frequencies of religious service attendance and prayer, the use of R/S to cope with stress, and self-identification as a religious/spiritual person. Incidence rate ratios (IRRs) and 95% confidence intervals (CI) were estimated for categories of the R/S variables in relation to hypertension incidence using Cox proportional hazard models. Based on 4,235 incident cases of hypertension identified from 2005 through 2013, never attending religious services (compared to 1/month) was associated with a decreased incidence of hypertension (IRR=0.90, CI: 0.80-1.02), while higher levels of prayer (compared to 1/week) were associated with an increased incidence (IRR=1.14, CI: 0.99-1.31) for prayer several times a day. Religious coping was inversely associated with hypertension (IRR=0.85, CI: 0.73-1.00), and the association was stronger among women with higher levels of perceived stress (IRR=0.75, CI: 0.61-0.92; P trend: 0.03) and among women with low religious self-identification (IRR=0.62, CI: 0.42-0.92; P trend: 0.06). The present study provides suggestive evidence that R/S coping may be associated with reduced incidence of hypertension, and that R/S may operate through the stress pathway to affect health.

1184- S/P

A PROSPECTIVE STUDY OF ENDOMETRIOSIS AND RISK OF BENIGN BREAST DISEASE Leslie V Farland*, Rulla M. Tamimi, A. Heather Eliassen, Donna Spiegelman, Stacey A Missmer (Department of Epidemiology, Harvard T.H. Chan School of Public Health)

Background: Endometriosis is a chronic gynecologic disorder that affects ~10% of women. Given the altered hormonal and inflammatory environment of women with endometriosis, several studies have investigated the relationship between endometriosis and breast cancer and found conflicting results. This is the first study to investigate the relationship between endometriosis and benign breast disease (BBD), benign lesions that are associated with increased risk of breast cancer. **Methods:** Among women in the Nurses' Health Study II followed from 1991-2005, we used laparoscopically confirmed endometriosis, the clinical gold standard for diagnosis, as our exposure. Cox proportional hazard models, adjusted for a priori confounding factors, were used to calculate hazard ratios(HR) and 95% confidence intervals(CI). Biopsy confirmed BBD was further classified as proliferative or non-proliferative disease by pathologists. Effect modification by fertility status and use of mammography for screening was investigated. **Results:** Endometriosis conferred a modest increased risk of biopsy confirmed BBD in crude and fully adjusted models(HR:1.34 CI:1.13-1.58; HR:1.20 CI:1.01-1.44, respectively). When looking at subtypes of BBD, surprisingly we did not find heterogeneity between endometriosis and non-proliferative(n=675) and proliferative(n=1336) BBD lesions as endometriosis conferred a modest increased risk for both(HR Non-proliferative:1.16 CI:0.84-1.54; HR Proliferative:1.23 CI:0.99-1.52). The relationship between endometriosis and risk of proliferative BBD appeared strongest among nulliparous women(HR: 1.61 CI:1.07-2.41; Pvalue, test for heterogeneity=0.05). Sensitivity analyses investigating screening behaviors between those with and without endometriosis did not significantly attenuate results. **Discussion:** Endometriosis may confer higher risk of BBD, with the strongest relationship among nulliparous women, although future work should replicate this novel finding.

1185

FEMALE MORTALITY DUE TO ASSAULT IN BRAZIL, 2011-2013 Leila Garcia*, Gabriela Silva (Institute of Applied Economic Research)

Objective: To estimate corrected female mortality rates due to assaults and describe the profile of these deaths in Brazil, in its macro-regions and states in the period 2011-2013. **Methods:** This is a descriptive study with data from the National Mortality Information System (SIM), managed by the Health Surveillance Secretariat of the Brazilian Ministry of Health. First, we selected deaths classified in the Assault chapter of ICD-10 (X85-Y09). These data underwent two correction procedures: proportional redistribution of events of undetermined intent (Y10-Y34) and application of correction factors for mortality rates previously described in the literature. **Results:** In Brazil, in the period 2011-2013, we estimated 17,581 deaths of women due to assaults, which corresponds to a corrected annual mortality rate of 5.87 deaths per 100,000 women. In the period there were on average 5,860 deaths of women from violent causes each year, 488 every month 16.06 each day, or one every 1h30m. The main victims were adolescents and young women (45% of those aged 10-29 years), those with black skin color (64%) and those living in the Midwestern, Northeastern and Northern regions. The states with higher corrected mortality rates per 100,000 women were Roraima (10.35) and Espirito Santo (9.84). The profile of the deaths, with high occurrence in households (28.1%) and weekends (35.7%) suggests relation with situations of family violence. **Conclusions:** The study confirmed that the mortality of women by assault is an important public health problem in Brazil and affects women of all ages, ethnicities and levels of education. In addition to presenting current data on the mortality of women by aggression, the study contributes to unveil the relative invisibility of the problem of violence against women in Brazil and discusses the need for improvement of monitoring of fatal violence, as well as targeted actions and policies to tackle the problem.

1190-S/P

DOES SOLAR SUPPLEMENT USE INFLUENCE SKIN CANCER RISK? Isabelle Savoye*, Claire Cadeau, Marie-Christine Boutron-Ruault, Marina Kvaskoff (Inserm U1018, Centre for Research in Epidemiology and Population Health (CESP))

Background: While beta-carotene-rich solar supplements are largely used to prepare the skin before tanning, their long-term effect on skin cancer risk has not been investigated. **Methods:** E3N is an ongoing prospective cohort that involves 98,995 French women aged 40-65 years at inclusion in 1990. In 2008, a specific UV questionnaire was sent to all reported skin cancer cases and 3 controls per case, matched on age, county of birth, and education. We collected information about frequency of solar supplement use before, during, and after sun exposure over the previous 10 years, as well as lifetime sun exposure behaviors. A total of 366 melanoma cases, 1192 non-melanoma skin cancers (NMSCs), and 3647 controls were involved in the study. We used conditional logistic regression models for analysis. **Results:** Consumption of solar supplements was associated with an increased risk of NMSC (sometimes: OR=1.22 (95%CI=0.97-1.55); often/always: OR=1.57 (1.12-2.20) vs. never, p-trend=0.003), but not of melanoma, although there was no heterogeneity across skin cancer types (phomogeneity=0.09). Adjustment for pigmentary traits or sun exposure had little impact on these results. We detected effect modification by eye color (pinteraction=0.04): the association between solar supplement use and NMSC risk was restricted to women with blue/grey eyes (sometimes: OR=1.85 (0.92-3.72); often/always: OR=8.17 (1.66-40.20); p-trend=0.001). **Conclusion:** Our study is the first to examine the association between solar supplement use and skin cancer risk. These findings suggest an increased risk of NMSC in solar supplement users, which may be restricted to sun-sensitive phenotypes. Given the potential impact of these findings for public health, more research is needed to confirm this relationship and examine its underlying mechanisms.

1192

DIETARY ENERGY DENSITY AND POSTMENOPAUSAL BREAST CANCER INCIDENCE IN THE CANCER PREVENTION STUDY-II NUTRITION COHORT Terry Hartman*, Roma Shah, Mia Gaudet, Ying Wang, W. Dana Flanders, Susan Gapstur, Marji McCullough (Rollins School of Public Health and Winship Cancer Institute, Emory University, Atlanta, GA)

Dietary energy density (ED) is a relatively novel measure of diet quality that estimates the amount of energy per unit of food (kcal/g) consumed. Low ED diets are generally high in fiber, fruits and vegetables and low in fat. Dietary ED has been positively associated with body mass index (BMI) and other risk factors for postmenopausal breast cancer including insulin resistance and breast density. We evaluated the association between dietary ED and postmenopausal breast cancer with and without adjustment for BMI in the American Cancer Society's Cancer Prevention-II Nutrition Cohort. Analyses included 56,980 postmenopausal women without a previous history of breast or other cancer, who provided dietary intake data in 1999. During a median follow-up of 11.7 years, 2850 breast cancer cases were identified. Median dietary ED was 1.5 (interquartile range – IQR=1.3-1.7). Multivariable-adjusted breast cancer incidence rates (relative risk (RR) and 95% confidence intervals (CI)) were estimated for quartiles (Q) of ED in Cox proportional hazards regression models. Tests of linear trend were conducted by assigning the median value to each quartile. Without adjustment for BMI, higher intakes of ED were significantly associated with higher risk of breast cancer with a significant trend (RR Q4 v. 1 = 1.19; CI 1.06-1.35; P-trend=0.03). Adjustment for BMI made no meaningful difference to the results. These preliminary results suggest that ED is positively associated with postmenopausal breast cancer. Future analyses will explore potential effect modification by BMI, age and other covariates and whether associations differ by estrogen receptor status.

1191-S/P

SERUM VITAMIN D AND BREAST CANCER WITHIN FIVE YEARS Katie O'Brien*, Dale Sandler, Jack Taylor, Clarice Weinberg (National Institute of Environmental Health Sciences)

Background: Vitamin D is an environmental and dietary exposure with known anti-carcinogenic effects, but protection against breast cancer has not been demonstrated. We evaluated the association between serum 25-hydroxyvitamin D [25(OH)D] levels, supplemental vitamin D use, and breast cancer incidence over five years of follow-up. **Methods:** From 2003-2009 the Sister Study enrolled a cohort of 50,884 US women aged 35-74 who had a sister with breast cancer, but had never had breast cancer themselves. Serum 25(OH)D levels at enrollment were measured using liquid chromatography-mass spectrometry in 1,612 women who subsequently developed breast cancer and 1,726 participants randomly sampled from the cohort. We estimated hazard ratios (HRs) and 95% confidence intervals (CIs) using Cox proportional hazards models. **Results:** Higher 25(OH)D levels were associated with lower breast cancer risk (highest versus lowest quartile, >38.1 versus <24.6 ng/ml: adjusted HR = 0.75; 95% CI: 0.60, 0.94; p for trend= 0.007), corresponding to a 25% reduction in risk. Analysis of the first five years of follow-up for all Sister Study participants showed that self-reported vitamin D supplementation at enrollment of at least 4 times a week was associated with a 10% reduction in risk of developing breast cancer (HR=0.90, 95% CI: 0.81, 0.99). **Conclusions:** Higher serum 25 (OH)D levels are associated with reduced breast cancer risk. In the US population, where a large proportion of women have low levels of circulating vitamin D, oral supplementation may be a safe and inexpensive way to reduce breast cancer risk.

1193- S/P

ASSOCIATIONS OF NSAID AND PARACETAMOL USE WITH RISK OF PRIMARY LIVER CANCER IN THE CLINICAL PRACTICE RESEARCH DATALINK Baiyu Yang*, Jessica Petrick, Jie Chen, Katrina Hagberg, Vikrant Sahasrabudhe, Barry Graubard, Susan Jick, Katherine McGlynn (National Cancer Institute)

Background: Liver cancer incidence has been rising rapidly in Western countries. Nonsteroidal anti-inflammatory drugs (NSAIDs) and paracetamol are two widely used analgesics that may modulate the risk of liver cancer, but population-based evidence is limited. **Methods:** We conducted a case-control study (1,195 primary liver cancer cases and 4,640 matched controls) within the United Kingdom's Clinical Practice Research Datalink, to examine the association between the development of liver cancer and use of prescription NSAIDs and paracetamol. Multivariable-adjusted odds ratio (OR) and 95% confidence interval (CI) were estimated using conditional logistic regression. **Results:** The analysis found that liver cancer risk was not associated with NSAID use (OR = 1.05, 95% CI = 0.88–1.24), or with recency of use, intensity or subtype. Paracetamol use, however, was associated with increased risk of liver cancer (OR = 1.18, 95% CI = 1.00–1.39, p-trend <0.01). **Conclusion:** Our results suggest that NSAID use was not associated with liver cancer risk in this population. Paracetamol use may be associated with higher liver cancer risk in a dose-response manner, but results should be interpreted cautiously due to methodological limitations. Given that paracetamol is a widely used analgesic, further examination of its relationship with liver cancer is warranted.

1194

PRE- AND POST-DIAGNOSIS ANALGESIC USE AND OVARIAN CANCER SURVIVAL Elizabeth Poole*, Melissa Merritt, Megan Rice, Shelley Tworoger (Brigham and Women's Hospital and Harvard Medical School, Boston, MA, USA)

Ovarian cancer is the 5th deadliest cancer among US women. Although clinical characteristics (e.g., disease stage and histology) and treatment (e.g., optimal debulking) predict outcomes, little is known about whether modifiable factors contribute to prognosis. We evaluated whether use of analgesics (aspirin; other non-steroidal anti-inflammatory drugs [NSAIDs], or acetaminophen) were associated with ovarian cancer prognosis. The Nurses' Health Study is a prospective study of 121,700 US nurses who have completed biennial questionnaires on lifestyle, medications, and disease diagnosis since 1976. Regular aspirin use (> 2 times/week over the prior year) was queried on every questionnaire since 1980; regular use of other NSAIDs or acetaminophen has been queried since 1990. We used Cox proportional hazards regression to calculate relative risks (RRs) and 95% confidence intervals (CI), adjusting for tumor and personal characteristics. Women diagnosed with stage IV ovarian cancer were excluded from the analysis. Women who regularly used aspirin after diagnosis had a 35% lower risk of death (RR: 0.65; 95% CI: 0.45-0.92) and a 44% lower risk of dying due to ovarian cancer (RR: 0.56; 95% CI: 0.36-0.86). Post-diagnosis use of other NSAIDs was associated with a suggestive decreased risk of ovarian cancer death (RR: 0.86; 95% CI: 0.59-1.26). There was no association of pre-diagnosis use of any of the analgesic medications with prognosis, nor was there an association of post-diagnosis acetaminophen use with survival. In this preliminary study of analgesic use among ovarian cancer patients, regular use of aspirin after diagnosis appeared to improve survival. However, there were relatively few current users available for analysis, particularly for non-aspirin NSAIDs (131 women were current users; 66 of whom died during follow-up). Overall, our results suggest that reducing inflammation after diagnosis may be beneficial for improving survival.

1200-S/P

PHYLOGENETIC ANALYSIS OF HIV ENHANCES CONTACT TRACING AND SEXUAL NETWORK ASCERTAINMENT Dana K Pasquale*, Irene A Doherty, Lynne A Sampson, Peter A Leone, Joseph Sebastian, Sue Lynn Ledford, William C Miller, Joseph Eron, Ann M Dennis (University of North Carolina at Chapel Hill)

BACKGROUND: Contact tracing is the cornerstone of many public health HIV efforts. However, the representativeness of elicited partnerships for underlying transmission is unknown. To evaluate gaps in contact tracing, we used HIV surveillance data to compare phylogenetic trees and sexual network “components” of linked cases and elicited partners. The sexual network included all persons newly diagnosed with HIV infection in Wake County, NC, 2012-2013, and traced partners. In total the network involved 663 persons; 411 were HIV+ (280 index, 121 partners). **METHODS:** We evaluated the sexual network components and phylogenetic trees among 230/411 HIV+ persons in the network with available sequences. Phylogenies were built with HIV pol sequences and incorporated background references (>15,000 sequences from NC) to identify transmission clusters (TC). TC were clades with >2 study sequences, short branch lengths, and high bootstrap support (>90%). From the trees, we created a dataset of dyadic pairs of 2 persons in the same TC. We fit a GEE model with an exchangeable correlation matrix where the outcome was whether the persons in the TC dyad were in different network components. Covariates included dyadic homophily of demographics and risk behaviors (eg, men who have sex with men [MSM]). **RESULTS:** 87/230 (38%) persons were in 34 TCs with 83 TC dyads identified. 42/87 (48%) persons linked in a dyad were not in the same network component. Being MSM and both persons in the dyad being an index case were significantly associated with being phylogenetically-but not network-linked in the multivariate model. Surprisingly, having anonymous partners was not associated with being in a TC without being network-linked. **CONCLUSION:** Combining contact tracing and phylogenetic analysis can identify gaps in contact tracing and provide a more complete picture of HIV transmission, especially among newly diagnosed MSM who are more likely to be in a TC with someone who is not named in their component.

1202

WHOLE-EXOME SEQUENCING TO IDENTIFY NOVEL GENES ASSOCIATED WITH INFERTILITY FOLLOWING CHLAMYDIAL PELVIC INFLAMMATORY DISEASE Brandie Taylor*, Xiaojing Zheng, Toni Darville, Abiodun-Ojo Olayinka, Kranti Konganti, Roberta Ness, Catherine Haggerty (Texas A&M University)

Objective: Chlamydia trachomatis (CT) is a prevalent sexually transmitted infection that leads to serious sequelae including pelvic inflammatory disease (PID) and infertility. Ideal clinical management of CT will require the identification of risk markers for customized screening, novel treatments or vaccine development. Common genetic variants in immune genes have been implicated in CT-PID but only explain a small proportion of CT-disease risk. The objective of this pilot study was to utilize whole-exome sequencing (WES) to identify clusters of rare variants in novel genes associated with infertility following CT-PID. **Methods:** We obtained stored DNA from 43 African American women with CT-PID who participated in the PID Evaluation and Clinical (PEACH) Health Study. Infertility was assessed at a mean of 84 months. Following WES, SKAT test and the CMC test were used to identify genes associated with infertility. Principal component analysis did not identify significant population stratification. Baseline variables did not differ between groups. **Results:** After excluding missing data and uncharacterized gene locations, a total of 17873 rare variant gene clusters were examined. The top significant associations identified with the SKAT test were the BMP3, C1RL, NME4, and POLR2J3 genes ($p < 0.0003$). After Bonferroni correction, only the POLR2J3 gene following the CMC test was significant ($3.35E-05$). **Conclusions:** This is the first study to use WES to identify novel genes associated with infertility following CT-PID. Clusters of variants in genes related to morphogenesis, complement, nucleoside diphosphate kinases, and RNA polymerase were identified but after correction for multiple comparisons only RNA polymerase remained significant. Power in our pilot study was limited by sample size due to the high cost of sequencing. Replication and validation utilizing targeted sequencing may shed light on new biological pathways that lead to infertility following CT-PID.

1201-S/P

LINKAGE TO CARE AFTER HOME-BASED HIV TESTING: PREDICTIVE MODELLING USING AN ENSEMBLE LEARNING METHOD Kipruto Kirwa*, Mark Lurie, Brandon Marshall, Becky Genberg, Paula Braitstein, Joseph Hogan (Brown University School of Public Health, Department of Epidemiology)

Background: Linking infected individuals to care is a critical prerequisite to successful HIV control. An ensemble of models may improve predictive accuracy for the probability of linkage to HIV care relative to single, arbitrarily-selected algorithms. **Methods:** We predicted probability of linkage to care after home-based HIV testing (HBT) in western Kenya using 19 individual models and a weighted combination of the models in a Super Learner (SL) algorithm. The SL aggregates cross-validated predictions from constituent models and produces a final estimate optimized by minimizing a mean square error (MSE). We assessed the predictive accuracy, programmatic net benefit, discrimination, calibration, and reclassification qualities of each model relative to SL. **Findings:** Of 3,482 adults who tested positive during HBT from December 2009, 44% (1,516) had not linked to a clinic by June 1, 2014. The SL's positive and negative predictive values of 85% and 87%, respectively, were comparable to those of the best performing single models. As defined by cross-validated MSE, the SL was the best performing model with 0.118, but was closely matched by many single algorithms. Across all metrics, the SL performed as well as, or slightly better than the best single algorithms. The net benefit of finding 48 unlinked individuals per 100 at a cut-off probability of 0.3 for linkage suggests that the SL provides much higher decision-making value than not using a model. **Interpretation:** SL performance at par with most of its component single algorithms indicates that in this epidemic context, linkage to care relates to patient characteristics in a non-complicated way, with little risk of predictive model misspecification. Very high predictive accuracies from nearly all models imply that patient characteristics documented at HBT are excellent predictors of who will link to care. Predicting linkage using these variables in the SL yields insights that may be beneficial for outreach program planning.

1203- S/P

CORRELATES OF COUNTY-LEVEL NON-VIRAL SEXUALLY TRANSMITTED INFECTION HOT SPOTS IN THE US Brian Chang*, William Pearson, Kwame Owusu-Edusei (Icahn School of Medicine at Mount Sinai)

Background: Studies on county-level hot spots of sexually transmitted infections (STIs) in the entire U.S. and their association with socio-economic factors are lacking. In this study, we used a combination of hot spot analysis (HSA) and spatial regression to examine the county-level correlates of the most commonly reported curable sexually transmitted infections (STIs) in the U.S. **Methods:** We obtained reported county-level total case rates of chlamydia, gonorrhea, and primary and secondary (P&S) syphilis in all counties in the 48 contiguous states using the National Notifiable Disease Surveillance System (NNDDS). We computed temporally-smoothed rates using 2008–2012 data. Covariates were obtained from county-level multiyear (2008-2012) American Community Surveys (ACS) from the US census. We conducted HSA (applying the false discovery rate (FDR) correction) to identify hot spot counties for all three STIs. Hot spots were defined as counties or clusters of counties with rates above the global mean ($p < 0.05$). We used logistic spatial regression with the spatial error model (SEM) to determine the association between hot spots and the covariates and variance inflation factor (VIF<10) analysis to reduce the effect of multicollinearity on the coefficients. **Results:** HSA indicated that 80% of hot spots for each STI were in the South. Spatial regression results indicated that, compared to White non-Hispanics, a 1% increase in the percentage Black non-Hispanic was associated with a 3.3% ($p < 0.01$; chlamydia), 3.8% ($p < 0.01$; gonorrhea) and 2.5% ($p < 0.01$; P&S syphilis) increase in the odds of being a hot spot county. Compared to the other regions (West, Midwest and Northeast), counties in the South were 6.6 ($p < 0.01$; chlamydia), 6.7 ($p < 0.01$; gonorrhea) and 4.0 ($p < 0.01$; P&S syphilis) times more likely to be hot spots. **Conclusion:** Our study provides important information on clusters of non-viral STIs in the entire US, including associations between hot spot counties and socio-economic/demographic factors.

1210

PTSD AND OTHER HEALTH CONDITIONS AND THEIR IMPACT ON EARLY RETIREMENT AND JOB LOSS AMONG WORLD TRADE CENTER DISASTER RESCUE AND RECOVERY WORKERS Shengchao Yu*, Robert Brackbill, Sean Locke, Steven Stellman, Lisa Gargano (New York City Department of Health and Mental Hygiene)

The health consequences of the 9/11 World Trade Center (WTC) terrorist attacks are well documented, but few studies have assessed the economic impact of this disaster on exposed individuals. We examined the association between 9/11 related PTSD in conjunction with other conditions and premature labor force exit (early retirement and job loss) among rescue and recovery workers. We further assessed the relationship between poor health, income drop, and premature labor force exit. We studied 12,358 rescue and recovery workers who had completed three waves of the WTC Health Registry surveys between 2003 and 2012. Logistic regression models examined the association of PTSD and other conditions with early retirement and health related job loss. We also compared income drop of those who experienced premature labor force exit by health status. Comorbidity of PTSD with one or more other major chronic conditions was associated with early retirement among rescue and recovery workers over and above an association with other chronic conditions without PTSD. For example, the odds ratio of reporting early retirement for those with 2 non-PTSD conditions, compared to workers with no condition, was 1.9 (95% CI: 1.5-2.5); with the addition of PTSD it increased to 2.9 (95% CI: 2.1-4.1). The association with health related job loss was even larger. Workers with PTSD comorbid with 3 or more other conditions were 7 times more likely to have health related job loss than those with no condition (AOR = 7.3, 95% CI: 5.0-10.5). For early retirees and workers who were unable to work due to health, the percentages with income drop since 9/11 for those having PTSD comorbidity were 39.4% and 48.5%, respectively, as compared to 26.4% and 21.1% for those with no major health condition. Disaster related health burden directly impacts quality of life as demonstrated by involuntary loss of employment and income. Policy makers need to be aware of unanticipated long term harm of major disasters such as 9/11.

1212- S/P

POST-TRAUMATIC STRESS DISORDER (PTSD) IN A COHORT OF WOMEN IN COASTAL LOUISIANA AFFECTED BY THE DEEPWATER HORIZON OIL SPILL Symielle Gaston*, Ariane Rung, Edward Trapido, Edward Peters (Louisiana State University Health Sciences Center School of Public Health)

As a result of technological disaster, people are at risk of experiencing several stressful life events concurrently, including physical and mental trauma and economic loss. In the context of such disaster, it is essential to examine disaster-related trauma and its association with the development of post-traumatic stress disorder (PTSD). This study explored the association between exposure to the Deepwater Horizon Oil Spill and PTSD using data collected from a cohort of female residents of Southeastern Louisiana enrolled in The Women and Their Children's Health (WaTCH) Study (N = 2,852). During the first wave of data collection (2012) sociodemographic, physical and economic exposure to the oil spill, and mental and physical health data was collected via telephone surveys. During wave 2 of data collection that is ongoing (2014), PTSD assessed with the PTSD Checklist (PCL) was collected from 519 women. In this subset, the mean age is 57 years, 55% of the women are white, and the mean PCL score was 15.5 (range: 0-79). Generalized linear models using a negative binomial distribution were fit to disentangle the separate associations between (1) physical and (2) economic exposure to the oil spill and PTSD for these women. Models adjusted for race, employment, marital status, education, income, and age revealed significant associations between both high economic ($p < 0.01$) and high physical ($p < 0.01$) oil spill exposure and PTSD severity, indicating each form of trauma is independently associated with PTSD. Although additional work is necessary to disentangle this single event from other natural disasters and traumatic events that have occurred in this population, this technologic disaster has negatively affected the psychological well-being of a vulnerable community.

1211-S/P

PREVALENCE OF POSTTRAUMATIC STRESS DISORDER (PTSD) IN GENERAL POPULATION, FOLLOWING TSUNAMI AND EARTHQUAKE IN ASIAN COUNTRIES – A META-ANALYSIS Harsha Dahal*, Pratap Jena, Sudhir Satpathy, Jugal Kishore, Sagarika Das (KSPH, HSRII, Premier Research Group, and Nitte University)

Meta-analyses were conducted on prevalence of posttraumatic stress disorder (PTSD) in general population, following Tsunami and Earthquake in Asian countries. Nine unique studies published on or after 2005 from six Asian countries describing prevalence of PTSD within two to six months of the event were selected using PRISMA guidelines. Fixed effects, heterogeneity model, yielded overall prevalence of PTSD following Tsunami and Earthquake as 30.9 percent (95% CI: 20.62%-41.66%). The prevalence of PTSD was higher Following Tsunami (34.17%; 95% CI: 7.66%-63.87%) than Earthquake (28%; 95% CI: 17.89%-38.7%). High prevalence of PTSD following natural disasters, necessities inbuilt mechanism in disaster relief operation to address the menace. Despite of frequent Earthquake and Tsunami in Asian countries, limited prevalence estimates are available, which needs to be given research priorities.

1213

ASSOCIATION BETWEEN TRAUMATIC BRAIN INJURY AND ATTEMPTED SUICIDE IN YOUNG ADULT VETERANS Jennifer Fonda*, Lisa Fredman, Regina McGlinchey, Susan Brogly, Jaimie Gradus (VA Boston Healthcare System)

Background: Traumatic brain injury (TBI) is prevalent among Veterans deployed to recent wars in Iraq and Afghanistan. Post-traumatic stress disorder (PTSD) and depression commonly co-occur with TBI in this population and share the same underlying neural and cognitive systems; having at least one may exacerbate executive functioning impairment, leading to increased risk of suicide. This study evaluated the association between TBI and attempted suicide and the role of psychiatric conditions in this association. **Methods:** The sample included 261,304 Veterans deployed to Iraq and Afghanistan (84% male) receiving care at Veterans Affairs (VA) facilities from 2007-2012, aged 18 to 40 (mean 29 yrs), and no history of bipolar disorder or schizophrenia. TBI was defined as a confirmed diagnosis (16%) according to the VA TBI comprehensive evaluation; no TBI was defined as a negative primary TBI screen (i.e. no head injury). Non-fatal, attempted suicide was based on ICD-9 codes recorded in emergency room visits or inpatient hospitalizations. We used Cox-proportional hazard regression to analyze the association between TBI and rate of attempted suicide, adjusting for demographic characteristics. Mediation analyses were conducted to examine the role of psychiatric conditions (PTSD, depression, anxiety, and substance abuse) in this association. **Results:** There were 453 attempted suicides: Veterans with TBI were more likely to attempt than those without TBI (0.46% vs. 0.12%). The adjusted Hazards Ratio (aHR) was 3.73 (95% CI =3.07, 4.53). This association was attenuated in mediation analyses (aHR=1.25, 95% CI=1.05, 1.48). Moreover, 82% of the effect of TBI on attempted suicide was mediated by co-occurring psychiatric conditions. **Conclusion:** This study found that Veterans with deployment-related TBIs are at increased risk of attempted suicide, which is mostly mediated by comorbid psychiatric conditions. Veterans with these conditions should be closely monitored for suicidal behavior.

1220-S/P

PRENATAL ACETAMINOPHEN USE AND CHILD'S ATTENTION, EXECUTIVE AND MOTOR FUNCTION AT AGE 5 Zeyan Liew*, Cathrine Bach, Beate Ritz, Jørn Olsen (UCLA Epidemiology)

Background: Recent research evidence suggested that in-utero exposure to acetaminophen, the most commonly used pain and fever medication in pregnancy, may have long-term neurodevelopmental consequences in the offspring. Here we aim to examine whether maternal use of acetaminophen affects children's attention, executive and motor function at age 5. **Methods:** We studied 1,491 mothers and children enrolled in the Danish National Birth Cohort (DNBC; 1996-2002). Acetaminophen use in pregnancy was prospectively recorded in three telephone interviews. Child attention and motor function was assessed at age 5 with the Test of Everyday Attention for Children at Five (TEACh-5) and the Movement Assessment Battery for Children (MABC) administered by trained psychologists. The Behavior Rating Inventory of Executive Function (BRIEF) was completed by parents and teachers to assess children's executive function. We employed multiple linear regression and logistic regression analysis adjusting for maternal IQ, indications of acetaminophen use, and other confounding factors. We used inverse-probability-weights (IPW) to account for sampling and non-participation in this DNBC sub-cohort. **Results:** First trimester use of acetaminophen was associated with poorer overall attention scores in children at age 5 (estimated mean difference -0.29; 95%CI -0.59, 0.01) compared to non-users as the reference group. Ever use of acetaminophen in pregnancy was associated with a 2-fold increase in the odds for parent-rated executive difficulties (the metacognition index) (OR=2.00; 95%CI 0.90, 4.44), but we did not find patterns for timing-specific exposure effects. Prenatal acetaminophen use was not associated with motor function scores in children. **Conclusions:** Maternal acetaminophen use during pregnancy was associated with poorer attention and executive functions in 5-year olds. Our findings add some evidence that acetaminophen exposure in utero may alter neurodevelopment in offspring.

1222-S/P

NEONATAL BRAIN DERIVED NEUROTROPHIC FACTOR (BDNF) AND CHILD DEVELOPMENT: POTENTIAL MARKER IN AT-RISK INFANTS Akhgar Ghassabian*, Rajeshwari Sundaram, Nikhita Chahal, Erin Bell, David A Lawrence, Edwina Yeung (Division of Intramural Population Health Research, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, MD, USA)

Background: Brain Derived Neurotrophic Factor (BDNF) has an important role in ameliorating the pathophysiology of neuropsychiatric disorders. Yet, prospective association of neonatal BDNF and later neurodevelopment is understudied. In a large population-based sample, we explored if BDNF levels in residual newborn dried blood spots (DBS) predict child development. We further explored if this association exists in preterm infants. **Methods:** In Upstate KIDS, a birth cohort with a primary goal to evaluate the impact of infertility treatment on child development (2008-2010), we measured DBS BDNF levels in 3145 neonates (2095 singletons and 1050 twins). Mothers reported on their children's development in 5 domains at ages 4-6, 8, 12, 18, 24, 30, and 36 months using the Ages & Stages Questionnaire© (ASQ). Generalized linear mixed models were used to test the association of BDNF and a child's failing on any of the ASQ domains and domain specific fails in the primary cohort (i.e. singletons and one randomly selected twin of each pair). Analyses were weighted for the sampling scheme and rerun among preterm infants (gestational age <37 weeks). **Results:** Neonatal BDNF was not associated with failure on any ASQ domains and domain specific fails in the primary cohort. However, when we restricted the analyses to preterm infants, a higher BDNF was associated with lower odds of failing any ASQ (OR per log unit increase in BDNF: 0.24, 95%CI: 0.08-0.73). This result was particularly significant for the communication domain (OR per log unit increase in BDNF: 0.22, 95%CI: 0.06-0.84). **Conclusions:** Results cautiously suggest that neonatal BDNF levels might be an early marker of later development in children at-risk of delays, including preterm infants.

1221

ASSOCIATION BETWEEN PLACENTAL HISTOPATHOLOGY AUTISM SPECTRUM DISORDERS IN A COMMUNITY COHORT Jennifer Straughen*, Dawn Misra, Carolyn Salafia, Pramod Nerula Sanford, Lederman Beata, Dygulska Nayaab, Khawar Fergan, Imbert Gabriela Perez, Alana Devine Dunn, Ashley Thakur, Ruchit Shah, Daphne Landau, Victoria Onbreyt, Giovanna Castillo (Wayne State University School of Medicine)

Background: Autism Spectrum Disorder (ASD) is a set of neurodevelopmental disorders expressed in early life as stereotypic behaviors and language and social-emotional deficits. Exposures to inflammation have emerged as prenatal risk factors that can be identified in the placenta by routine histology. **Methods:** Our case-control sample was drawn from a population based sample of births occurring at a large urban community based hospital (New York Methodist Hospital) 2007 to 2013 when placental examination was universal. Coupled with billing data for children who continued for pediatric care, we have a unique population based cohort with now 55 population based cases (42 males, 13 females) and 199 controls (150 males, 49 females). Pathology diagnostic reports were extracted for coding of markers of acute inflammation, chronic inflammation, and maternal underperfusion. Conditional logistic regression accounted for our matched (gender, gestational age, birth weight) case-control design. **Results:** There were substantial differences in several measures of exposure between cases and controls. Placentas of cases were much more likely to have acute fetal chorionic vessel inflammation (23.6% cases, 6.5% controls; conditional logistic regression odds ratio (COR), 95% CI: 4.88, 1.99, 11.96). There was a higher risk of chronic inflammation as measured by uteroplacental chronic vasculitis in the placentas of cases (7.3% cases, 1.5% controls; COR, 95% CI: 6.36, 1.13, 35.90) as well as higher risk of chronic chorio-decidualitis but this difference was not significant (p=0.14). Finally, histologic evidence of poor maternal perfusion was also much more likely in cases (7.3% cases vs. 0.5% controls; COR, 95% CI: 13.54, 1.51, 121.6). **Conclusions:** Children with ASD had significantly more histologic evidence of prenatal exposures to both acute and chronic inflammation and poor maternal perfusion. This may point to a universally available and inexpensive screen for ASD risk at birth.

1223-S/P

LIFE COURSE-ADJUSTED ASSOCIATIONS BETWEEN INTRAUTERINE ENVIRONMENT AND DNA METHYLATION IN YOUNG ADULT WOMEN OF A JERUSALEM PERINATAL STUDY SUB-COHORT. Jonathan Huang*, David Siscovick, Hagit Hochner, Yechiel Friedlander, Daniel Enquobahrie (Institute for Health and Social Policy, McGill University)

Background: Intrauterine environment (IUE), including maternal gestational weight gain (GWG) and pre-pregnancy BMI (ppBMI), have been associated with offspring adult DNA methylation and cardiometabolic phenotype. Methylation, directly or as a proxy, may mediate the IUE-adult phenotype relationship, however time-depending confounding by life course factors may produce spurious associations. **Methods:** Among 589 adult women (mean = 32 years) of the Jerusalem Perinatal Study Family Follow-Up, we quantified peripheral blood DNA methylation in five candidate genes drawn from literature (ABCA1, INS-IGF2, LEP, HSD11B2, and NR3C1) using EpiTYPER/ MassARRAY. We used multivariable linear regression and marginal structural models (MSM), estimated by inverse probability weighting and g-formula, to control for life course factors and estimate IUE – adult methylation associations. **Results:** Across various models and accounting for multiple tests, higher GWG was inversely related to ABCA1 methylation (= -1.1% per quartile, [95% CI: -2.0, -0.3]), after adjustment for ancestry, parental confounders, and offspring's own adolescent weight, education, parity, and smoking. Mediation by the latter four life course factors appeared minimal: MSM-based estimates for total, natural, and controlled direct effects were similar. Multiple imputation for missing values did not alter associations. Exploratory analyses suggest the relationship may be driven by mothers with lowest ppBMI. ABCA1 methylation appeared to mediate a relationship between maternal GWG and beta-cell function (indirect effect on HOMA- = -0.6%, [95% CI: -1.0, -0.1]), though these measures were contemporaneous. **Conclusions:** Life course factors, including some found to be related to adult DNA methylation, did not appear to be important time-dependent confounders of our observed associations. This extends previous findings, however questions of functional relevance and the potential mediation by inflammation and cell type remain.

1224

MATERNAL PREECLAMPSIA DURING PREGNANCY AND RISK OF CHILDHOOD CANCERS IN OFFSPRING — A CALIFORNIA STATEWIDE CASE-CONTROL STUDY Xiaoqing Xu (UCLA School of Public Health)

Background: Preeclampsia/Eclampsia is a leading cause of maternal mortality and morbidity, as well as a major cause of adverse effects on fetal well-being. We examined associations between fetal exposure to preeclampsia and subsequent risk of childhood cancers. **Methods:** We obtained childhood cancer cases ($N = 13,677$) diagnosed at age 5 and younger from 1988-2012 from the California Cancer Registry and linked them to birth certificates using a probabilistic record linkage program. Controls were randomly selected from among all California birth during this period frequency matching them to cases by birth year (20:1 matching rate). We based preeclampsia /eclampsia history during pregnancy, labor, and delivery on the medical worksheet from the birth registry. We considered exposure to preeclampsia or eclampsia (ever/never) and also severity of the condition. We used unconditional logistic regression model to estimate the effect of preeclampsia on each subtype of childhood cancers. Propensity score analysis was used to account for potential confounding factors including maternal age at pregnancy, race/ethnicity, maternal birth place, maternal SES, birth year, birth type and number of prenatal care visits. **Results:** Prenatal exposure to preeclampsia was found to be associated with increased risk of germ cell tumor ($OR = 2.2$, 95% CI: 1.3-4.0) specifically two histologic subtypes of germ cell tumors: seminomas ($OR = 9.4$, 95% CI: 2.1-42.4) and teratoma ($OR = 3.5$, 95% CI: 1.5-6.3) but not Yolk Sac tumors. The risks remained elevated after we adjusted for preterm delivery. Increases in risk were also observed for hepatoblastoma, neuroblastoma and Wilms tumor, the magnitude of the association strengthening for severe preeclampsia/eclampsia. **Conclusions:** Our finding suggest that maternal preeclampsia increases risk of some rare childhood cancers and may shed light on potential etiologic factors of these cancers.

1230-S/P

HETEROGENEOUS ASSOCIATIONS BETWEEN JOB STRAIN AND BLOOD PRESSURE: INSIGHTS FROM QUANTILE REGRESSION ANALYSIS IN THE BRAZILIAN LONGITUDINAL STUDY OF ADULT HEALTH (ELSA-BRASIL) Rosane Härter Griep*, Leidjaira Lopes Juvanhol, Enirtes Caetano Prates Melo, Maria de Jesus Mendes da Fonseca (National School of Public Health, Oswaldo Cruz Foundation, Brazil)

Background: The results of studies of job stress and blood pressure (BP) are inconsistent, and these divergences may stem partly from the fact that the effects of job stress on BP are heterogeneous in the population. We investigated whether job strain is associated with BP, and demonstrated how this association vary across the entire conditional distribution of BP. **Methods:** We evaluated 9,220, 35-64 years old, current workers from ELSA-Brasil baseline (2008-2010). Job strain was measured by the Demand-Control-Support Questionnaire, and assessed according to the quadrant formulation proposed by Karasek (low-strain work was the reference category). In addition, we evaluated the continuous scores for every dimension separately. The associations between job strain and systolic and diastolic blood pressure (SBP and DBP, respectively) were evaluated using quantile regression models (5-quantile intervals, from the 5th to the 95th quantile), adjusted by gender, age, education, and self-reported race. In this analysis, we excluded participants who reported use of antihypertensives (n=2,260). **Results:** Active work was associated with lower SBP (-1.91 and -2.7 mm Hg at the 90th and 95th quantiles, respectively) and DBP (-0.98 mm Hg at the 5th quantile). Psychological demands were inversely associated with SBP (-0.15 mm Hg at the 70th quantile) and DBP (-0.22 mm Hg at the 95th), and control was associated only with SBP at the 95th quantile (-0.31 mm Hg). Social support at work was positively associated with BP in most of the distribution, and the effects were higher at a higher quantile of the conditional distributions of both SBP (from 0.1 at the 30th to 0.4 mm Hg at the 95th quantile) and DBP (from 0.08 at the 10th to 0.23 mm Hg at the 95th quantile). **Conclusions:** BP is heterogeneously associated with job strain (quadrants and dimensions) along its distribution. Quantile regression is a useful tool which can contribute to better understanding this complex relationship.

1232

EFFECTS OF JOB STRAIN ON INCIDENT DIABETES IN THE US Miriam Mutambudzi* Zulqarnain Javed (University of Texas Medical Branch)

Background: Job strain is the perception of low control over one's job while facing high job demands. Karasek et al. (1978) defined high job strain as a product of high psychological demands, low decision latitude and low social support at work. Most literature on job strain and its effects on health has been based on studies outside the U.S., leaving a significant knowledge gap of the effects of psychosocial occupational characteristics in US workplaces. The objective of this study was to assess the effects of job strain, and relevant covariates on incident diabetes over a 6 year period using nationally representative data of US adults 50 years and older, taking into account the dynamics and psychosocial aspects of work in the U.S. **Methods:** Using the Health Retirement Study data from 2006-2012 cox proportional hazards regression models were used to estimate the hazard ratios for incident diabetes in working adults according to baseline job strain. **Results:** Job strain significantly increased risk of incident diabetes in the overall population (HR=1.71, 95%CI=1.10-2.10). Stratification by gender indicated that women were more vulnerable to the effects of high job strain (HR=2.00, 95%CI=1.05-3.80), while men showed significant risk with passive jobs (HR=2.49 95%CI=1.19-2.15.02). Risk was highest in minority participants, and participants with low levels of education, those who were not married, or worked more than 55 hours a week. **Conclusions:** High job strain and passive jobs, both of which exhibit low control over work were associated with incident diabetes. Workplace initiatives which take into account psychosocial work factors that may be effective in mitigating effects of job stress among older adults should be explored in the workplace.

1231-S/P

IMPACT OF WALKING MEETINGS ON PRODUCTIVITY AND MOOD AMONG WHITE-COLLAR WORKERS PARTICIPATING IN A NOVEL WALKING MEETING PROTOCOL Hannah Kling*, Xuan Yang, Kristopher L. Arheart, Alberto Caban-Martinez (University of Miami Miller School of Medicine)

BACKGROUND: Many jobs encourage consecutive hours seated. Low levels of physical activity (PA) have been shown to increase risk for development of chronic diseases and suggestions to improve well-being and work productivity include reducing sitting time. Using a Walking Meeting (WaM) protocol designed to increase PA during regular seated meetings, we describe the correlations between objectively measured PA and productivity, and PA and mood among a sample of white-collar workers at baseline and for two weeks after they implemented the walking meeting process. **METHODS:** We recruited white-collar workers (n=17) at a university who had weekly meetings with teams of 2-3 workers. To measure objective PA, participants wore a GT3XP Actigraph Accelerometer throughout study participation. During the first week, participants kept their normal schedule and baseline measures were collected. Groups implemented WaM by changing their standard, sitting meeting to a walking meeting throughout the following 2 weeks. Participants completed a survey measuring productivity, and negative/positive mood before the baseline week, and after each of the 3 weeks. **RESULTS:** While there was no correlation after week one of WaM implementation, during the second week, there was a positive correlation between very vigorous PA and negative mood (Pearson moment correlation[r]=0.69, p-value=0.0125). Engagement in moderate levels of PA was significantly related to 4 productivity measures: work time missed, impairment while working, overall work impairment, and activity impairment (r=-0.59, p=0.0263; r=-0.61, p=0.0197; r=-0.62, p=0.0189; r=0.0058). **CONCLUSIONS:** There was a positive correlation between light/moderate PA and all measures of productivity during the second week of WaM implementation. Minutes spent in work-related moderate/vigorous PA increased after WaM implementation. The more negative a participant's mood, the more minutes they spent in vigorous PA.

1233

NULL ASSOCIATION BETWEEN WORKPLACE SOCIAL CAPITAL AND BODY MASS INDEX. RESULTS FROM A FOUR-WAVE PANEL SURVEY (J-HOPE STUDY) Toru Tsuboya*, Akizumi Tsutsumi, Ichiro Kawachi (Tohoku University)

Research on the longitudinal association of workplace social capital and obesity is limited. We sought to investigate the prospective association of social capital in the workplace with body mass index (BMI) among employees in Japan. We used repeat panel surveys from 12 private companies in Japan. In the present study, four annual surveys waves were used, including 8811, 10608, 9766, and 6249 participants, respectively. The first survey was conducted between October 2010 and December 2011 (response rate = 77.4%), and the following three surveys were conducted at approximately annual intervals. Questionnaires inquiring about workplace social capital, and other characteristics were administered at each survey. Height and weight were objectively measured in 11 companies, and self-reported in one company. Cross-sectional as well as fixed effects analysis of change in social capital and change in BMI were conducted. Analyses were stratified by age, sex, BMI at baseline, and companies. The analysis was conducted in 2015. Over 3 years, approximately 32% of the participants changed their BMI by more than 1 unit, while workplace social capital changed for approximately 78% of the sample. We found no associations between change in workplace social capital and change in BMI. The null association was preserved across stratified analyses by sex, age, overweight/obesity status at baseline, and companies. Workplace social capital is not associated with changes in employee BMI.

1240

IS ADOLESCENCE A SENSITIVE PERIOD FOR HOUSING POLICY EFFECTS ON RISKY BEHAVIORS? Nicole M Schmidt*, Theresa L Osypuk (University of Minnesota, Minnesota Population Center)

Adolescent risky behaviors are significant public health concerns and often co-occur. Neighborhood context may be one upstream cause, but extant observational research may be biased. Developmental theories suggest that intervening early in life to change detrimental exposures could improve outcomes. We leverage the only experimental design available to test 1) how neighborhood and housing changes affect adolescent risky behaviors, and 2) whether the child's age when the family moved into better neighborhoods modifies treatment effects. We use the Moving to Opportunity (MTO) study, which randomly assigned volunteer families to 1 of 3 treatment groups at baseline (1994-1997): a low poverty group receiving a Section 8 rental voucher redeemable in low-poverty neighborhoods and housing counseling; a Section 8 group receiving a traditional voucher; and a public housing control group. Our outcome was a global index of risky behaviors (measured in 2002, N=2829) defined as the fraction of four items the youth ever engaged in (alcohol, cigarette, or marijuana use, sexual intercourse). We combined the two voucher groups because effects were homogenous ($p>.05$). The voucher treatment main effect on risky behavior index (RBI) was nonsignificant for girls, and harmful for boys (B(SE) = .06(.02), 95% CI 0.01,0.11) (treatment gender interaction $p=.005$). There was also a 3-way interaction among treatment, gender, and baseline age ($p=.03$), where only older children exhibited treatment effects. Treatment boys 10y or older were more likely ($p<.05$) than controls to exhibit risky behaviors (an adverse effect), while boys <10y had no treatment effect. Treatment girls older than 13y were less likely than controls to exhibit risky behaviors ($p<.05$) (a beneficial effect), while girls <11y had no treatment effect. These findings suggest the need to incorporate additional supports for families of teenage boys who receive rental vouchers, to buffer adverse consequences of moving at older ages.

1242

CHANGES IN NEIGHBORHOOD-LEVEL RACIAL RESIDENTIAL SEGREGATION AND CHANGES IN SYSTOLIC BLOOD PRESSURE: THE CORONARY ARTERY RISK DEVELOPMENT IN YOUNG ADULTS (CARDIA) STUDY Kiarri Kershaw*, Ana V Diez Roux, Mercedes R Carnethon, Peter J De Chavez, David C Goff, Jr, Penny Gordon-Larsen, Margaret T Hicken, Whitney R Robinson (Northwestern University Feinberg School of Medicine)

In this study we examined the relationship between change in neighborhood-level racial residential segregation and change in systolic blood pressure (SBP) among 2,281 black CARDIA participants (age 18-30 at baseline) examined up to 6 times over 25 years. To investigate whether reductions in segregation are associated with reductions in SBP, we also examined this relationship among the 1,862 participants living in highly segregated neighborhoods at baseline. Racial residential segregation was measured using the Gi* statistic, a z-score measuring the extent to which the racial composition (i.e., percent black) of a given neighborhood (census tract) deviates from the composition of the larger surrounding metropolitan area or county. High segregation was defined as a $Gi^*>1.96$. SBP was modeled continuously; 10 mm Hg was added to SBP for participants on blood pressure-lowering medications. Fixed-effects modeling was used to estimate the associations of within-person change in exposure to segregation and within-person change in SBP, while tightly controlling for time-invariant confounders. SBP increased by 0.15 mm Hg (95% Confidence Interval (CI): 0.03, 0.26) with each unit increase in segregation in models adjusted for time-varying education, income, marital status, neighborhood poverty, body mass index, current smoking, physical activity, time, and interactions of time with age, sex, and field center. Among participants who lived in highly segregated neighborhoods at baseline, changes to moderate levels of segregation ($0<Gi^*<1.96$) were associated with 1.26 mm Hg reductions in SBP (95% CI: -2.19, -0.32). Changes to low levels of segregation ($Gi^*<0$) were related to reductions in SBP of similar magnitude ($= -1.34$; 95% CI: -2.38, -0.31). These findings confirm previous cross-sectional studies relating higher segregation to higher blood pressure. They also extend the existing literature by showing that decreases in racial segregation are associated with reductions in SBP.

“-S/P” indicates work done while a student/postdoc

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OUT OF THE LABOUR FORCE AND SCHOOL: A COMPARISON OF HEALTH INEQUALITY AND YOUTH LABOUR FORCE PARTICIPATION IN CANADA AND THE US Anita Minh*, Arjumand Siddiqi, Carles Muntaner, Patricia O'Campo, Jelani Kerr (School of Population and Public Health, University of British Columbia)

Background: This study compares the health of young adults who are out of the labour force and out of school (OLF) in Canada and the United States (US). OLF young adults may be vulnerable to poor health because they may be excluded from both work and school. However, strong social policies may bolster income and provide other goods and services to protect youth from economic vulnerability. While both the US and Canada are democratic, wealthy countries with a substantial number of educational and labour detached youth, the two countries exhibit marked differences with respect to their social policies. **Methods:** Using nationally representative samples of youth, ages 25-29, from Canada ($n=5,080$) and the US ($n=4,482$), we estimated the risk of poor self-rated health across categories of labour force participation (OLF/unemployed/students/employed students/employed non-students). Estimates were adjusted for demographic variables and stratified by SES (participants' educational attainment) and gender. **Results:** The proportion of OLF young adults was higher in the US (13.3%) than in Canada (4.47%). While in both countries the association between OLF and health status differed by SES and gender, the magnitude of these differences varied by country. OLF youth with less than high school education in both the US and Canada were more at risk of poor health than those with higher educational attainment. However, in Canada, OLF was associated with poor health for young adults regardless of educational status, while in the US, OLF was only associated with poor health amongst those with less than high school education. Both in Canada and in the US, OLF was associated with poor health for both males and females but the gender-differences were greater in the US. **Conclusion:** The findings of this study provide evidence of differences in the magnitude of health inequalities associated with labour force participation between the Canadian and US political and economic climates.

1243-S/P

INCOME INEQUALITY AND CARDIOVASCULAR DISEASES: A MULTILEVEL ANALYSIS OF ELDERLY RESIDENTS OF SAO PAULO, BRAZIL. Kaio Henrique Massa*, Roman Pabayo, Yeda Aparecida Duarte, Maria Lúcia Lebrão, Alexandre Chiavegatto Filho (School of Public Health - University of Sao Paulo)

Introduction: Population aging is a global phenomenon that has led to important social and healthcare changes. Chronic diseases are now responsible for the highest number of years spent with a disability among the elderly. The extremely unequal distribution of income in São Paulo may be associated with some chronic diseases, such as cardiovascular diseases (CVD). **Objective:** We aimed to analyze the effect of area-level income inequality with CVD morbidity among elderly residents of Sao Paulo, Brazil. **Methods:** We analyzed 1,333 individuals aged 60 or older residing in 32 administrative areas of the city of Sao Paulo in 2010, from the Health, Welfare and Aging (SABE), a representative sample of elderly residents of Sao Paulo. The association between income inequality and CVD morbidity was analyzed with Bayesian multilevel models, after controlling for individual factors (sex, age, race, education, income, marital status, alcohol ingestion, smoking, BMI and presence of comorbidities) and area-level (average income of the administrative area). **Results:** At the individual level, older age, education, marital status, alcohol ingestion and presence of hypertension and diabetes were associated with risk for CVD. At the contextual level, we found a consistently significant association between income inequality and risk of CVD even when controlling for average area-level income. In comparison with elderly residents in areas on the lowest quartile of income inequality, there was an increased risk of CVD among residents of the 2nd (OR=1.35 IC95%=1.15-1.59), 3rd (OR=2.71 IC95%=2.18-3.36) and 4th (OR=1.43 IC95%=1.14-1.79) quartiles. **Discussion:** The results highlight the importance of area-level income inequality on CVD risk. Our findings for the largest Latin American city indicate the need to develop healthcare policies focused on the effect of both individual and contextual characteristics.

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VISUALIZING SENSITIVITY ANALYSIS IN EPIDEMIOLOGIC STUDIES: THE EAGER TRIAL. Enrique Schisterman*, Neil Perkins (DIPHR / NICHD / NIH)

Early withdrawals and missing data are common challenges in estimation of etiologic relations. The underlying missingness mechanism may lead to biased estimation and, unfortunately, not all missingness mechanism assumptions can be empirically tested. Among available methods to account for missing data, multiple imputation (MI) is a commonly used technique which accounts for ignorable missingness by generating multiple, complete datasets. We proposed a sensitivity analysis to determine the plausibility of underlying missingness mechanisms via a new graphical representation of the data under all the possible imputation scenarios coupled with imputations from traditional MI. Using data from the EAGER Trial (n=1228), we estimated the relative risk (RR) for preconception low dose aspirin (LDA) versus placebo on pregnancy and live birth. Due to early withdrawal, 128 participants had unknown pregnancy status and 140 with missing live birth status. An intent to treat analysis under complete case (CC) and MI approaches revealed similar pregnancy RR=1.09 (pvalue=0.02, for both CC and MI) and live birth RR=1.10 (CC pvalue=0.08 and MI pvalue=0.09). The sensitivity analysis using this graphical tool allowed for visualization of these point estimates in the context of all possible and plausible realizations of missingness scenarios. Additionally and in this case, overlaying the RR of the 500 imputed data sets shows a robust effect of LDA on pregnancy, regardless of missingness mechanism. This visualization technique is easily interpretable, providing a more complete and comprehensive picture of risk estimated with missing data.

1252- S/P

MEDIATION ANALYSIS FOR SURVIVAL OUTCOME WITH TIME-VARYING EXPOSURES, MEDIATORS, AND CONFOUNDERS: A CASE STUDY OF THE FRAMINGHAM HEART STUDY Sheng-Hsuan Lin*, Eric Tchetgen Tchetgen, Tyler VanderWeele (Department of Epidemiology and Biostatistics, Harvard Chan School of Public Health)

This study proposes an approach to conduct mediation analysis for survival data with time-varying exposure, mediators, and confounders. We identify the direct and indirect effects through a survival mediational g-formula and provide the required assumptions. We also provide a feasible parametric approach along with an algorithm and software to estimate these effects. We apply this method to analyze the Framingham Heart Study data to investigate the causal mechanism of smoking on mortality. The risk ratio of smoking 30 cigarettes per day for ten years compared with no smoking on mortality is 2.30 (95 % CI = (1.36, 2.88)). Among the effect, 7.91 % is mediated by coronary artery disease. The survival mediational g-formula demonstrates a powerful tool for conducting mediation analysis in longitudinal dataset.

1251- S/P

A BAYESIAN APPROACH TO THE G-FORMULA FOR ESTIMATING INTERVENTION EFFECTS IN SPARSE DATA Alexander Keil*, Jessie Edwards, Jessie Buckley, Stephanie Engel (University of North Carolina at Chapel Hill)

Epidemiologists often wish to estimate quantities that are easy to communicate and correspond to the results of realistic public health scenarios. Methods from causal inference can answer these questions. Often, however, these approaches are modeling intensive, which may be problematic in sparse data scenarios, including those with long follow-up, small sample sizes, or correlated exposures. In a Bayesian framework, each of these problems is ameliorated by incorporating prior information to strengthen inference. We develop a Bayesian approach to one causal model, the g-formula, to estimate the effects of interventions in sparse data scenarios. Simulation studies in small samples suggest that the Bayesian g-formula outperforms the standard g-formula with respect to mean squared error. In an applied example, we estimate the effect of environmental tobacco smoke on body mass index z-scores among 69 children aged 4-9 years who were enrolled in a longitudinal birth cohort in New York, USA. Each mother child pair was enrolled prospectively during pregnancy and attended 3 study visits during childhood. In the final study visit, the mean BMI z-score (95% confidence interval) was 0.59 (0.32, 0.85). Under an intervention to prevent environmental tobacco smoke, the posterior expected mean BMI z-score (95% credible interval) was 0.44 (0.10, 0.79). Under a scenario in which all children were exposed to tobacco smoke, the posterior expected mean z-score was 0.80 (95% credible interval: 0.07, 1.54). The difference in z-score comparing the scenario in which all children were exposed to the scenario in which no children were exposed intervention to prevent exposure reduced by 0.36 (95% credible interval -0.49, 1.21). Environmental tobacco smoke exposure may be associated with higher BMI in children. Because the Bayesian g-formula can estimate intervention effects in observational data while incorporating prior information, it may be generally useful for informing policy decisions.

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COUNTERFACTUAL RISKS, POPULATION EXCESS RISKS AND POPULATION ATTRIBUTABLE FRACTIONS USING MARGINAL PREDICTIONS FROM MULTIVARIABLE REGRESSION MODELS WITH COMPLEX PROBABILITY OR RESPONDENT-DRIVEN SURVEY DATA Greta Bauer* (Epidemiology & Biostatistics, Western University, London, Canada)

Counterfactual theory has allowed for a clear definition of confounding and advanced the study of causal effects. However, counterfactual theory as commonly presented contains implicit assumptions regarding the types of risk comparisons that are important, and thus the type of questions addressed. These presentations tend to focus on causal effects estimates for individual-level treatment effects (e.g. RR), wherein members of the target population are either universally exposed or unexposed. Population excess risks and population attributable fractions may be calculated using RRs combined with known exposure prevalences, but these methods become problematic when adjustments have been applied. Application of counterfactual theory to estimation of population health impact presents opportunities to more clearly articulate population comparisons, and for more transparent analytic strategies for measures of population impact. Here we may be interested in comparing a population factual to a counterfactual estimate of risk under a different exposure condition, under a standard distribution of population characteristics, including confounders. Probability-based population samples provide an opportunity to directly estimate both current risks and counterfactual risks under conditions of different population risk distribution, provided that risk does not impact survival. We present a method for estimating population excess risks and population attributable fractions from population data sets, using average marginal predictions (model-standardized risks) from multivariable regression models, weighted to population structure, and standardized to counterfactual-based sets of confounders. Limitations on interpretation of results are discussed, and applications are presented for complex probability samples and respondent-driven samples using SUDAAN software.

1254

COMPARING DYNAMIC TREATMENT STRATEGIES THAT DEPEND ON DIFFERENT SETS OF BIOMARKERS Lauren Cain*
(Department of Epidemiology, Harvard T.H. Chan School of Public Health)

Dynamic treatment strategies often involve treatment changes when a biomarker, or combination of biomarkers, reaches some threshold. When the goal is to compare dynamic strategies that are based on different sets of biomarkers with different distributions of time to reaching the threshold, superiority of one of the strategies may simply reflect the benefits of early treatment changes as opposed to changes based on a particular biomarker. For example, consider two dynamic strategies to switch antiretroviral therapy in HIV-positive patients: (1) switch within 90 days of HIV-RNA crossing above 200 copies/mL, and (2) switch within 90 days of HIV-RNA crossing above 200 copies/mL or hemoglobin worsening, whichever occurs first. Any advantages of Strategy 1 over 2 may be the result of switching earlier rather than using information on hemoglobin. To differentiate between these possibilities, we propose Strategy 3: switch within 90 days of HIV-RNA crossing above 200 copies/mL or when they are randomly assigned to switch. This random threshold for switching will be chosen to have the same distribution as the indication for switching in Strategy 2, but is not associated with hemoglobin nor mortality prognosis. Here we will explore the bias and statistical properties of this approach to distinguishing between the effects of early and biomarker-based switching. Our analysis will be restricted to HIV-positive individuals who become virologically suppressed following antiretroviral therapy initiation. We will use both inverse-probability weighting and the parametric g-formula to appropriately adjust for time-varying confounding. The method will be applied to data from the HIV-CAUSAL Collaboration.

1260-S/P

MATERNAL VITAMIN D SUPPLEMENTATION IN THE PERICONCEPTIONAL PERIOD AND CHILD RISK OF AUTISM SPECTRUM DISORDER Marin Strøm*, Kristen Lyall, Charlotta Granström, Alberto Ascherio, Sjørdur F Olsen (Centre for Fetal Programming, Statens Serum Institut)

Background and aim There is little research examining maternal vitamin D in association with autism spectrum disorder (ASD), though there is biological plausibility for a relationship. Vitamin D has been hypothesized to have an association with ASD based on reports of increased prevalence of ASD in children of darker-skinned immigrant mothers who moved to higher latitudes and in children born in certain seasons. In animal studies, rats born to vitamin D-deficient dams have been found to have significant alterations in the brain. In humans, maternal vitamin D insufficiency has also been linked with impaired child language development at 5 and 10 years old. No study has examined the relationship between maternal or gestational vitamin D and ASD diagnosis specifically. Therefore our aim was to test the hypothesis of an inverse association between maternal vitamin D supplementation in the periconceptional period and child risk of ASD in the large prospective Danish National Birth Cohort (DNBC). **Methods** We used data from 62,598 mother-child pairs from the DNBC excluding children <2500g or gestational age <32 weeks. Data on vitamin D supplementation from 4 weeks prior to pregnancy until gestational week 12 was collected by a recruitment form. ICD-10 diagnosis codes on ASD (F840, F841, F845, F848 and F849) was obtained from the mandatory National Patients Registry. **Results** There were 890 children with a diagnosis of ASD. We saw no association between vitamin D from supplements in the periconceptional period and ASD, adjusted HR for week -4;12 was 1.29 (95% CI 0.99;1.67) for >0.5 vs 0 µg/day, and 1.20 (0.98;1.46) for >5 vs 0 µg/day. The same was the case when we looked at 4 week intervals separately, and also when we examined childhood autism as a separate outcome. **Conclusion** In this large prospective cohort study we were not able to substantiate an association between maternal vitamin D supplementation during the periconceptional period and child risk of ASD.

1262

ARE CONSUMPTION OF DAIRY PRODUCTS AND PHYSICAL ACTIVITY INDEPENDENTLY RELATED TO BONE MINERAL DENSITY OF 6 YEARS-OLD CHILDREN? Renata Bieleman*, Juliana Vaz, Marlos Domingues, Alícia Matijasevich, Iná Santos, Ulf Ekelund, Bernardo Horta, Pedro Curi Hallal (Post-Graduate Program in Epidemiology, Federal University of Pelotas, Brazil.)

Dairy products are probably the main calcium sources during childhood. Physical activity (PA) during childhood may improve bone mineral density (BMD). There is no consensus if the effects of PA and calcium consumption are additive or there is interaction. Therefore, the study evaluated how both factors may influence bone density in 6 years-old children from a birth cohort. The study started in 2004 and mother/child were interviewed and measured periodically since birth to the age of 6. PA was measured by maternal proxy (at 4 and 6 years) and using accelerometry (at 6 years). Consumption of dairy products was measured using a 24-hour food recall (at 4 years) and a food frequency questionnaire (6 years). Total body and lumbar (L1-L4) BMD (g/cm²) were measured by DXA scan. From the original birth cohort, 3444 6-year-olds were submitted to DXA scan whereas 2636 children provided adequate accelerometry data. Consumption of dairy products at 4 years was positively associated with higher lumbar spine BMD at 6 years only in boys, while current consumption was positively associated in boys and girls (p<0.001). PA by maternal report was associated with higher BMD at 6 years, except for lumbar spine BMD in girls. PA by accelerometry was positively related with BMD; however in girls only lumbar spine density was significantly associated. Sex was not a modifier of effect of most exposures. There was no clear evidence of interaction between the effect of physical activity and consumption of dairy products on BMD. We observed positive longitudinal and cross-sectional associations between consumption of dairy products and PA with BMD in total body and lumbar spine of young children, reinforcing the need for early behavioral interventions with this population as a means of improving later bone health.

1261-S/P

METABOLITE BIOMARKERS OF DIET AND BREAST CANCER RISK Mary Playdon* (Yale University/National Cancer Institute)

Associations between diet and breast cancer are controversial, owing to inconsistent findings potentially reflecting bias and measurement error inherent in self-report. We examined objective dietary biomarkers and incident breast cancer in a nested case-control study within the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial (PLCO). We included 621 postmenopausal breast cancer cases and 621 controls matched on age, diagnosis/blood collection dates, and hormone use. Relative concentrations of 627 plasma metabolites were measured using mass spectrometry. We first identified metabolites associated with 54 diet items using partial Pearson correlation, controlling for blood draw age, case-status, smoking, diabetes, body mass index, physical activity, education and caloric intake (Bonferroni correction). Next, diet-associated metabolites (90th vs.10th percentile) were examined in relation to breast cancer using conditional logistic regression, controlling for previous covariates and breast cancer risk factors (False Discovery Rate<0.2), stratified by estrogen receptor (ER) subtype (N=418 ER+/144 ER-). There were 181 Bonferroni-significant diet-metabolite associations, including for vitamin E (α-tocopherol, r=0.34), and alcohol (ethyl-glucuronide, r=0.35). No metabolites associated with overall or ER- breast cancer, but eight associated with ER+ subtype. Five were alcohol-related, including steroid hormones (4-androsten-3,17 diol disulfate-1 (OR=1.8, 95% CI:1.2-2.7), etiocholanolone-glucuronide (OR=1.8, 95% CI:1.1-2.8), 4-androsten-3,17 diol monosulfate-2 (OR=1.7, 95% CI:1.2-2.6); xenobiotics (ethyl-glucuronide (OR=1.8, 95% CI:1.3-2.7)); and lipid (α-hydroxyisovalerate (OR=2.0, 95% CI:1.3-3.0)). α-tocopherol (OR=2.0, 95% CI: 1.3-3.0) and α-tocopherol (OR=1.9, 95% CI: 1.1-3.0) were positively associated with ER+ subtype. Metabolites related to alcohol (including sex steroid hormones) and vitamin E (tocopherol metabolites) are associated with ER+ but not overall or ER- breast cancer.

1263-S/P

TIMING AND TYPE OF ALCOHOL CONSUMPTION AND THE METABOLIC SYNDROME - ELSA-BRASIL Bruna Vieira*, Vivian Cristine Luft, Maria Inês Schmidt, Lloyd Chambless, Dora Chor, Sandhi Maria Barreto, Bruce Duncan (Postgraduate Program in Epidemiology and Hospital de Clínicas de Porto Alegre, Federal University of Rio Grande do Sul, Porto Alegre, Brazil)

Background: The prevalence of the metabolic syndrome is rising worldwide. Its association with alcohol intake, a major lifestyle factor, is unclear, particularly with respect to the influence of drinking with as opposed to outside of meals. **Methods:** In cross-sectional analyses of 14,375 civil servants (aged 35-74 years) of the Brazilian Longitudinal Study of Adult Health (ELSA-Brasil), we investigated the association of the quantity of alcohol, the timing of consumption with respect to meals and the predominant beverage type (wine or beer), with the metabolic syndrome and its components. **Results:** In analyses adjusted through logistic regression models for age, sex, educational level, income, socioeconomic class, ethnicity, smoking, body mass index and physical activity, light consumption of alcoholic beverages with meals was inversely associated with the metabolic syndrome (up to 4 drinks/week: OR=0.85, 95% CI 0.74 – 0.97; 4 to 7 drinks/week: OR=0.75, 95% CI 0.61 – 0.92), compared to abstention/occasional drinking. On the other hand, greater consumption of alcohol (>7 drinks/week) when consumed outside of meals was significantly associated with the metabolic syndrome (7 to 14 drinks/week: OR=1.32, 95% CI 1.11 – 1.57; more than 14 drinks/week: OR = 1.60, 95% CI 1.29 – 1.98). Drinking predominantly wine, which occurred mostly with meals, was never significantly associated with higher odds of most components of the syndrome. Drinking predominantly beer, most notably when outside of meals and in larger quantity, was frequently associated with the metabolic syndrome and many of its components. **Conclusions:** The alcohol – metabolic syndrome association differs markedly depending on the relationship of intake to meals. Consuming relatively small doses with meals may protect against the syndrome, while consuming larger quantities outside of meals may confer risk. Beverage preference – wine or beer – appears to underlie at least part of this difference.

1264-S/P

ASSOCIATION BETWEEN EDUCATION AND ANTHROPO-METRIC INDICATORS AS INCOME IMPROVES OVER A DECADE OF OBSERVATION Macarena Lara*, Jay Kaufman, Patricia Bustos, Hugo Amigo (School of Public Health, Faculty of Medicine, University of Chile)

Background It has been reported that people with more education have healthier anthropometric indicators, but it is unclear to what degree this is due to economic improvements. **Objective** To analyze the association between education and body mass index (BMI) and skinfold sum (SS), considering the change in income from 2000 to 2010 in Chilean adults. **Methods** A cohort study was conducted. From 3096 births in the Limache Hospital from 1974 to 1978, 998 people were randomly selected in 2000 and 650 of them were followed in 2010. Socioeconomic and anthropometric variables were measured. The exposure, “education 2000” was dichotomized (< 8 years, >8 years) as well the mediator “change in income 2000-2010” (increased, decreased). Both outcomes, “BMI 2010” and “SS 2010”, were measured continuously. Using mediation analysis, the controlled direct effect (CDE) of education on BMI and SS while setting the mediator to increased income was estimated using models stratified by sex, adjusted for age, maternal education and parental obesity, and weighted to account for loss to follow-up. **Results** Of the 650 adults, 27% had low education in 2000 and 75% increased their income. In 2010, women with low education were 1.3 cm shorter (CI: 0.1, 2.6) and 3.7 kg heavier (CI: 0.5, 7.0) than the high education group. Men with low education were 4.4 cm shorter (CI: 2.5, 6.3) and 6.3 kg lighter (CI: 1.9, 10.7) than the high education group. The CDE showed that when setting income to increase for everyone, women with low education had 2.6 kg/m² higher BMI (CI: 0.9, 4.2) and 8.7 mm higher SS (CI: 1.0, 16.4) than the high education group, while men with low education had 0.1 kg/m² less BMI (CI: -1.8, 1.9) and 10.1 mm less SS (CI: 1.3, 19.0) than the high education group. **Conclusion** Faced with an improvement in income over time, low education increased anthropometric indices in women and decreased them in men, confirming a qualitative interaction by gender for these socioeconomic inequalities in health.

1270-S/P

ASSOCIATION BETWEEN SATELLITE-BASED ESTIMATES OF LONG-TERM PM_{2.5} EXPOSURE AND DEGREE OF CORONARY OCCLUSION Laura McGuinn*, Cavin Ward-Caviness, William Kraus, Elizabeth Hauser, Alexandra Schneider, Alexandra Chudnovsky, Petros Koutrakis, David Diaz-Sanchez, Lucas Neas, Robert Devlin (University of North Carolina at Chapel Hill)

Background: Epidemiological studies have found associations between both short and long-term PM_{2.5} exposure and cardiovascular events, though many have relied on data from central-site air quality monitors. **Objectives:** We examined the associations between long-term PM_{2.5} exposure and coronary artery disease (CAD) in a cardiac catheterization cohort in North Carolina. **Methods:** We utilized a cohort of 5679 patients who had undergone cardiac catheterization at Duke University between 2002-2009 and resided in NC. We used temporally and spatially (10x10 km and 1x1 km) resolved estimates of daily PM_{2.5} concentrations from 2002-2009 for North Carolina based on satellite derived aerosol optical depth measurements. PM_{2.5} predictions were matched to each patients address and averaged for the year prior to catheterization. The CAD index was used to measure severity of CAD, and individuals with an index >23 were considered cases. Logistic regression was used to model odds of having CAD or a myocardial infarction (MI) with each unit increase in annual average PM_{2.5}. Odds ratios (OR) and 95% confidence intervals (CI) were calculated per unit (µg/m³) increase in PM_{2.5}, adjusting for gender, race, smoking status and socioeconomic status. **Results:** There were a total of 2491 people with a CAD index >23 and 704 that had experienced a recent MI. In adjusted models, a 1µg/m³ increase in PM_{2.5} was associated with an 11.1% relative increase in the odds of significant CAD (95% CI: 4.0%-18.6%) and a 14.2% increase in the odds of having a recent MI (95% CI: 3.7% - 25.8%), when using the 10x10 km satellite data. **Conclusions:** Long-term PM_{2.5} exposure was associated with both coronary artery disease and incidence of myocardial infarction in a well-characterized cohort of cardiac catheterization patients. This abstract does not necessarily reflect U.S. EPA policy.

1272-S/P

ADJUSTING FOR REVERSE CAUSATION IN OBESITY PARADOX, THE ATHEROSCLEROSIS RISK IN COMMUNITIES (ARIC) STUDY Maryam Shakiba*, Hamid Soori, Mohammad Ali Mansournia, Arsalan Salari (Guilan interventional cardiovascular research center. Guilan university of medical Sciences)

Purpose: The lower mortality rate of obese patients in heart failure (HF) cases has been partly attributed to reverse causation bias due to weight loss caused by disease. Using the weight both prior and after HF, this study aimed to adjust for reverse causation and examine the association of obesity both before and after HF with mortality. **Methods:** Using Atherosclerosis Risk in Communities (ARIC) study, 308 patients with data available on before and after development of incident HF included. Pre and post-morbid obesity defined based on body mass index measurements at least three months before and after incident HF. The associations of pre and post-morbid obesity and weight change with survival after HF evaluated using Cox proportional hazard model. **Results:** Pre-morbid obesity associated with higher mortality (HR=1.73, 95%CI: 1.13-2.66, p=0.01) but post-morbid obesity associated with increased survival (HR=0.57, 95%CI: 0.37-0.87, p=0.01). Adjustment for weight change due to disease as the confounder for obesity-mortality relation resulted in no significant association of post-morbid obesity and mortality. **Conclusions:** This study demonstrates that controlling for reverse causality through adjustment for weight change as the confounder may remove or inverse the protective effect of obesity on mortality among patients with incident HF.

1271-S/P

EXPOSURE TO BIOMASS COOKSTOVE SMOKE AND BLOOD PRESSURE AMONG WOMEN IN RURAL HONDURAS Bonnie Young*, Maggie L. Clark, Sarah Rajkumar, Megan L. Graham, Annette Bachand, Robert Brook, Tracy L. Nelson, John Volckens, Stephen J. Reynolds, Christian L'Orange, Sebastian Africano, Anibal B. Osorio Pinel, Jennifer L. Peel (Department of Environmental and Radiological Health Sciences, Colorado State University, Fort Collins, CO, USA.)

Background: Growing epidemiologic data suggest household air pollution may be linked to elevated blood pressure and risk of cardiovascular disease, particularly in low- and middle-income countries where families rely on biomass fuel for cooking. **Objective:** We explored the association between household air pollution from wood-burning cookstoves (both cleaner-burning and traditional stove models) and systolic and diastolic blood pressure among women in rural Honduras. **Methods:** Our cross-sectional study assessed 109 women aged 25-55 years from February to April 2015. Gravimetric personal and kitchen PM_{2.5} (particulate matter less than 2.5 µm in diameter) samples were collected over 24 hours. In-person interviews ascertained socio-demographic variables; blood pressure measurements were made between 8:30am and 12:00pm after the exposure measures. We used multivariable linear regression models to assess the association between log-transformed PM_{2.5} concentrations and systolic and diastolic blood pressure. **Results:** Mean (standard deviation, range) personal and kitchen 24-hour average PM_{2.5} concentrations were 105.9 µg/m³ (109.6, 12.6 to 978.5) and 261.1 µg/m³ (328.8, 12.6 to 1,653.9), respectively. Traditional stoves had higher personal and kitchen average PM_{2.5} concentrations (135.1 and 350.3) as compared to cleaner-burning stoves (65.9 and 142.8). Adjusting for relevant confounders (e.g., age, body mass index, and salt intake), we observed a 1-log-µg/m³ increase in kitchen PM_{2.5} exposure was associated with a 3.1 mmHg increase in systolic blood pressure (95% CI, 0.27, 5.94) and a 2.4 mmHg increase in diastolic blood pressure (95% CI, 0.32, 4.46), with suggestive evidence of a stronger association among women older than 40 (p-interaction=0.13 for systolic blood pressure). **Conclusion:** Consistent with previous studies, exposures to PM_{2.5} from the use of biomass cookstoves may contribute to elevated blood pressure, and these associations may be stronger among older women.

1273

NEIGHBORHOOD SOCIOECONOMIC INEQUALITIES AND RACIAL DIFFERENCES IN HEART DISEASE MORTALITY IN MISSISSIPPI Sai Kurmana* (Mississippi State Department of Health)

Objective: Our study analyzed associations among heart disease mortality, race/ethnicity, and neighborhood area poverty. **Methods:** We geocoded and linked heart disease mortality surveillance data for the year 2010. US census tracts were used for analysis and the proportion of population living below poverty level was our measure to monitor neighborhood socioeconomic inequalities in health. **Results:** There were 7,551 deaths due to heart disease mortality in the year 2010. The mean age at death was 63 years and the numbers of males and females were almost equal. Almost 69% of deaths were white, compared to about 30% blacks. The age-adjusted heart disease mortality rates for whites were 242.6 per 100,000 and 279.31 per 100,000 for blacks. Individuals >66 yr of age were >10 times more likely to die due to heart disease compared with those <45 yr of age. Census tract poverty was associated with higher all-cause heart disease mortality rates in the analysis. Compared with the Census tracts with <5% of the population below poverty level ("richest"), those with 5% to 9.9% of the population below poverty had 1.5 times higher mortality rate (314.4/100,000, 95% CI 295.1 to 333.7), those with 10% to 19.9% had 1.2 times higher mortality rate (249.6/100,000, 95% CI 240.5 to 258.8), and those with >20% of the population below poverty (federal poverty areas) had 1.7 times higher mortality rate (347.7/100,000, 95% CI 336.8 to 358.5). After adjustment for individual age and gender, the estimated Black White Rate Ratio (B:W RR) for heart disease increased to 5.0 (95% CI 4.8 to 5.1) compared with 3.9 in the crude model. **Conclusions:** The rate patterns show that higher neighborhood poverty is associated with progressively higher heart disease mortality for both blacks and whites. However, for blacks greater increases in heart disease mortality rates are observed as neighborhood socioeconomic status declines compared with whites.

1280-S/P

DIFFERENTIAL PREGNANCY TERMINATIONS: A SUFFICIENT BUT NOT NECESSARY SOURCE OF SELECTION BIAS

Jacqueline Cohen*, Sonia Hernandez-Diaz (Department of Epidemiology, Harvard T.H. Chan School of Public Health)

Background: Studies of the effect of early pregnancy exposures on the risk of congenital malformations often only include live births. It is understood that if the proportion of pregnancies terminated upon prenatal diagnosis of congenital malformations varies with exposure, selection bias would result. We questioned whether selection of livebirths could lead to bias in the presence of non-differential termination. **Objective:** To explore under which circumstances non-differential risk of pregnancy terminations would lead to biased estimates of teratogenic effects in studies restricted to live births. **Methods:** We carried out simulations to model the effects of differential and non-differential risks of pregnancy termination for both malformation and social reasons under various scenarios. We used as an example the association between antidepressants and major malformations. To inform the models we used data from a recent study which suggested that abortions for social reasons, but not after prenatal diagnosis of congenital malformations, may be different among women with and without antidepressant use. We used DAGs to graphically illustrate how the bias may arise. **Results:** Under the null and in the absence of unmeasured common causes, there is no bias as a result of differential social abortions if the termination risk due to malformations is non-differential with respect to exposure. However, if there is an effect of the exposure on the risk of malformations, a differential social abortion risk would cause a modest bias in at least one scale. Even in the presence of differential terminations for malformations, the bias is minimal when this risk is low. **Conclusion:** In the absence of differential termination risks for malformations, differential risk of social abortions may induce bias in studies of teratogenicity restricted to live births. We discuss under what scenarios and assumptions there would be such selection bias.

1282-S/P

ON NEONATAL MORTALITY AND THE GESTATIONAL-AGE PARADOX: PRENATAL PATHOLOGY AS AN UNMEASURED CONFOUNDER

Quaker Harmon*, Olga Basso, Clarice Weinberg, Allen Wilcox (National Institute of Environmental Health Sciences- Epidemiology Branch)

The calculation of gestational-age-specific neonatal mortality is contentious for perinatal epidemiologists. The conventional approach calculates gestational-age-specific risk as deaths among neonates born at a given gestational age. With a “fetuses-at-risk” approach, risk is instead based on deaths among all who were in utero at the given gestational age. We construct a simulation that demonstrates that both approaches are flawed for studying etiology. In our construction, causes of neonatal death arise from two distinct sets of mechanisms: One originates in fetal life, and comprises intrauterine pathologies (such as birth defects) that can kill either the fetus or the newborn. The other comprises factors that are birth-dependent – mainly complications of immaturity, but also including complications that present during or after delivery. The risk sets corresponding to those two sources of mortality are distinct: intrauterine pathologies develop among fetuses prenatally, while birth-dependent problems develop only later. The contributions of the two sources to neonatal mortality cannot be distinguished. Moreover, intrauterine pathologies confound the relation between gestational age and neonatal mortality by causing both early birth and neonatal death. We generate simulations that admit the two sources of neonatal death, and replicate the so-called gestational-age paradox (in which neonatal mortality at preterm weeks is lower in the higher-risk category, due to collider-stratification bias). Simulations also illustrate that, in calculating gestational-age-specific risk, neither denominator (fetuses or newborns) allows etiologic interpretation of effects of prenatal exposures. Valid etiologic inference is achievable by foregoing stratification on gestational age and simply including all live births in the denominator.

1281- S/P

EFFECT OF USING ‘CORRECTED AGE’ FOR CHILDREN BORN PRETERM IN THE ESTIMATION OF ASSOCIATIONS BETWEEN A PRENATAL EXPOSURE AND INFANT GROWTH OUTCOMES

Johnna Perdrizet*, Diego Bassani, Daniel Roth Nandita, Perumal, Alicia Matijasevich, Iná Santos (Dalla Lana School of Public Health, University of Toronto, Toronto, Canada)

In clinical practice, child growth standards are commonly applied to preterm infants using corrected age (CA) [postnatal age – 280 days + gestational age at birth (GA)], rather than postnatal age (PNA). However, CA is rarely used in epidemiologic cohort studies examining child growth that include preterm infants. To our knowledge, the implication of using CA vs PNA has not been compared in associations between prenatal exposures and child growth. In this proof-of-concept, we estimated the association between treatment for high blood pressure in pregnancy (HiBP) and infant length-for-age z-score (LAZ) or stunting [LAZ<-2] using the 2004 Pelotas (Brazil) Birth Cohort at 3- and 12-month postnatal visits. LAZs were calculated based on the World Health Organization Child Growth Standards, using 1) PNA for all infants (PNA method) or 2) CA for preterm and PNA for term infants (CA). Mean difference (MD) or odds ratio (OR) and 95% CIs for HiBP-LAZ or HiBP-stunting associations were estimated by linear or logistic regression, respectively. The preterm birth rate was 21% and 11% for HiBP and not-HiBP, respectively, and HiBP was associated with lower GA ($p<0.001$). HiBP was associated with lower mean LAZ or stunting at 3 months ($n=3,849$); however, the effect was attenuated using CA vs PNA [MD(95%CI): $-0.17(-.30, -.04)$ vs $-0.38(-.52, -.23)$] or [OR(95%CI): $1.8(1.1, 2.7)$ vs $2.3(1.7, 3.3)$]. At 12 months ($n=3,795$), HiBP was not associated with mean LAZ or stunting using CA vs PNA [MD(95%CI): $-0.04(-.17, .10)$ vs $-0.11(-.24, .03)$] or [OR(95%CI): $1.2(0.7, 2.0)$ vs $1.4(0.9, 2.2)$]. Inferences were similar based on multivariable-adjusted models. In conclusion, since HiBP was associated with GA, using PNA to calculate LAZ for preterm infants biased HiBP-LAZ/stunting associations. As expected, the effect of using CA declined from 3 to 12 months. Epidemiologists should consider using CA in studies of cohorts that include preterm infants, particularly when analyzing early infant growth outcomes.

1283-S/P

TIME-VARYING CONFOUNDING OF THE ASSOCIATION BETWEEN PERFLUOROALKYL ACIDS AND TIME TO PREGNANCY: AN EXAMPLE FROM THE DANISH NATIONAL BIRTH COHORT

Cathrine Carlsen Bach*, Niels Bjerregård Matthiesen, Jørn Olsen, Tine Brink Henriksen (Perinatal Epidemiology Research Unit, Aarhus University Hospital, Aarhus, Denmark)

Background: Previous studies have investigated the associations between levels of perfluoroalkyl acids (PFAAs) in women and time to pregnancy (TTP). Inconsistent results may be explained by differences in whether and how studies conditioned on parity. We used causal directed acyclic graphs (DAGs) to evaluate the causal structure of the association and exemplified the approach in a sample of Danish women. **Methods:** According to our DAGs, studies including parous women may be confounded by factors related to previous pregnancies as well as the interpregnancy interval. To test this hypothesis, we included 638 nulliparous women and 613 parous women from the Danish National Birth Cohort who provided a blood sample and reported their TTP during early pregnancy. By the use of discrete-time survival analyses we estimated the associations between quartiles of plasma PFAAs, including perfluorooctane sulfonate and perfluorooctanoate (PFOA), and TTP, adjusted for potential confounders. **Results:** In nulliparous women, we found no association between PFAA levels and TTP [e.g. for PFOA: fecundability ratio (95 % confidence interval) 0.92 (0.73; 1.15), highest versus lowest quartile]. In parous women, higher PFAA levels were associated with longer TTP [e.g. for PFOA: fecundability ratio (95 % confidence interval) 0.63 (0.47; 0.86), highest versus lowest quartile]. Adjusted for interpregnancy interval, these associations were attenuated. **Conclusions:** The associations between PFAAs and TTP in parous women could be due to confounding by factors related to previous pregnancies and the duration of the interpregnancy interval. In studies of the association between PFAA levels measured during pregnancy and TTP, restriction to nulliparous women may minimize such bias. These issues may also apply to other chemicals with properties similar to PFAAs i.e. sharing the same or similar pharmacokinetic structures (accumulation in the body and excretion during pregnancy and breastfeeding).

1284-S/P

THE ROLE OF FETAL GROWTH AS A MEDIATOR OF THE RELATIONSHIP BETWEEN MATERNAL EXPOSURES AND PERINATAL DEATH Alexandra V. C. Seaward*, Olga Basso, Jay S. Kaufman, Robert Platt (McGill University)

Intra-uterine growth restricted infants have a higher risk of adverse perinatal outcomes, although the role of fetal growth as a causal mediator is not fully understood. Studies on fetal growth often use small-for-gestational age (SGA) thresholds from birth-weight-for-gestational-age charts, which are biased at preterm gestational ages when predicting perinatal outcomes. To adjust for these limitations, other methods for classifying fetal growth have been proposed. The study objective was to investigate fetal growth as a mediator (measured by SGA thresholds) between maternal exposures and perinatal death, using singleton live births and fetal deaths (n=10,357,248) from 2007-2009 US Vital Statistics birth cohort linked birth/infant death and fetal death datasets. Exposures were maternal smoking during pregnancy (never vs. smoker) and maternal race (white, black, other). Perinatal death was defined as fetal death ≥ 22 weeks gestation and neonatal death (infant death <28 days of life). SGA was defined as live birth-based (standard) or non-customized ultrasound-based. Log-binomial regression models were used to estimate the total effect of maternal smoking or race on perinatal death and the direct effect by conditioning on SGA. Log-binomial marginal structural models with stabilized inverse probability weighting were used to estimate the controlled direct effect (CDE) (setting mediator to non-SGA). Direct effect adjusted risk ratios were similar between the standard mediation model and MSM model for both exposures. CDE estimates differed depending on the definition of SGA, standard vs. ultrasound: (maternal smoking) RR 1.22 [95% CI: 1.16-1.27] vs. RR 1.14 [95% CI: 1.09-1.19], and (black race) RR 1.94 [95% CI: 1.89-2.00] vs. RR 1.84 [95% CI: 1.79-1.89]. Results suggest that SGA partially mediates the effect of maternal smoking or race on perinatal death but live birth-based SGA may overestimate the CDE. Future analyses will address the impact of unmeasured confounding.

1290

PREVALENCE OF DECREASED GLOMERULAR FILTRATION RATE IN ELDERLY: A POPULATION-BASED STUDY

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Background: Since GFR decreases with ageing, a low GFR in old people might be due to a physiologic process instead of being a mark of disease. However, comorbidities can superimpose on this process, and reduce GFR by a pathologic course. This study aims to assess the prevalence of low GFR in a geriatric population in a developing country megalopolis and the prevalence of low GFR in the absence of coincident diseases. **Method:** a multistage cluster sampling (1,353 inhabitants) was used in order to obtain a sample representative of the elderly population of São Paulo megalopolis (1,249,388 inhabitants aged 60 years). Participants answered a survey on socio-demographic factors and health and had urine and blood samples collected. $GFR < 60 \text{ mL/min/1.73m}^2$ (estimated by the abbreviated MDRD equation) was defined as low and presence of hematuria or proteinuria as kidney damage. Data are presented as weighted mean and standard error or weighted proportion in order to be representative of the elderly population of the city. Comparisons were made by chi-square with Rao-Scott correction or t-test. **Results:** Low GFR prevalence was 19.8%. These individuals were older (75 ± 1 vs. 69 ± 1 years, $p < 0.001$), had lower educational level (18 vs 30%, $p = 0.010$) higher prevalence of hypertension (82 vs. 63%, $p < 0.001$), diabetes (34 vs 26%, $p = 0.021$), cardio-vascular disease (43 vs. 24%, $p < 0.001$) and kidney damage (35% vs 15%, $p < 0.001$). Only 0.7% of the whole population had low GFR without concomitant diseases or kidney damage. **Conclusions:** We found a high prevalence of low GFR, which was rarely present without kidney damage and/or coincident chronic diseases that might affect the kidneys. These data suggest that in this group of geriatric individuals low GFR is indicative of coincident renal disease and not only a physiologic process of ageing.

1292-S/P

THE VERY OLD IN THE EMERGENCY DEPARTMENT: FREQUENT VISITS, HOSPITAL ADMISSIONS AND DEATHS.

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Background: Older adults use emergency departments (ED) more than any other age group. Moreover, utilization by very old and vulnerable individuals will increase as the population continues to age. Further understanding of ED use is a key step in health care planning for these patients. We thus sought to characterize ED utilization patterns of very old adults in a general hospital. **Methods:** A secondary analysis of ED visits was performed using a 2003-2013 database of a tertiary general hospital, in Sao Paulo, Brazil. Age, sex, physician diagnoses, and outcomes (hospitalization; length of stay; in-hospital mortality) were then compared by age group: 65-84 years vs. 85+ years (very old adults). **Results:** Patients aged 65+ years represented 17% (76,715) of ED encounters for all adults, and mean age was 77 years. Very old adults accounted for 16% (15,864) of visits of individuals aged 65+ years. From 2003 to 2013, while the number of outpatient visits of the very old increased 34%, hospital admissions increased almost fourfold (283%). When compared to individuals between 65-84 years, very old adults were more frequently female (57 vs. 48%; $p < 0.001$) and widowed (53 vs 21%; $p < 0.001$). They were also hospitalized more often (41 vs. 27%; $p < 0.001$), with higher median length of stay (8 vs. 6 days; $p < 0.001$) and higher in-hospital mortality (3.0 vs 1.0%; $p < 0.001$). The most common reasons for ED visits were unspecified symptoms and signs, respiratory diseases and injuries. **Conclusions:** Patients aged 85+ accounted for one in five older adult ED visits from 2003 to 2013, with steady increases across the study period. Hospital admissions grew in greater proportion than outpatient visits in this age group, which was also associated with longer hospitalizations and higher mortality. This pattern of ED utilization suggests that primary care is not absorbing the health demands of very old adults and that hospital resources will be increasingly consumed by their needs.

1291-S/P

ASSOCIATION BETWEEN DELAYED WORD RECALL AND PHYSICAL FUNCTION IN THE NATIONAL HEALTH AND AGING TRENDS STUDY Ryan Andrews*, Claire Greene, Qian-Li Xue, Judith Kasper, Michelle Carlson (Johns Hopkins Bloomberg School of Public Health)

Assessing physical function for older adults in clinical settings can be challenging due to space and time constraints; however, such assessments can help identify those who are at high risk for future disability. Consequently, efficient measures to identify those who have lower physical function are desirable. Previous research has suggested that cognitive impairment and physical impairment frequently co-occur, possibly due to common antecedents, like poor nutrition and cardiovascular risk factors. In particular, memory impairment tends to be closely associated with physical decline and dysfunction. In this analysis, we modeled the association between performance on a delayed word recall test (DWRT) and physical function, as measured by the Short Physical Performance Battery (SPPB). The SPPB score was dichotomized into low versus normal based on a clinically relevant cutoff of below versus at least 9 out of 12, respectively. The data came from the National Health and Aging Trends Study (NHATS), which has been following since 2011 a cohort of nationally representative Medicare beneficiaries aged 65 years or older. Our goal was to show an association between DWRT score and physical function, with higher DWRT score indicating relatively better physical functioning. Longitudinal random effects logistic regression was used to estimate the association between DWRT and SPPB in four waves of NHATS data after adjusting for gender, race, health status, heart disease history, hypertension history, diabetes history, and baseline age. We found that for each additional word correctly recalled on the DWRT, the adjusted odds of having low physical function were reduced by approximately 13%. These results suggest that physicians and other clinical providers for older adults could use the 3-4 minute DWRT in clinical practice to help identify those who may have low physical functioning without the need for a formal physical functioning test that can be time and resource intensive.

1293

DEPRESSION AS A RISK FACTOR FOR FRAILTY: A FOUR YEAR FOLLOW UP OF ELDERLY IN THE SABE STUDY.

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Background: Only a few studies have addressed the interrelationships between frailty and depression. This paper studies the cumulative incidence of frailty during a period of four years and its associated factors, such as age, sex, education, income, depressive symptoms (using the Geriatric Depression Scale), ethnicity (White x Non-White), cognitive impairment, presence of Cancer, Number of comorbidities, living alone. **Methods:** Data were obtained from the second round of the SABE Study, conducted in 2006, when 1413 elderly were interviewed, forming a representative sample of the city of São Paulo – Brasil. Subjects considered frail or pre-frail according to the conceptual model of Fried, were excluded at baseline, resulting in 580 elderly to be followed. To assess the effects of independent variables a Poisson regression with robust estimation was adjusted. The outcome variable was frailty at 2010, with two classes: Non-frail and Frail (Frail + Pre-frail). **Results:** The mean observation time was 3.8 years, with a maximum of 5.9. The incidence coefficients were: frail - 6.2 (6.6 - men, 5.9 -women) per 1000 person-years and pre-frail: 88.4 (90.4- men and women-88.4) by 1000 person years. The Poisson regression showed as significant variables: age ($60 - 74 \times 75 +$) with incidence ratios (IRR) = 1.35 and severe depressive symptoms IRR = 1.95. **Conclusions:** This study may advance the understanding of the bi-directional relationship between frailty and depression. Both have been recognized as crossed syndromes, sharing some common risk factors or simply manifestations of the same underlying pathology. However, this research has shown that in elderly individuals, without frailty but with severe depressive symptoms at baseline the incidence of frailty increased 95% during the following 4 years. Deepening the study of these relations should make important contributions to the Public Health and clinical care aimed at the preservation of functionality.

1294

NONAGENARIAN'S VISITS TO EMERGENCY DEPARTMENT AND OUTCOMES IN A PRIVATE HOSPITAL Fernando Ganem*, Marcia Sousa e Sa Fernando, Menezes Antonio, C O Lira Fernanda, Ungaretti Luis Penna, Fernanda Bastos, Thiago Silva Luiz, Gil Fernando Machado (Syrian Lebanese Hospital, Sao Paulo , Brazil)

BACKGROUND: The aim of this study is to describe the trend in Emergency Department (ED) visits by patients aged 90 years and over, between 2008 and 2014 and the profile after hospitalization. **METHODS:** We registered visits of nonagenarians to Syrian Lebanese Hospital, a tertiary Brazilian private hospital. ED visits, hospitalization, diagnoses, length of stay, intensive care unit admission and mortality were calculated. **RESULTS:** In this period, 5347 patients visited the ED, 3121 patients (58%) were discharged, but 2226 (42%) were hospitalized. In this group, the most prevalent diagnoses according to ICD-10 were diseases of respiratory system (26%); circulatory system (19%); genitourinary (9%); symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (7%); lesions (7%); digestive (6%); nervous (5%) and neoplasms (4%), among others, less frequent. The hospital stay (in days) was < 1 (7%), 2-3 (18%), 4-7(25%), 8-15(26%), 16-30(16%), > 30 (8%). From all hospitalized patients, 1024 (46%) were admitted to the intensive care unit (ICU), and among them 193 (19 %) died. The overall mortality rate was 13 %, but 1944 (87%) were discharged. **CONCLUSIONS:** We conclude that in this increasing population, the probability of admission is high and almost half requires ICU care. However, different than expected, the length stay was less than 15 days in more than 75%, and the great majority was discharged from ICU and hospital. These results lead us to evaluate accurate criteria for admission and adapt care delivery processes to meet the needs of elderly patients, including after hospital discharge.

1296-S/P

SUBTYPES OF MULTIMORBIDITY AND FUNCTIONAL IMPAIRMENT STATUS AMONG OLDER ADULTS Spruha Joshi*, Stephen J Mooney, Andrew G Rundle, Gary Kennedy, John R Beard Magdalena Cerda (Division of Epidemiology and Community Health, School of Public Health, University of Minnesota)

Demographic shifts toward an aging population and advances in healthcare have caused a dramatic increase in the number of people living with multimorbidity (2 chronic conditions) and functional limitations. Limited evidence suggests that multimorbidity is not random but rather certain chronic conditions frequently co-occur. Additionally, multimorbidity may increase functional limitations (i.e. difficulties walking one block). We aimed to identify subtypes of multimorbidity and their relationship to subsequent functional impairment. Data were drawn from the New York City Neighborhood and Mental Health in the Elderly Study II, a longitudinal study of older adults, 65 to 75 years of age. Participants completed measures on disease status, functional impairment and demographic characteristics; those with complete data (n=2023) were included. We used latent class analysis to identify subtypes of multimorbidity and generalized estimating equations to estimate the relationship between multimorbidity subtypes at wave 1 and functional impairment at waves 2 and 3, controlling for baseline functional impairment and demographic characteristics. We identified 4 classes: 1)no disease(47%); 2)chronic pain and arthritis(21%); 3)high blood pressure and cholesterol(13%); and 4)high multimorbidity (i.e. diabetes, heart and lung disease)(19%). Membership in the chronic pain and arthritis class (OR:1.93;95%CI:1.52-2.46), high blood pressure and cholesterol class(OR: 4.49;95%CI:3.35-6.05), and high multimorbidity class(OR: 9.95;95%CI:5.75 - 17.12) compared to the no disease class resulted in a higher odds of subsequent functional impairment. Findings from this study suggest that there are distinct subtypes of multimorbidity and that increased multimorbidity may be a strong predictor of risk for subsequent functional impairment. Identifying subtypes of multimorbidity that pose the greatest risk for functional impairment is critical to develop plans of care that avert secondary consequences of chronic disease.

1295

PREDICTORS AND HEALTH DISPARITIES OF PREDIABETES IN OLDER ASIAN ADULTS Lorena Garcia*, Brittany Garcia, Diana Cassady, Heejung Bang (University of California Davis)

Background: Prediabetes, a precursor to diabetes, if left untreated can lead to long term health consequences such as damage of the kidney, heart and circulatory system. Yet limited information is known about prediabetes in older Asian adults, therefore our objective was to determine the association between sociodemographic and health indicators of prediabetes status for older Asian adults. **Methods:** The California Health Interview Survey (CHIS), the state's largest annual health interview survey was used. CHIS is a population-based, random digit dialing phone survey administered in 5 different languages. Participants for this study included Asian adults (unweighted n= 3415) who self-identified by subgroup (Chinese, Korean, Filipino, South Asian, and Vietnamese) between the ages of 50 and 84 years old. Data from the 2011-2012 CHIS were used, participants with self-reported type 1 or 2 diabetes were excluded from the analyses. To identify predictors of prediabetes status, chi-square, t-tests and logistic regression were used, accounting for survey design. **Results:** The prevalence of prediabetes in older Asians was 5% which represented 50,593 older Asian adults. Chinese (41%) had the highest proportion of prediabetes followed by Filipinos (26.4%), Koreans (20.5%), South Asian (8.4%) and Vietnamese (3.7%). Prediabetes was significantly associated with older age (60+ years), non-US born, and high blood pressure. Body mass index, smoking, physical activity, fast food consumption, health insurance, education and income were not associated with prediabetes status. In fully adjusted models, Vietnamese were at higher odds of prediabetes compared to Chinese (OR=0.18, 95% CI: 0.07, 0.50). No significant associations were found between other Asian subgroups and prediabetes status. **Conclusion:** Prediabetes in older Asians adults differed by Asian subgroup and by health indicators. Prediabetes prevention programs should raise awareness in these high risk communities.

1297

AGE IS THE STRONGEST EFFECTOR FOR THE ASSOCIATION BETWEEN ESTIMATED GLOMERULAR FILTRATION RATE AND CORONARY ARTERY CALCIFICATION. Paulo Lotufo*, Cheng-Suh Chiou, Rosa Moyses, Isabela Bensenor (University of Sao Paulo)

Chronic kidney disease (CKD) is a global public health problem associated with high cardiovascular morbidity and mortality. Therefore, the recognition of subclinical markers of atherosclerosis in the initial phases of renal dysfunction could be an important moment for action improving the rates of health-adverse outcomes. We addressed this question among the participants of The Brazilian Longitudinal Study of Adult Health (ELSA-Brasil) who performed a coronary calcium score during the baseline. Estimated glomerular filtration rate (eGFR) was assessed using the CKD-Epi equation and coronary calcium score was measured by 64 channels multislice computed tomography. We enrolled 4,321 men and women free of cardiovascular diseases aged 35 to 74 years-old. They were categorized according the eGFR measured in mg/ml/1.73m² as eGFR greater than 90, stage1 (n=1,741; 40.3%); eGFR between 90-60, 2 (n=2,401; 55.6%) and eGFR lower than 60 (n =178; 4.1%). The association between CAC and eGFR was evaluated by an unadjusted logistic regression model that was subsequently adjusted for high blood pressure, smoking habit, dyslipidemia, and diabetes. As for the eGFR, age is fundamental for the calculation, we analyzed first without age-adjustment. The crude odds ratios (and 95% Confidence Intervals) comparing the stage 1 as reference were 1.94 (1.67-2.24) for stage 2 and 4.51 (3.29-6.19) for stage 3. These results did not change when other cardiovascular risk factors were incorporated. However, after adjustment for age these associations were fully attenuated. Concluding, despite the higher prevalence of CAC in the early stages of CKD, age remained as the most important risk factor for CAC in our study. Traditional cardiovascular risk factors are the major factors for the higher incidence of subclinical atherosclerosis in early CKD and highlight the stronger influence of age on CAC in this population.

1298-S/P

SOCIAL RELATIONS AND PHYSICAL FUNCTIONING AMONG BRAZILIAN OLDER ADULTS: 10-YEAR FOLLOW-UP OF THE BAMBUI COHORT STUDY OF AGING Juliana Lustosa Torres*, Maria Fernanda, Furtado De Lima E Costa, Juliana Mambrini Cesar De Oliveria (UNIVERSIDADE FEDERAL DE MINAS GERAIS)

Objectives. The aim was to investigate the effects of social engagement and social network on changes of disability in Brazilian older people. **Method.** Data come from a population-based study of Brazilian older adults aged 60 years (N = 1,158), The Bambui Cohort Study of Ageing, with up to 10 yearly data on the outcome measure, activities of daily living (ADL) disability. We use a two separated Mixed-effects Logistic Regression model analysis to model 10-year trajectory of physical functioning, while controlling for social and demographic, health variables and using the pattern mixture model for considering dropouts. **Results.** Social engagement were associated to ADL disability at baseline but not associated to ADL disability trajectory. Those in the lowest tertile of social engagement were nearly twice as likely to report an ADL disability (Odds ratio [OR] = 1.9; 95% CI 1.3, 2.7) compared to those in the highest tertile. For social network, the results were not significant. **Discussion.** These findings suggest that social relations could not change ADL disability but baseline association between social engagement and ADL disability appears to persist over time. Public programs should encourage social participation of older adults to prevent and delay disability.

1299-S/P

SOCIAL AND ENVIRONMENTAL FACTORS ASSOCIATED WITH FUNCTIONAL MOBILITY AND FALLS IN ELDERLY RESIDENTS OF SÃO PAULO, BRAZIL: A MULTILEVEL ANALYSIS Carla Ferreira do Nascimento*, Alexandre Dias Porto, Chiavegato Filho, Yeda Aparecida de Oliveira Duarte, Maria Lúcia Lebrão (University of São Paulo)

Introduction: Recent studies show that falls are the most important external cause of death in elders, leading to hospitalization, injuries, dependency, and to increased costs of health and social care services. Functional mobility impairment is a risk factor for falling, but social, environmental and behavioral aspects may also affect this event. **Objective:** To identify the social, environmental and contextual aspects associated with functional mobility and falls in elderly residents of the Municipality of São Paulo, Brazil. **Methods:** We used the data from Health, Wellbeing and Aging (SABE) Study, a representative study of individuals aged 60 and older of the Municipality of São Paulo in 2010. The dependent variables of interest were the occurrence of any fall in the last year and functional mobility impairment was assessed by the Timed Up and Go (TUG) test. Individual (age, sex, marital status, race, chronic diseases, perception of income sufficiency) and contextual (Gini coefficient, green areas per capita, and homicide rate) factors were analyzed by multilevel logistic models. **Results:** From the sample of 1189 elderly individuals, 31% reported a fall in the last year and 51% had mobility impairment. The socioeconomic individual factors were not significantly associated with falling, but having eight or more years of schooling was a protective factor for mobility impairment for every model (OR: 0.5). Living in a neighborhood with a moderate homicide rate was associated with higher odds of falling (OR: 1.51, 95%CI: 1.09-2.07). Neighborhoods with moderate greens spaces were associated with higher odds of mobility impairment for individuals 80 years old and older (OR: 0.43, 95% CI: 0.18-0.98). **Conclusion:** Our findings support the concern that neighborhood characteristics are associated with falls and mobility impairment for the elderly. Strategies to prevent falls and mobility impairment in developing countries should consider public environment and social aspects.

1300-S/P

DO SOCIO-DEMOGRAPHIC AND/OR HEALTH BEHAVIOR CHARACTERISTICS MODERATE THE ASSOCIATION BETWEEN PSYCHOSOCIAL STRESS AND ALLOSTATIC LOAD-

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PURPOSE: Allostatic load (AL) has been proposed as a biological construct reflecting multi-system physiological dysregulation leading to adverse health. A range of stressful life experiences have been shown to be positively associated with AL, however, there is little research examining whether or not socio-demographic and/or health behavior characteristics act as moderators of this association. **METHODS:** Data were obtained from a national sample of 1,182 adults, ages of 34-84, from the Midlife Development in the United States study. Potential moderating characteristics (age, gender, race/ethnicity, income, educational attainment, marital status, physical activity, smoking status, alcohol use) and a cumulative stress index were assessed via questionnaire. Biological data were collected from 24 biomarkers to measure AL. Linear mixed effect regression analyses examined the moderating role of each socio-demographic and health behavior characteristic with respect to the relationship between psychosocial stress and AL. **RESULTS:** Findings indicated that age was the only statistically significant moderator of the relationship between psychosocial stress and AL. The relationship appeared to be strongest among individuals younger than 54 years of age, where increases in psychosocial stress were associated with increases in AL, and weakest among individuals older than 55 years of age, where increases in psychosocial stress were associated with little change in the already stagnant high levels of AL. **CONCLUSIONS:** Associations between psychosocial stress and AL do not appear to be moderated by health behavior or socio-demographic characteristics, with the exception of age, as seen by the weaker associations between psychosocial stress and AL in older ages. This is consistent with the published literature suggesting that many risk factors begin to exhibit weaker associations with AL at older ages due to the inherent effects of biological aging (time) that continue to accumulate.

1310-S/P

THE ASSOCIATION BETWEEN ANTI-OXIDATIVE VITAMINS AND CHILDREN WITH ALLERGIC DISEASES IN LOW AND HIGH AIR POLLUTION COMMUNITIES Han-pin Hsiao*, Teng-Hui Huang, Tsu-Nai Wang

Background: Previous epidemiological studies have demonstrated a positive correlation between air pollution and asthma, especially in children. Vitamin intake may modulate the risk of asthma. We will explore the relationship between anti-oxidative vitamins and allergic diseases in low and high air pollution communities. **Methods:** Data were based on the Nutrition and Health Survey in Taiwan (NAHSIT), this was a population-based, multi-stage cross-sectional study of 2,128 elementary schoolchildren in Taiwan. The air pollutant data were used to estimate air pollutant concentration exposures of the children using the inverse distance weighting (IDW) method of the geographic information system (GIS) software. **Results:** After adjustment for confounders, vitamin A intake was negatively associated with eczema or allergic rhinitis (adjusted OR=0.74, 95% CI=0.58-0.95, p=0.020). We further examined the effects of vitamins on allergic diseases in high and low air pollution communities and found a significant protective effect of vitamin A against eczema or allergic rhinitis in areas with higher gasoline-powered air pollution (aOR=0.67, p=0.011) and lower diesel-powered air pollution (aOR=0.61, p=0.009). **Conclusion:** Our study suggested that certain intakes of specific vitamins are helpful to ameliorate allergic diseases and asthma in children exposed to specific air pollutants. In general, vitamin A is the best antioxidant for allergic children who are exposed to multiple air pollutants.

1312-S/P

AN ASSOCIATION BETWEEN ENTEROVIRUS INFECTION AND ASTHMA IN TAIWAN: A NATIONWIDE POPULATION-BASED COHORT STUDY Yu-Ting Tseng* (886-7-3121101-2141-10)

Background Asthma is one of the most common chronic diseases in children worldwide. Enterovirus infection (EV) is the most frequent disease in children who are less than 10 years of age. Previous studies have suggested that viral infections are caused by atopy features, wheezing, and colds, and may result in the development of chronic asthma and asthmatic exacerbations in children. However, the relationship between EV infection and virus-induced asthma is not clear. **Method** We conducted a cohort study involving 37,848 EV-infected children and 1:1 age-sex-matched non-EV-infected controls from Taiwan's National Health Insurance Research Database. **Result** Children with EV infection had significantly higher incidences of asthma, allergic conjunctivitis, allergic rhinitis, and atopic dermatitis (P<0.0001). Cox proportional hazards model was used to estimate the risk of asthma, and the subjects with EV infection had a significantly increased risk of asthma after adjusting other confounding factors (adjusted HR=1.34, 95% CI: 1.28-1.41). **Conclusion** The present study found that children with EV infection have significantly higher risk of developing asthma. This suggests that exploration of the pathogenesis of virus-induced asthma in children should be carried out in the future.

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ASTHMA HOSPITALIZATIONS AMONG ADULT WORLD TRADE CENTER HEALTH REGISTRY ENROLLEES IN NEW YORK STATE, 2001-2010 Sara Miller-Archie*, Hannah Jordan, Howard Alper, James Cone, Stephen Friedman, Robert Brackbill, Juan Wisnivesky (New York City Department of Health and Mental Hygiene, World Trade Center Health Registry)

Background: Asthma is one of the most common conditions associated with exposure to the World Trade Center disaster. We sought to describe patterns of asthma hospitalization and identify factors associated with hospitalization among 9/11-exposed persons with asthma. **Methods:** We studied 11,831 adult World Trade Center Health Registry enrollees who lived in New York State on September 11, 2001, and who reported ever having been diagnosed with asthma. Data for participants were matched to an administrative database comprising 95% of all hospital discharges in New York State. A hospitalization for asthma was defined as a principal discharge diagnosis of asthma, or a principal diagnosis of another respiratory condition plus a secondary diagnosis of asthma, during the study period (9/11/2001-12/31/2010). Bivariate analysis and zero-inflated multivariable Poisson regression models were used to identify risk factors for hospitalization. Factors associated with single or multiple hospitalizations compared with no hospitalizations were analyzed using a multivariable multinomial logistic regression model. **Results:** We identified 735 asthma hospitalizations among 418 enrollees (3.5%). Posttraumatic stress disorder and gastroesophageal reflux symptoms at Registry enrollment in 2003-04 were associated with post-9/11 asthma hospitalization. 9/11-related exposures, including exposure to the dust cloud or whether someone had performed rescue/recovery work, were not associated with hospitalization. **Conclusions:** Preliminary findings suggest that physical and mental comorbidities were risk factors for asthma hospitalization among persons with asthma.

1320-S/P

MATERNAL CIRCULATING PLGF LEVELS ARE ASSOCIATED WITH INSULIN AND IGF-1 LEVELS IN NEWBORNS

Hua He* (Xin Hua Hospital Affiliated to Shanghai Jiao Tong University School of Medicine, China)

Objective: This study was aimed to explore whether maternal circulating PLGF levels may affect fetal growth in late gestation, insulin and IGF-1 levels in newborns. **Methods:** This was a nested case-control study in a prospective pregnancy cohort - the Integrated Research Network of Perinatology in Quebec (n=2366). Maternal plasma PLGF at the 3rd trimester (32-35 weeks) of gestation and cord plasma glucose, insulin and IGF-1 were measured for naturally conceived singleton infants without malformations, including 162 small-for-gestational-age (SGA) infants (birth weight <10th percentile), 144 large-for-gestational-age (LGA) infants (>90th percentile), and 184 appropriate-for-gestational-age (AGA) infants (control, birth weight between 25th and 75th percentiles). Ultrasound biometry scans were performed for fetal growth measurements at the 2nd and 3rd trimester of pregnancy. **Results:** Maternal plasma PLGF concentrations were positively correlated to fetal growth velocity (fetal weight gain per week, $r=0.14$, $P=0.0167$) at late gestation, birth weight ($r=0.33$, $P<0.0001$), cord plasma insulin ($r=0.12$, $P=0.0231$) and IGF-1 ($r=0.24$, $P<0.0001$) concentrations, but negatively correlated to cord plasma glucose-to-insulin ratios ($r=-0.11$, $P=0.0303$). Maternal PLGF concentrations were substantially lower in SGA versus AGA infants, but not significantly different between LGA and AGA infants. Women with plasma PLGF concentrations in the lowest quartile had substantially lower cord plasma insulin and IGF-1 concentrations, but higher glucose-to-insulin ratios. Adjusted for maternal and infant characteristics, each log unit increase in maternal plasma PLGF was associated with 0.16 (95% CI 0.04-0.28) log unit increase in cord plasma insulin, and 0.17 (0.08-0.26) log unit increase in cord plasma IGF-1 concentrations (all $P<0.001$), respectively. **Conclusions:** Maternal circulating PLGF levels are predictive of growth velocity in late gestation, and positively associated with fetal insulin and IGF-1 levels.

1322-S/P

PLASMA ADIPONECTIN AND DEPRESSIVE SYMPTOMS DURING PREGNANCY AND POSTPARTUM: RESULTS FROM A PROSPECTIVE COHORT.

Fernanda Rebelo*, Dayana Farias, Claudio Struchiner, Gilberto Kac (National School of Public Health/ Fiocruz)

Background: A protective effect of adiponectin on depression has been described in the literature but this association has not yet been investigated during the perinatal period. **Objective:** To evaluate the association of plasma adiponectin and symptoms of depression in women from early pregnancy to 30-45 days postpartum. **Methods:** Prospective cohort with four waves of follow-up: 5-13th; 22-26th; 30-36th gestational weeks; and 30-45 days postpartum. Study subjects were women 20 to 40 years old, free of chronic non-communicable or infectious diseases, bearing a singleton pregnancy and not making use of antidepressants. Depressive symptoms were measured using the Edinburgh Postnatal Depression Scale (EPDS; cutoff = 11). Plasma adiponectin concentrations were measured by enzyme linked immunosorbent assay. Statistical analyses included linear mixed effects regressions to model the association between these time-dependent variables. **Results:** The prevalence of depressive symptoms was 35.5%, 22.8%, 21.8% and 16.9% in the 1st, 2nd, 3rd trimesters and postpartum, respectively. Values of adiponectin remained stable over pregnancy, with an increase at the postpartum. Women who remained non-depressed through all study periods tended to have higher values of adiponectin throughout pregnancy and postpartum, compared to those who had at least one depressive episode, but this difference was not statistically significant ($\beta = -0.14$; $p = 0.071$). Plasma adiponectin showed an inverse, but not significant association with EPDS scores in the multiple model ($\beta = -0.07$; $p = 0.320$). **Conclusion:** We found a high prevalence of depressive symptoms at early pregnancy. Plasma adiponectin seems to have an inverse relation with depressive symptoms during the perinatal period, but the association did not achieve statistical significance and our findings are inconclusive.

1321-S/P

TISSUE DNA METHYLATION AS A BIOMARKER OF EXPOSURE TO TOBACCO SMOKE

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Background: DNA methylation in blood has been recently identified as a biomarker of cumulative exposure to tobacco smoke that appears to differentiate between former and never smokers showing greater utility than cotinine. We sought to replicate these blood-based findings in a novel population as well as evaluate the utility of DNA methylation as a biomarker of tobacco smoke exposure in invasive tumor and adjacent normal tissues. **Methods:** DNA methylation data for four genomic loci of interest were available from the Illumina Infinium HumanMethylation450 assay from a cohort of Bangladeshi individuals (DNA derived from whole blood) and on invasive tumor and adjacent normal tissues from The Cancer Genome Atlas. Self-reported smoking status (current, former, never) was available for both study populations. Sensitivity, specificity and area under the curve (AUC) were calculated to determine the utility of these biomarkers for cumulative tobacco smoke exposure (comparing former vs never smokers) or recent tobacco smoke exposure (comparing current vs noncurrent smokers). **Results:** Using blood DNA methylation, the AUC values comparing former and never smokers ranged between 0.80 and 0.84. Using adjacent normal tissue DNA, the AUC values comparing former and never smokers were not statistically better than random chance, although when comparing current versus noncurrent smokers, AUC values ranged between 0.74 and 0.77. Using invasive tumor tissue DNA, the DNA methylation markers could not reliably discriminate between any smoking statuses. **Discussion:** We successfully replicated the recent findings of others using DNA methylation as a biomarker for cumulative tobacco smoke exposure in blood in a novel study population. Additionally, we observed that these markers could determine recent tobacco smoke exposure in adjacent normal tissue but not in tumor tissue. These findings support a novel biomarker to evaluate tobacco smoking status in blood and normal tissues.

1323-S/P

MATERNAL ADVERSE CHILDHOOD EXPERIENCES AND NEWBORN TELOMERE LENGTH

Maeve Wallace*, Katherine Theall, Stacy Drury (Tulane University School of Public Health and Tropical Medicine)

Adverse Childhood Experiences (ACEs) are associated with poor mental and physical health outcomes in adulthood. Telomere length (TL) is an epigenetic modification and frequently hypothesized biological mechanism underlying the transgenerational effects of early life adversity, but empirical data are sparse. The objective of this study was to determine the association between maternal ACEs and newborn TL. TL was measured in bloodspots from 229 infants born to women recruited and interviewed prenatally including an assessment for ACEs during childhood (<age 12) and adolescence (age 12-17). Linear regression models estimated associations between newborn TL and individual score items (occurring at either time), as well as total ACE scores (sum of adverse experiences ranging from 0-10) during childhood, adolescence, and either time, controlling for maternal and paternal age, maternal education, race, smoking, gestational age, and including tests for interaction by annual household income (<\$16,000; \$16,000-\$49,999; >\$50,000) and infant sex. Just over 80% of women reported at least one ACE during either time (range 0-8). Associations with TL were differential by income but not infant sex. Among the poorest women (<\$16,000), eight of nine ACE items had positive effect estimates indicating longer newborn TL, though only verbal abuse reached statistical significance ($\beta=0.24$, $p<0.01$). Conversely, among the highest earning women seven of nine ACE items had negative estimates indicating shorter newborn TL, the strongest associated with living with a family member who was mentally ill or attempted suicide ($\beta=-0.25$, $p<0.01$). Total adolescent and combined (childhood or adolescence) ACE scores were not associated with newborn TL, but total childhood ACE score predicted longer newborn TL among the poorest women only ($\beta=0.12$, $p<0.05$). Longer TL among infants born to women experiencing early life adversity and current impoverished conditions may set the stage for rapid TL attrition.

1330-S/P

METHODOLOGICAL ISSUES IN MATCHING COHORTS TO REGISTRY DATA: RESULTS FROM A LARGE, LONG-TERM, PROSPECTIVE STUDY Breanne E. Biondi*, Sumathy Vasanthan, Anita Thomas, Karen Pawlish, Daniel M. Rosenblum, Arjun Gupta, Antoinette Stroup, Stanley H. Weiss (Rutgers School of Public Health, Rutgers New Jersey Medical School - Department of Medicine)

In the 1980's, 4 injection drug user cohorts were established in New Jersey (NJ), with support from NCI, NIDA and NJ Dept. of Health. All studies received human subject research approval. Three NJ-based cohorts (n=1208) were repeatedly matched through 2000 with the NJ State Cancer Registry (NJSCR), NJ HIV/AIDS Registry, and NJ vital statistics (with death certificates). From serial follow-ups, 18.9% had multiple names or aliases, 3.8% multiple social security numbers (SSN), & 1.6% multiple birth dates. We created multiple records for these to maximize sensitivity for possible matches. SSN was unavailable for 9.7%. We obtained original medical records & death certificates. We gave exhaustive attention to confirm matches, cross-comparing signatures. We identified 60 persons with certain NJSCR matches, of which 15% had a name change or alias & 18% were missing SSN (in either our cohort data or NJSCR records). Algorithmic matching scores ranged from 6.03 to 54.69 (higher score=likelier match). Mean scores: without SSN 17.38, with SSN 36.95 (t=6.26, p<.001; Wilcoxon rank-sum p<.001). There were 5 additional cancer diagnoses without NJSCR records, from HIV/AIDS registry and death certificate analyses. Using CDC datasets, we explored sensitivity & specificity of the modern CDC algorithms that registries use to gain insight into their limitations. We have shown matching algorithms to be less effective among Latinos or when missing SSN. For our current data linkage with the NJSCR, which includes a 4th NJ cohort (n=1072), follow-up time & cohort size are each doubled compared to our past work. Latinos comprise 12% of the cohort, now totaling 2280. Furthermore, for most cancers, incidence generally increases with age. Thus, despite deaths from other causes (especially HIV), our cancer case total will substantially increase. Our rigorously confirmed past cancer cases will facilitate further examination of methodologic issues, serving as a "gold" standard for comparison with match findings.

1332-S/P

FEMALE ESTROGEN-RELATED FACTORS AND INCIDENCE OF BASAL CELL CARCINOMA IN A NATIONWIDE UNITED STATES COHORT Elizabeth Cahoon*, Cari Kitahara, Estelle Ntowe, Emily McDonald, Michele Doody, Bruce Alexander, Terrence Lee, Mark Little, Martha Linet, Michal Freedman (National Cancer Institute)

PURPOSE: Ultraviolet radiation (UVR) exposure is the primary risk factor for basal cell carcinoma (BCC), the most common human malignancy. While the photosensitizing properties of estrogens have been recognized for decades, few studies have examined the relationship between reproductive factors or exogenous estrogen use and BCC. **METHODS:** Using data from the United States Radiologic Technologists Study, a large, nationwide prospective cohort, we assessed the relationship between reproductive factors, exogenous estrogen use and first primary BCC while accounting for sun exposure, personal sun sensitivity, and lifestyle factors for geographically-dispersed women exposed to a wide range of ambient UVR. **RESULTS:** Elevated risk of BCC was associated with late age at natural menopause (hazard ratio (HR) for 55 years vs. 50-54 years =1.50, 95% CI: 1.04, 2.17) and ever menopausal hormone therapy (MHT) use (HR =1.16, 95% CI: 1.03-1.30, p-trend for duration=0.001). BCC risk was most increased among women reporting natural menopause who used MHT for 10 or more years vs. never used MHT (HR=1.97, 95% CI: 1.35-2.87). Risk of BCC was not associated with age at menarche, parity, age at first birth, infertility, use of diethylstilbestrol by participant's mother, age at hysterectomy, or use of oral contraceptives. **CONCLUSION:** These analyses confirm a previous finding of increased risk of BCC associated with MHT. Novel findings of increased BCC risk associated with MHT in women experiencing natural menopause and for late age at natural menopause warrant further investigation. Users of MHT may constitute an additional high risk group in need of more frequent skin cancer screening.

1331-S/P

VITAMIN C SUPPLEMENT INTAKE AND POSTMENOPAUSAL BREAST CANCER RISK IN FRENCH WOMEN: INTERACTION WITH DIETARY VITAMIN C Claire Cadeau*, Claire, Guy Fagherazzi, Isabelle Savoye, Marie-Christine Boutron-Ruault (Inserm, U1018, Team 9)

Background: Experimental studies have suggested both protective and detrimental effects of vitamin C on cancer risk, but evidence from epidemiological studies is inconsistent. We investigated the relationship between vitamin C supplement intake and breast cancer risk, while considering a potential interaction with dietary vitamin C intake. **Methods:** Between 1995 and 2008, 2,482 invasive breast cancer cases occurred among 57,403 postmenopausal women from the E3N prospective cohort during 581,085 person-years. We estimated vitamin C intake from foods through a validated food frequency questionnaire sent in 1993-1995, and vitamin C supplement use through questionnaires sent in 1995, 2000, 2002, and 2005. Multivariable hazard ratios (HR) for primary invasive breast cancer and 95% confidence intervals (CI) were estimated using Cox regression models. All statistical tests were two-sided. **Results:** Vitamin C supplement use (ever vs. never) was not associated with breast cancer risk overall; it was associated with higher breast cancer risk in women in the fourth quartile of vitamin C intake from foods (HR = 1.31, 95% CI: 1.03, 1.66), but not in other quartiles of dietary vitamin C (1st quartile: HR = 0.98, 95% CI: 0.73, 1.30; 2nd quartile: HR = 1.12, 95% CI: 0.85, 1.46; 3rd quartile: HR = 0.84, 95% CI: 0.63, 1.13), Pinteraction = 0.04. **Conclusion:** Vitamin C supplement use was associated with an increased postmenopausal breast cancer risk among women with high vitamin C intake from foods. Our data suggest a potential U- or J-shaped relationship between total vitamin C intake and postmenopausal breast cancer risk that deserves further investigation.

1333-S/P

ASPIRIN USE AND RISK OF COLORECTAL CANCER ACCORDING TO TUMOR IMMUNITY STATUS Yin Cao*, Reiko Nishihara, Zhi Rong Qian, Mingyang Song, Molin Wang, Wendy Garrett, Edward Giovannucci, Charles Fuchs, Andrew Chan, Shuji Ogino (Massachusetts General Hospital and Harvard Medical School, Harvard T.H. Chan School of Public Health)

Background: Aspirin use reduces the risk of colorectal carcinoma. Because aspirin inhibits PTGS2 (cyclooxygenase-2) which in turn can suppress T cell-mediated anti-tumor immunity, we hypothesized that aspirin use might be associated with lower risk of colorectal cancer with lower immune response. **Methods:** We collected biennially updated data on aspirin use from 87,545 women enrolled in the Nurses' Health Study since 1980 and 47,436 men enrolled in the Health Professionals Follow-up Study since 1986 through 2010. We used duplication-method Cox proportional cause-specific hazards regression to assess the association of aspirin use with risk of colorectal cancer subtypes according to the degree of tumor infiltrating lymphocytes (TILs), intra-tumoral periglandular reaction, peritumoral reaction, or Crohn's-like reaction. **Results:** We documented 1,458 incident colorectal cancers with available tissue data. Compared with nonregular use, regular aspirin use was associated with a multivariable relative risk (RR) for colorectal cancer of 0.78 (95% confidence interval 0.70-0.87). The inverse association significantly differed according to the degree of TILs (Pheterogeneity =0.007). Compared with nonregular use, regular aspirin use was associated with lower risk of tumors with low-level TILs (RR 0.72; 95% CI, 0.63-0.81), and the apparent benefits were dose- and duration-dependent (both Ptrend <0.001). In contrast, regular aspirin use was not associated with risk of tumors with intermediate-level (RR 0.95; 95% CI 0.72-1.24) or high-level TILs (RR 1.09; 95% CI 0.78-1.51). This differential association appeared consistent regardless of microsatellite instability, BRAF mutation or PTGS2 expression status of the tumors. **Conclusions:** Regular aspirin use is associated with lower risk of colorectal cancer with low-level TILs, but not tumors with intermediate or high-level TILs, suggesting a potential role of host immunity in mediating the chemopreventive effect of aspirin.

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CIRCULATING N-LINKED GLYCOPROTEIN ACETYLS AND FUTURE COLORECTAL CANCER INCIDENCE AND MORTALITY: THE WOMEN'S HEALTH STUDY AND THE MULTI-ETHNIC STUDY OF ATHEROSCLEROSIS Paulette Chandler*, Akintunde Akinkuolie, Deirdre Tobias, Patrick Lawler, Chungying Li, M.V. Moorthy, Lu Wang, Daniel Duprez, David Jacobs, Robert Glynn, James, Otvos Margery Connolly, Wendy Post, Paul Ridker, JoAnn Manson, Julie Buring I, Min Lee, Samia Mora (Division of Preventive Medicine, Brigham and Women's Hospital, Harvard Medical School)

Introduction: Glycoproteins that undergo dramatic changes in concentration during inflammation may be exploited as tumor markers. GlycA, a novel marker of inflammation measured by nuclear magnetic resonance (NMR) spectroscopy, identifies N-acetyl glycan groups mostly attached to acute phase proteins. We hypothesized that GlycA may be a marker of colorectal cancer (CRC). **Methods:** Examined association between GlycA and incident CRC and CRC mortality in two prospective cohorts (N=34,320): Discovery cohort: 27,524 participants from the Women's Health Study (WHS); Validation cohort: 6,796 participants from the Multi-Ethnic Study of Atherosclerosis (MESA). CRC risk-factor adjusted Cox proportional hazards regression models estimated the hazard ratios (HRs) and 95% confidence intervals (CIs); and compared GlycA to other systemic inflammatory markers, high-sensitivity C-reactive protein (hsCRP), fibrinogen, and soluble intercellular adhesion molecule-1 (sICAM). **Results:** In WHS (median follow-up: 19 years), 338 incident CRC cases and 103 CRC deaths were confirmed. The HRs (95% CIs) per SD increment of GlycA for CRC incidence and mortality were 1.19 (1.06-1.35; p=0.004) and 1.24 (1.00-1.54; p=0.05), respectively. Other acute phase proteins (hsCRP, fibrinogen, and sICAM) were not associated with CRC incidence or mortality. Findings were similar in MESA (median follow-up: 8 years) with 70 incident CRC cases and 23 CRC deaths; HRs and 95% CIs per SD of GlycA for CRC incidence and mortality were 1.29 (1.02-1.62; p=0.03) and 1.49 (1.01-2.21; p=0.046), respectively. In a pooled (WHS/MESA) analysis for incident CRC, HRs (95% CIs) per SD of GlycA for CRC incidence and mortality were 1.26 (1.15-1.39; p<0.0001) and 1.32 (1.12-1.57; p=0.01), respectively. **Conclusions:** Elevated levels of baseline GlycA, a novel measure of circulating N-acetyl glycan groups, is associated with incident CRC and CRC mortality in two prospective cohorts, and is independent of established CRC risk factors.

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SCREENING COLONOSCOPY AND THE RISK OF DEATH FROM RIGHT COLON CANCER Chyke Doubeni*, Douglas Corley, Virginia Quinn, Christopher Jensen, Ann Zauber, Michael Goodman, Joanne Schottinger, Theodore Levin, Noel Weiss, Robert Fletcher (Department of Family Medicine and Community Health, the Abramson Cancer Center, and the Center for Clinical Epidemiology and Biostatistics, of the Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA)

The effectiveness of endoscopic screening in reducing mortality risk from left colon/rectal cancer is well-known, but effectiveness for cancers in the right colon remains unclear, due partly to limitations of prior studies. The study's primary objective was to determine whether receipt of screening colonoscopy reduces the risk of dying from right colon cancer in average-risk people. This was a case-control study in Kaiser Permanente, Northern and Southern, California. Patients who were 55-90 years of age on the death date from colorectal adenocarcinoma during 2006-2012 were matched about 1:2 to controls on sex, birthdate, health plan enrollment duration, and medical service area. We excluded persons with a prior CRC diagnosis, colectomy, or inflammatory bowel disease, a confirmed strong family CRC history, or health plan membership of less than five years. Receipt of screening colonoscopy in the prior 10 years was ascertained through chart audits. Outcome was death from colorectal adenocarcinoma as the underlying cause. In total, there were 1,758 cases and 3,503 controls. Overall, 1.4% of case patients and 3.5% of controls had undergone screening colonoscopy, which corresponded to an adjusted odds ratio (OR) of 0.32 (95% confidence interval [CI], 0.21-0.52) for death from any CRC. About 1.5% of cases who died of right colon cancer compared with 3.5% of controls had undergone screening colonoscopy, corresponding to an OR of 0.36 (CI, 0.19-0.67). For left CRC, 1.1% of cases compared with 3.3% of controls had undergone screening colonoscopy (OR=0.24, CI, 0.12-0.52). In an analysis of receipt of screening sigmoidoscopy, the OR for any CRC death was 0.60 (CI: 0.51-0.70). Receipt of screening colonoscopy was associated with a substantial reduction in the risk of death from both right and left colon/rectum cancers, supporting its use for routine screening as recommended in guidelines.

1335-S/P

CONDITIONAL SURVIVAL AMONG COLON CANCER PATIENTS IN THE UNITED STATES Reshley Andrew Dalisay*, Ray M. Merrill, Natalie Dayton (Brigham Young University)

Colon cancer incidence rates have declined in the United States since the mid-1980s. The decline has occurred across racial groups for both males and females. Yet colon cancer remains a leading cause of cancer. When a patient is diagnosed, they often receive a prognosis. Along with age, tumor grade, and stage being major prognostic indicators, conditional survival also influences the survival period beyond the initial date of diagnosis. Conditional survival is the probability estimate that an individual will survive a health related condition after having already survived a certain time. Conditional survival probability estimation provides further useful prognostic information to cancer patients, tailored to the time already survived since diagnosis, which can be informative in terms of shared decision making and time to "cure." As the number of long-term survivors increase, there is a growing need for updated and subgroup-specific analyses on conditional survival. Analyses are based on 96,022 males and 101,793 females diagnosed with colon cancer during 2000 through 2008 collected from medical records at hospitals and other facilities by population-based cancer registries in the Surveillance, Epidemiology, and End Results Program of the National Cancer Institute. In this paper, we present conditional 5-year relative survival rates for patients diagnosed with colon cancer, followed through 2012 for vital status and cause of death. Emphasis is placed on conditional survival estimates by age, sex, and stage at diagnosis. Key words: colon cancer, conditional survival, population-based, prognosis, relative survival, SEER.

1337

ADOLESCENT AND MID-LIFE DIET AND PANCREATIC CANCER RISK IN THE NIH-AARP DIET AND HEALTH STUDY Vanessa Gordon-Dseagu*, Frances Thompson, Amy Subar Elizabeth Ruder, Anne Thiébaud, Barry Graubard, Nancy Potischman, Rachael Stolzenberg-Solomon (National Cancer Institute, Division of Cancer Epidemiology and Genetics, National Institutes of Health)

Background: Increasing incidence and low survival rates for pancreatic cancer are suggestive of the need to better understand the factors underlying the development of the disease. Given its long latency period, exploring the influence of early and midlife exposures will further advance our understanding of the cancer. **Objective:** We examined the associations between diet during early adolescence, 10 years before baseline (ages 40-61 years), and their joint effects upon pancreatic cancer incidence in the NIH-AARP Diet and Health Study. **Design:** 303,094 participants aged 50-71 y completed two 37-item food frequency questionnaires in 1996 that assessed diet at ages 12-13 years and 10 years previously. We used Cox proportional hazards regression to calculate adjusted hazard ratios (HRs) and 95% confidence intervals (CIs). **Results:** Average follow-up was 10.1 years and 1,322 pancreatic adenocarcinoma cases were identified. When comparing highest to lowest tertile (T3 vs T1) carbohydrate intake during adolescence (HR (95% CI): 0.87 (0.76, 0.99), but not 10 years before baseline, was inversely associated with pancreatic cancer. Total fat intake 10 years before baseline was significantly associated with risk (1.17 (1.02, 1.34), and high fat intake during both adolescence and midlife were positively associated with risk (1.37 (1.12, 1.67)). Calcium intake 10 years before baseline was associated with reduced risk (T3 vs T1: 0.87 (0.76, 0.99), P-trend=0.03) as was a change from low intake in adolescence to high intake in midlife (0.71 (0.54, 0.93)). Compared with low solid fat (butter and margarine) intake, high intake 10 years before baseline was associated with increased risk (1.22 (1.06, 1.41), P-trend=0.007). Solid fat consumption during both time points (1.33 (1.09, 1.61)) was also associated with pancreatic cancer risk. **Conclusion:** Our study found a number of dietary factors, present during adolescence and midlife, to be associated with an increased risk of pancreatic cancer.

"-S/P" indicates work done while a student/postdoc

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INVERSE ASSOCIATION OF LYMPHOID LEUKEMIA INCIDENCE AND ANEMIA PREVALENCE AMONG PRESCHOOL CHILDREN Frank Groves* (University of Louisville / School of Public Health & Information Sciences / Department of Epidemiology & Population Health)

To explore a possible etiologic role of iron-regulatory cytokines in childhood acute lymphoblastic leukemia, the ecologic relationship between leukemia incidence and anemia prevalence among preschool children was studied using international cross-sectional data as well as US time-series data. Lymphoid leukemia incidence rates for various countries from the International Agency for Research on Cancer were regressed on anemia prevalence rates from the World Health Organization in a cross-sectional fashion. There was a statistically-significant inverse association between leukemia incidence and anemia prevalence in 53 countries, with leukemia incidence being highest in those countries where anemia prevalence was lowest. Four decades of acute lymphoblastic leukemia incidence (from nine SEER cancer registries) and anemia prevalence (from NHANES surveys) were also graphed for comparison with the international cross-sectional data. Graphical inspection revealed a similar inverse association of US leukemia incidence & anemia prevalence rates during 1973-2012, with leukemia incidence increasing as anemia prevalence was decreasing. Furthermore, white children had twice the leukemia incidence, but only half the anemia prevalence, compared to black children. It is postulated that the iron-replete state may be favorable to leukemogenesis, perhaps due to promotion of lymphopoiesis by hepcidin. Conversely, the iron-depleted state may be unfavorable to leukemogenesis, perhaps due to inhibition of lymphopoiesis by erythropoietin.

1340-S/P

AGE-SPECIFIC INDICATORS OF A HEALTHY LIFESTYLE AND RISK FOR POSTMENOPAUSAL BREAST CANCER: ASSOCIATIONS WITH ALCOHOL INTAKE, OBESITY, PHYSICAL ACTIVITY, AND ASPIRIN USE Kathleen McClain*, Lauren McCullough, Patrick Bradshaw, Sumitra Shantakumar, Rebecca Cleveland, Mary Beth Terry, Alfred Neugut, Susan Teitelbaum, Marilie Gammon (University of North Carolina, Chapel Hill)

Modifiable lifestyle factors are consistently associated with breast cancer risk, which may differ by menopausal status. Whether these factors vary in postmenopausal women of different ages, particularly among the elderly, is understudied. We investigated whether lifetime average alcohol intake, obesity in the year prior to diagnosis (assessed by the body mass index (BMI, weight in kilograms/height in meters²)), lifetime average recreational physical activity (RPA), and ever use of aspirin display age-specific associations among a population-based sample of postmenopausal women (N=1006 cases and 990 frequency-matched controls). Breast cancer risk factor information was collected shortly after diagnosis through interviewer-administered questionnaires. Unconditional logistic regression was used to model associations between modifiable factors and postmenopausal breast cancer by age (<65 years/65+ years). Subgroup analyses were performed stratifying women by hormone replacement therapy (HRT) use, and among women with estrogen receptor positive/progesterone receptor positive (ER+/PR+) cancers. Odds ratios (ORs) were stronger among women 65+ years for alcohol intake (OR=1.84, 95% confidence intervals (CI): 1.06, 3.19, 15-30 g/day vs. nondrinkers), obesity (OR=1.82, 95% CI: 1.28, 2.57, BMI 30+ vs. <25), and RPA (OR=0.71, 95% CI: 0.48, 1.05, highest quartile vs. inactive), although multiplicative interaction with age was not evident ($p>0.05$). Further, among those 65+ years, associations were generally more pronounced among never users of HRT and for ER+/PR+ cancers. Decreased odds ratios associated with ever vs. never aspirin use were observed in both women <65 (OR=0.72, 95% CI: 0.52, 0.98) and 65+ years (OR=0.74, 95% CI: 0.55, 1.00); but associations among hormone-related subgroups were inconsistent. Interventions targeting these modifiable lifestyle factors, particularly designed for women 65+ years of age, may reduce the burden of breast cancer in the United States.

“-S/P” indicates work done while a student/postdoc

1339-S/P

BODY MASS INDEX AND RISK OF COLORECTAL CANCER ACCORDING TO TUMOR LYMPHOCYTIC INFILTRATE Shuji Ogino*, Akiko Hanyuda (Harvard T.H. Chan School of Public Health)

Background: Higher body mass index (BMI) has been associated with increased risk of colorectal cancer. Evidence suggests that excess energy balance may influence systemic immune and inflammatory status. Thus, we hypothesized that the positive association between BMI and colorectal cancer risk might differ according to colorectal carcinoma subtypes according to levels of lymphocytic reaction to tumor. **Methods:** We collected biennial questionnaire data on weight and baseline height information in the Nurses' Health Study (1980-2010) and the Health Professionals Follow-up Study (1986-2010). Utilizing duplication-method Cox proportional hazards regression models, we prospectively assessed the association between BMI and risk of colorectal cancer subtypes according to the degree of Crohn's-like lymphoid reaction, peritumoral lymphocytic reaction, intratumoral periglandular reaction, tumor-infiltrating lymphocytes, the overall lymphocytic reaction score, or tumor-infiltrating T-cell [CD3+, CD8+, CD45RO (PTPRC)+, or FOXP3+] density. Statistical significance level was adjusted for multiple hypotheses testing by Bonferroni correction. **Results:** We documented 1,436 colorectal carcinomas with available tumor immunity data over 3,346,752 person-years of follow-up. BMI was significantly associated with higher risk of overall colorectal cancer (P_{trend}<0.001); however, the association of BMI with colorectal carcinoma risk did not significantly differ by the level of lymphocytic reaction or T-cell infiltration in tumor tissue status (Pheterogeneity>0.10). **Conclusions:** BMI may be associated with risk of colorectal cancer regardless of levels of tumor lymphocytic infiltration.

1341-S/P

STATISTICAL ANALYSIS OF RADON GAS INDOOR CONCENTRATIONS AND RISK OF LUNG CANCER: MEASUREMENT METHODS AND VARIABLES. Yula Merola*, Luiz Eduardo Mendes (Universidade Estadual Paulista- Unicap)

A national reference level for radon represents the maximum accepted radon concentration in homes and is an important component of a national prevention program. The goal of this meta-analysis was to investigate the relationship between residential radon exposure and lung cancer in the international literature. The literature search was performed using PubMed and other online sources. All studies selected were stratified by level of exposure to evaluate the dose-response relationships. Adjusted odds ratios with confidence intervals of 95% were extracted from each of the studies for lung cancer risk assessment due to exposure to each category of residential radon concentrations expressed in Becquerel per cubic meter (Bq/m³). However, due to the choice of different Becquerel categories of radon concentrations by the studies, such data was later adjusted by using WHO's categories 0-99, 100-199, 200-299 and >300 Bq/m³. For each study, analysis of the weighted linear regression of log-adjusted odds ratio was performed according to the average radon concentrations. Coefficients and confidence intervals of 95% were calculated according to the various levels of radon concentration Sensitivity analyzes: As heterogeneity of the studies may be related to several factors (region assessed - rural or urban - geologic features, participants' characteristics, methods of recruitment, adjustment for confounding factors, and length of exposure assessment), separate meta-analysis was performed by grouping studies that had similar characteristics - such as those that recruited that >75% of eligible cases in similar environments or that took measurements of radon in at least 70% of all occupied houses.

1342-S/P

OCCURRENCE OF MULTIPLE (2+) SUBSEQUENT MALIGNANCIES FOLLOWING CHILDHOOD CANCER Arena del Mar Morillo*, Ruth Kleinerman, Wayne Liu, Lindsay Morton, Amy Berrington de Gonzalez(National Cancer Institute)

Childhood cancer survivors are at increased risk of subsequent malignancies. Higher risks are particularly associated with treatment and genetic susceptibility, which are both major sources of morbidity and mortality. Patterns of second cancers (one subsequent malignant neoplasm) have been studied extensively. However, some children develop 2 subsequent malignancies and to date these have received less attention. We evaluated the patterns of 2 subsequent malignant neoplasms (SMNs) in survivors of the five most common childhood cancers: Hodgkin lymphoma (HL), leukemia, non-Hodgkin lymphoma (NHL), and brain/central nervous system (CNS) or soft-tissue neoplasms. We selected survivors diagnosed at ages 0-19 years during 1973-2012, as reported in 9 SEER registries. Mean follow-up was 12 years, (range=2 months-39 years). In the 3,752 HL survivors, 68 (2%) patients were diagnosed with 2 SMNs (mean age at HL diagnosis=16 years, mean age of SMN diagnosis =36 years), most commonly 2 breast cancers (n=23 patients, of whom 21 received initial radiotherapy; n=7 synchronous). In the 7,724 brain/CNS malignancy survivors, 21 (0.3%) patients were diagnosed with 2 SMNs (mean age at first brain/CNS diagnosis=9 years, mean age of SMN diagnosis=24 years), the most commonly diagnosed multiple primaries were 2 subsequent brain/CNS malignancies (n=8, of whom 5 received initial radiotherapy). In contrast, no clear patterns in the occurrence of multiple subsequent malignancies were observed in leukemia (10,625 survivors, 11(0.1%) 2 SMNs); NHL (2,936 survivors, 11(0.4%) 2SMNs); or soft-tissue neoplasm (2,597 survivors, 7(0.3%) with 2 SMNs) survivors. Some ultimately developed 3 SMNs: HL n=9; leukemia n=1; NHL n=2; brain/CNS n=4; soft-tissue n=2. Our preliminary data suggests the potential role of radiotherapy in developing multiple future cancers early in adulthood, and in the same organ, following childhood cancer. Detailed analyses of the timing, treatment and patterns are ongoing.

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NEIGHBOURHOOD SOCIAL AND MATERIAL DEPRIVATION AND PROSTATE CANCER RISK IN MONTREAL, CANADA

Marie-Elise Parent*, Claire Demoury, Nicoleta Cutumisu, Tracie A Barnett, Eric Robitaille, Brittany Sigler, Hugues Richard (INRS-Institut Armand-Frappier, University of Quebec)

Introduction: Prostate cancer (PCa) risk shows strong spatial variation which remains largely unexplained. We describe PCa risks in relation to neighbourhood social and material census-derived deprivation. **Methods:** In a case-control study in Montreal, 1,933 incident PCa cases aged 75 years were ascertained across French hospitals in 2005-9, and 1,994 age-matched (± 5 years) controls were selected from electoral lists. Interviews elicited sociodemographic and lifestyle characteristics. Addresses at diagnosis (cases) or recruitment (controls) were geocoded and linked to two census-derived indices of material (income, education, employment) and social (proportion of people living alone, separated or widow, and single-parent families) deprivation in dissemination areas (census areas inhabited by 400-700 persons). **Results:** Polytomous logistic regression was used to estimate ORs (95% confidence intervals [CI]) for the association between the two indices, in quintiles, and risk of low-and-high-grade (Gleason score of 7 [4+3] or higher) PCa. Models were adjusted for age, ancestry, 1st degree family history, education, income, marital status, physical activity, BMI, frequency of physician visits, exposure to traffic-related air pollution, and PCa screening frequency. For material deprivation, using the most favourable quintile as referent, the OR for low-grade PCa across increasingly unfavourable quintiles were 1.07, 1.25, 1.11, 1.05; for high-grade PCa, corresponding values were 1.15, 1.48, 1.25, 1.39, none reaching significance. For social deprivation, ORs for low-grade PCa were 0.70, 1.32, 1.16, 1.50, while for high-grade PCa, they were 1.38 (95%CI 0.79-2.43), 1.34 (0.78-2.32), 1.85 (1.13-3.03), and 2.04 (1.23-3.38). **Discussion:** Low-grade PCa showed little association with neighbourhood material or social deprivation. High-grade PCa was weakly associated with material deprivation but it was strongly associated with social deprivation, independently of individual factors.

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METHOD TO INTEGRATE CANCER IMMUNOLOGY INTO MOLECULAR PATHOLOGICAL EPIDEMIOLOGY FOR FUTURE IMMUNO-PREVENTION AND IMMUNOTHERAPY Shuji Ogino* (Harvard T.H. Chan School of Public Health)

Background: Cancer immunology has recently been flourishing because of success of immunotherapy strategies. Immune response to cancer relates to molecular features of tumor. Studies have shown that many types of cancers utilize the immune checkpoint mechanism to evade from immune surveillance, and that selected immune checkpoints can be blocked to treat multiple tumor types. Evidence also indicates that modifiable factors such as aspirin use, physical activity and systemic vitamin D level can influence not only cancer risk but also host immunity. Thus, integration of cancer immunology, molecular pathology and epidemiology is needed. **Design:** We propose a new integrative model of immuno-molecular pathological epidemiology (immuno-MPE), which can decipher the relationship between an exposure and disease subtype according to immune response status. We conducted two proof-of-principle studies using the Nurses' Health Study and the Health Professionals Follow-up Study. We examined plasma 25-hydroxyvitamin D [25(OH)D] level [or body mass index (BMI) in the second study] in relation to incidence of colorectal cancer subtypes according to levels of immune response to tumor, measured as lymphocytic infiltration in tumor tissue. We applied a statistical test to assess etiological heterogeneity of the associations of each exposure with different subtypes. **Results:** Using a nested case-control design, plasma 25(OH)D level was associated with lower incidence of immune-rich colorectal cancer subtype but not with that of immune-poor subtype. In contrast, higher BMI was associated with higher incidence of colorectal cancer regardless of immune response level, as measured by lymphocytic infiltrates. **Conclusion:** The integrative approach of immuno-MPE can give insights on how an exposure can influence cancer incidence according to levels of immune response to tumor. The immuno-MPE approach can give insights for the development of immuno-prevention and immunotherapy strategies.

1345-S/P

THE FUTURE OF HEPATOCELLULAR CARCINOMA INCIDENCE IN THE UNITED STATES FORECAST THROUGH 2030

Jessica Petrick*, Scott Kelly, Sean Altekruse, Katherine McGlynn, Philip Rosenberg (National Cancer Institute)

Hepatocellular carcinoma (HCC) incidence rates have been rising in the United States for the past 35 years. As HCC has a poor prognosis, quantitative forecasts could help to inform prevention and treatment strategies to reduce the incidence and burden of HCC. Single year HCC incident case and population data for the years 2000-2012 and ages 35-84 years were obtained from the Surveillance, Epidemiology, and End Results (SEER) 18 Registry Database. We forecast incident HCC cases in the U.S. through 2030, utilizing age-period-cohort (APC) models and stratifying by sex, race/ethnicity, and age. Forecast incidence rates and 95% confidence intervals were obtained by multiplying the estimated longitudinal age incidence rate curve in a referent birth cohort by the rate ratio between birth-specific cohorts and the referent cohort. Rates of HCC increased with each successive birth cohort through 1959. However, rates began to decrease with the 1960-1969 birth cohorts. Asians/Pacific Islanders have had the highest rates of HCC in the U.S. for many years, but the rates have stabilized and begun to decline in recent years. Between 2013 and 2030, rates among Asians/Pacific Islanders are forecast to decline further with estimated annual percentage changes of -1.59% among men and -2.20% among women. Thus, by 2030, Asians are forecast to have the lowest incidence rates among males, while Hispanics are forecast to have the highest rates among males (age-standardized rate [ASR]=44.2). Blacks are forecast to have the highest rate among females (ASR=12.82). While liver cancer has long had some of the most rapidly increasing incidence rates, the decreasing rates seen among Asians/Pacific Islanders, individuals younger than 65, and cohorts born after 1960 suggest that there will be declines in incidence of HCC in future years. Prevention efforts should be focused on individuals in the 1950-1959 birth cohorts, Hispanics, and blacks.

1346

LATE EFFECTS STUDIES IN CHILDHOOD LEUKEMIAS : OVERVIEW AND SINGLE INSTITUTION STUDY Robin Rohrer* (Seton Hill University)

Objectives: The objectives of this study are to place the current research and practices of the late effects of childhood leukemias in both a historical context and through the lens of a single institution experience. As a medical historian and pediatric cancer epidemiologist the author explores both the development of services over the last fifty years for childhood leukemia survivors and the actual use of services at a major regional referral hospital. The Children's Hospital of Pittsburgh is the provider of childhood cancer diagnosis and treatment in the tri-state region of Pennsylvania, Ohio and West Virginia. **Background:** This study is both an historical overview of the recognition of neuropsychological and psychosocial late effects following treatment for childhood leukemias as well as a single institution study of a particular cohort of children with either acute lymphoblastic leukemia or acute myeloid leukemia at the Children's Hospital of Pittsburgh. The historical study begins with the 1960s with the greater success and survival due to improved therapy. For the single institution study the author developed a family interview instrument and a medical staff interview instrument which contained questions on diagnosis, screening for late effects, referral to services, neuropsychological testing and outcome reporting. These interviews were conducted in the outpatient clinic, late effects clinic, by phone, mail or email. **Results and conclusions:** Using both interview data and historical records (archives of the National Cancer Institute, Memorial Sloan Kettering Cancer Center, St Jude Children's Research Hospital and Children's Hospital of Pittsburgh) the author has found under use of both referrals to services and acceptance of services by patient families. Although back to school programs are popular and an acceptable service it is important to determine why psychosocial and neuropsychological services in this population are underutilized.

1348

ADHERENCE TO CLINICAL GUIDELINES FOR PATIENTS WITH CANCER OF UNKNOWN PRIMARY Julie Smith-Gagen*, Paulo Pinheiro (University of Nevada, Reno)

OBJECTIVE: Patients with cancer of unknown primary (CUP) may receive sub-optimal diagnostic investigation due to biological and clinical uncertainty of the disease. We sought to characterize the adherence to guideline-concordant initial diagnostic evaluation and the impact initial guidelines have on patient survival. **METHODS:** Patients with a diagnosis of cancer of unknown primary were identified in the Surveillance Epidemiology and End Results (SEER)-Medicare database between 2005 and 2009 and followed until December 31, 2010 (n=10,575). Diagnostic procedures were identified in the Medicare claims dataset. Cox proportional hazards regression was used to examine time to receipt of diagnostic procedure and patient survival. **RESULTS:** Only 35.3% of CUP patients receive guideline-concordant initial diagnostic evaluation. The likelihood of receiving guideline-concordant provisional diagnostic evaluation was highest among younger patients, urban patients, patients with higher income and among patients with comorbid conditions. Receipt of initial CUP diagnostic procedures were associated with about a 30% lower risk of death, Hazard Ratio and 95% Confidence Interval, HR 95%CI, (0.77 (0.7,0.8). Also associated with a lower hazard of death included receipt of colorectal cancer tests, HR 95%CI, 0.85(0.8,0.9), mammograms, HR 95%CI, 0.69 (0.6,0.7), immunohistochemistry tests, HR 95%CI, (0.90(0.8,0.9), molecular profiling, HR 95%CI, 0.61(0.5,0.6), and PSA (HR 95%CI, 0.72(0.6,0.8). **CONCLUSIONS AND RELEVANCE:** The currently recommended initial CUP diagnostic guidelines are effective in a large and diverse population-based cohort. Some inconsistently recommended supplemental diagnostic procedures are also effective in this cohort. Additionally, this study also initiates a discussion regarding the documentation of provisional CUP in population-based cancer registries.

1347-S/P

SUN EXPOSURE PROFILES AND SKIN CANCER RISK: A NESTED CASE-CONTROL STUDY IN FRENCH WOMEN Isabelle Savoye*, Catherine Olsen, Anne Bijon, Lucien Wald, Laureen Dartois, Françoise Clavel-Chapelon, Marie-Christine Boutron-Ruault, Marina Kvaskoff (Inserm U1018, Centre for Research in Epidemiology and Population Health (CESP), Lifestyle, genes and health: integrative trans-generational epidemiology Team.

Background: While ultraviolet radiation (UV) exposure is a recognized risk factor for skin cancer, associations are complex and few studies allowed a direct comparison of exposure profiles associated with cutaneous melanoma, basal-cell carcinoma (BCC), and squamous-cell carcinoma (SCC) within a single population. **Methods:** We examined associations between UV exposures and skin cancer risk in a nested case-control study within E3N, a prospective cohort that included 98,995 French women aged 40-65 years in 1990. In 2008, a specific UV questionnaire was sent to all reported skin cancer cases and 3 controls per case, matched on age, county of birth, and education. Analyses included 366 melanoma cases, 1027 BCC cases, 165 SCC cases, and 3647 controls. Participants completed lifetime diaries of residence and holiday locations, with information on time spent in the sun and sun protection for each location. These data were linked to an international database on average daily UV doses, which was used to calculate total, residential, and recreational UV scores. Conditional logistic regression models were adjusted for pigimentary traits. **Results:** A history of severe sunburns <25 years was strongly associated with increased risks of all skin cancers (melanoma: OR=2.5, BCC: OR=2.0, SCC: OR=2.1 for 6 sunburns vs. none), while sunburns 25 years were associated with BCC and SCC only. There were positive dose-response relationships between total UV score and BCC (ptrend=0.02) and SCC (ptrend=0.05) risks, but not with melanoma risk. While SCC risk was mostly associated with total and residential UV scores, BCC risk was more strongly associated with recreational UV score. Sunscreen use <25 years was inversely associated with BCC risk. **Conclusions:** Melanoma, BCC, and SCC are associated with different sun exposure profiles. While melanoma risk is best predicted by number of sunburns <25 years, BCC is more strongly associated with recreational sun exposure, and SCC with total and residential sun exposure.

1349

CONIZATION AS A MARKER OF PERSISTENT HUMAN PAPILLOMA VIRUS INFECTION AND RISK OF BREAST CANCER Deirdre Cronin-Fenton*, Mette Sogaard, Dora K. Farkas, Anne G. Ording, Henrik T. Sørensen (Department of Clinical Epidemiology, Aarhus University Hospital, Aarhus N, Denmark)

Background: Several studies have identified human papillomavirus (HPV) DNA in breast tumors. Population-based studies suggest up to four-fold increased risk of breast cancer among women with chronic HPV infection, but findings are inconsistent. **Methods:** We used Denmark's population-based medical registries to assemble a cohort of 87,782 women, who underwent cervical conization, as a marker of persistent HPV infection, from January 1st 1978 through November 30th 2013. We computed standardized incidence ratios (SIRs) with associated 95% confidence intervals (CIs) comparing the observed versus expected number of breast cancers among women who underwent conization. We stratified our analyses by age, history of autoimmune disease, alcohol-related disease, obesity, and other comorbid diseases, as well as by breast cancer stage and estrogen receptor (ER) status at diagnosis. We also calculated the absolute risk of breast cancer in the HPV cohort. **Results:** Overall, 2,694 breast cancers were diagnosed versus 2,521 expected over a median follow-up period of 15.5 years, yielding an SIR of 1.1 (95% CI: 1.0, 1.1). The majority of breast cancer cases were diagnosed more than one year after the conization procedure. Risk remained slightly elevated within five years of follow-up (<1 year of follow-up: SIR=1.2, 95% CI: 0.92, 1.5; 1-5 years of follow-up: SIR=1.2, 95% CI: 1.1, 1.3) but attenuated thereafter (>5 years of follow-up: SIR=1.1, 95% CI= 1.0, 1.1). Stratification by stage, ER status, comorbid disease, obesity, or alcohol-related disease produced little change in the estimates. Breast cancer risk among women with autoimmune disease (SIR=1.4, 95% CI: 1.0, 1.8) was elevated after 5 years of follow-up. **Conclusions:** Our study suggests that breast cancer risk is slightly elevated among women who undergo cervical conization for persistent HPV infection, possibly due to detection bias.

1350-S/P

PROPORTIONAL HAZARDS MODELS OF COLORECTAL CANCER MORTALITY ACROSS TIME-DEPENDENT COLONOSCOPY EXPOSURE IN A POPULATION-WIDE COHORT OF SCREENING AGE WITH CONSIDERATION OF COMPETING RISKS David Stock*, Linda Rabeneck, Lawrence Paszat (University of Toronto)

Background: Colonoscopy has been demonstrated effective in colorectal cancer (CRC) mortality reduction, though current screening guidelines recommending colonoscopy every 10 years among average risk populations of screening age are not directly based on empirical evidence for such an interval. We assessed the protective benefit of colonoscopy within the past 10 years against colorectal cancer death (CCD) and whether this effect is maintained with age, using time-dependent exposure models, with consideration of competing mortality. **Methods:** We used administrative data to compare risk of CCD across colonoscopy utilization among a population-wide cohort comprising individuals aged 60 to 80 years (N= 1,509,423) as of January 1, 2002. Baseline and time-dependent (i.e., updated) relative hazards of CCD were assessed in the context of those for competing "other cause deaths" (OCD). Cumulative incidence of CCD and OCD across colonoscopy exposure, over follow-up, was estimated. Relative hazards were computed by age strata (60-69 years, 70-74 years, 75+ years) and by proximal and distal cancer subsites. **Results:** At least one colonoscopy during the 10 years prior to baseline was estimated to provide a 51% reduced hazard of CCD (HR: 0.49; 95% CI: 0.45-0.54) over the following eight. When colonoscopy was modeled as a time-dependent covariate, risk of CCD was further diminished (multivariable-adjusted HR: 0.36; 95% CI: 0.33-0.38), demonstrating a larger protective effect when then main exposure was correctly classified post baseline. Stratified analyses indicated moderately attenuated CCD risk reduction among the oldest age group, however, consideration of OCD suggested this may have been due to competing risks. **Conclusion:** Maintaining colonoscopy exposure recent to 10 years may provide substantial protective benefit for average-risk individuals over 50 years. CCD risk reduction may be maintained well beyond 74 years, a common upper age limit recommended by screening guidelines.

1352-S/P

THE ASSOCIATION BETWEEN COLORECTAL CANCER SCREENING AND LANGUAGE BARRIERS WITH HEALTH PROVIDERS AMONG HAITIAN HOUSEHOLDS RESIDING IN LITTLE HAITI, FLORIDA Meredith L. Wilcox*, Juan Manuel Acuña, Pura Rodriguez de la Vega, Gretel Castro Purnima Madhivanan (Department of Medical and Population Health Sciences Research, Florida International University)

BACKGROUND: Compliance with screening for colorectal cancer (CRC) is lower among Haitian households compared with non-Hispanic White, Black, and Hispanic households in Little Haiti, Florida. Qualitative research suggests that Haitians experience unique cultural and linguistic barriers to screening. This study assessed the association between CRC screening and language barriers with health providers among 420 Haitian households in Little Haiti. **METHODS:** This study analyzed cross-sectional data from a random-sample, population-based survey conducted in Little Haiti in 2011-2012. CRC screening was defined as (1) compliance with biennial blood stool test (BST) and (2) ever-use of colonoscopy by at least 1 household member. Language barriers were deemed present if any member had ever misunderstood a provider's recommendation due to speaking different languages. Associations between outcomes and exposure were assessed using chi-squared tests and binary logistic regression models. Analyses were restricted to Haitian households that contained at least 1 member age 50 (n=325). **RESULTS:** Less than half of Haitian households were compliant with BST (42%) or had ever undergone colonoscopy (46%). One-fifth of households reported language barriers with health providers (17%). Language barriers were significantly associated with BST compliance (p=0.003), but not colonoscopy (p=0.316). After controlling for other covariates, odds of complying with BST were significantly greater among Haitian households that experienced language barriers with providers (AOR=2.53, p=0.017). **CONCLUSIONS:** Screening for CRC was expected to be lower among Haitian households that experienced language barriers with health providers. However, this study found that language barriers facilitated screening, namely compliance with BST. This finding calls for additional research on language-related aspects of health care utilization among this population, e.g. the impact of language interpreters on CRC screening.

1351-S/P

COLORECTAL CANCER AND THE HUMAN GUT MICROBIOME: REPLICATION WITH WHOLE-GENOME SHOTGUN METAGENOMICS Emily Vogtmann*, Xing Hua, Georg Zeller, Shinichi Sunagawa, Anita Voigt, Rajna Herczeg, James Goedert, Jianxin Shi, Peer Bork, Rashmi Sinha (Nutritional Epidemiology Branch, Division of Cancer Epidemiology & Genetics, National Cancer Institute)

Accumulating evidence indicates that the gut microbiota affects colorectal cancer development, but previous studies have varied in population, technical methods, and associations with cancer. Understanding these variations is needed for comparisons and for potential pooling across studies. Therefore, we performed whole-genome shotgun metagenomics sequencing on fecal samples from 52 pre-treatment colorectal cancer cases and 52 matched controls from Washington, DC. To address some sources of variation in previous studies, we compared findings from a previous 16S rRNA study to the metagenomics-derived taxonomy within the same population. In addition, metagenome-predicted genes, modules, and pathways in the Washington, DC cases and controls were compared to French cases and controls whose specimens were processed using the same platform. Associations between the presence of fecal *Fusobacteria*, *Fusobacterium*, and *Porphyromonas* with colorectal cancer detected by 16S rRNA were replicated by metagenomics. Considering significant cancer associations with the relative abundance of genes, modules, and pathways in the French population, statistically significant associations in the Washington, DC population were detected for four out of 10 genes, three out of nine modules, and seven out of 17 pathways. In conclusion, metagenomic sequencing results replicated most, but not all of the major taxonomic associations with colorectal cancer previously observed from 16S rRNA profiles. In addition, colorectal cancer in the Washington, DC study was associated with 39% of the metagenome-predicted genes, modules, and pathways identified from the French study. Future studies must have larger sample sizes or pool data across studies to have sufficient power to detect associations that are reproducible and significant after correction for multiple testing.

1353-S/P

SUBJECT RESPONSE RATES IN CASE-CONTROL STUDIES OF CANCER: TIME TRENDS AND QUALITY OF REPORTING Mengting Xu*, Jack Siemiatycki, Lesley Richardson (The University of Montreal Hospital Research Centre (CRCHUM))

Background: The validity of results from case-control studies depends in part on response rates. Inconsistent quality of reporting hampers our ability to appreciate the magnitude and trend over time in response rates. Objectives: To examine the quality of reporting and time trends of response rates in published case-control studies over the past 30 years. **Methods:** A retrospective review of case-control studies of cancer published in 15 major journals was conducted. Four publication periods (1984-86, 1995, 2005 and 2013) were reviewed. Information on study base ascertainment, data collection methods, population characteristics, response rates, and reasons for non-response was extracted. Quality of response rate reporting was assessed based on the amount of information reported. Time trends of response rates, and reasons for non-response, were assessed separately using linear regression, adjusted for study location and reporting quality. **Results:** 370 studies conducted between 1961 and 2010 were reviewed. Overall, the reporting of response rates was very poor, especially for control series. Few studies reported reasons for non-response. Reporting quality has deteriorated recently. Overall, response rates declined by 0.35% (95% CI: -0.51%, -0.19%) and 0.81% (95% CI: -1.00%, -0.62%) per year in case and population control series respectively. Steeper declines were observed in studies conducted after 2000, with declines of 2.07% (95% CI: -3.60%, -0.55%) and 2.43% (95% CI: -3.98%, -0.87%) per year, in the two series respectively. **Conclusion:** Response rates and quality of reporting of response rates have declined over the past 30 years. It would be helpful to develop standardized templates for reporting response rates, including definitions, and reasons for non-response.

"-S/P" indicates work done while a student/postdoc

1360

THE PREVALENCE AND DISTRIBUTION OF METABOLIC SYNDROME COMPONENTS IN HISPANIC CHILDREN IN NORTHEAST TENNESSEE: A PILOT STUDY Arsham Alamian*, Abraham Alhassan, Julia Rusiñol, Jonathan Peterson, William A. Clark, Effiong Otukonyong, Liang Wang, Jo-Ann Marrs (East Tennessee State University)

Metabolic syndrome (MetS) is a major risk factor for cardiovascular disease yet it has been little studied in Hispanic children of rural areas. This pilot study aimed to estimate the prevalence of MetS and its components (high waist circumference (WC), elevated blood pressure (BP), high triglycerides (TRI), low high-density lipoprotein (HDL), and hyperglycemia) in a sample of Hispanic children aged 2 to 10 years from northeast Tennessee (TN). Between June and October 2015, 46 Hispanic children were recruited during their well-child visit at a community health center in Johnson City, TN. Anthropometric data, blood pressure readings, and a blood sample were collected. Descriptive statistics were used to estimate the prevalence of MetS and its components. Chi-squared test or Fisher's exact test was used to test differences of proportions. Results showed that 41.3% of Hispanic children (mean age:6.8 years; SD:2.5) were overweight or obese (Body Mass index (BMI) for age and sex 85th percentile), 15.2% had a high WC (90th percentile for age and sex), 30.4% had elevated BP (systolic or diastolic BP for age, sex and height 90th percentile), 13.0% had low HDL (5th percentile for age and sex), and 45.6% had high TRI (95th percentile for age and sex). Overall, 17 (37%) children were negative for every component of MetS, 17 (37%) were positive for one component, 6 (13%) for two components, 5 (11%) for three components, and 1 (2%) for four components. The prevalence of MetS (3 components) was 13%. While the prevalence of MetS did not vary by sex, it tended to be higher (33.3%) in children aged 4 or younger than in 5 to 10 (12.1%) year olds (P=0.05). The prevalence of having 2 or more positivities for MetS was significantly higher among overweight/obese children than in children with lean weight (47.4% vs. 11.1%, P=0.03). Findings provide evidence that Hispanic children are at high risk for MetS. Prevention efforts should begin early and target children with elevated BMI.

1362-S/P

SCREENING OF HYPERTENSION AND ASSOCIATED RISK FACTORS FOR CHRONIC KIDNEY DISEASE AMONG ELDERLY LIVING IN CEARA STATE, BRAZIL FROM 2009 TO 2015 Geraldo Bezerra da Silva Junior*, Carina Vieira de Oliveira Rocha, Debora Mota Cordeiro Praciano, Isadora Rodrigues da Costam Joao Amarildo Rodrigues da Silva Filho, Laio Ladislau Lopes Lima, Lucas Arnaud, Elizabeth De Francesco Daher, Sonia Maria Holanda Almeida Araujo (Collective Health Graduate Program, Health Sciences Center, University of Fortaleza. Fortaleza, Ceara, Brazil)

Introduction: In Brazil, systemic arterial hypertension (SAH) is the main cause of chronic kidney disease (CKD), followed by diabetes mellitus (DM). The aim of this study was to investigate SAH and associated risk factors for CKD in elderly living in an area of Northeast Brazil. **Methods:** From 2009 to 2015, a screening of SAH and risk factors for CKD in the general population during activities, including World Kidney Day, a campaign supported by the International Society of Nephrology and the Brazilian Society of Nephrology, was conducted. Were included in this study all participants older than 65 years. **Results:** 662 participants older than 65 years were included, with mean age of 72.1±6.2 years. 52.5% were female. 371 participants (56%) had SAH and 9.4% of them weren't taking any anti-hypertensive drug. Family history of SAH was found in 340 participants (51.3%). Previous diagnosis of CKD was found in 58 cases (8.7%) and 86 (12.9%) had family history of CKD. DM diagnosis and family history of DM was found in 161 (24.3%) and 263 (39.7%) of cases, respectively. Mean glycemia was 131.6±60.4, and 7.2% had glycemia>200 measured at random. Mean systolic blood pressure was 136.6±21.0mmHg, diastolic blood pressure was 81.5±11.9mmHg and 45.2% had blood pressure over 140X90mmHg. Mean body mass index was 26.5±4.2kg/m². 39% were overweight and 16.3% obese. Smoking was referred by 128 participants (19.4%), and sedentary lifestyle in 361 (54.5%). **Conclusion:** Was found a significant number of people with SAH and CKD, a frequency higher than the estimated prevalence in our population. This can be due to a bias of the campaign, which attracts people with previous diagnosis or with family history of SAH and CKD. This do not invalidates the importance of these kinds of activities, once it alerts the population for the risks of a still poor known disease by the general population, which is CKD. The focus on the elderly is important because they represent a high risk population for CKD.

“S/P” indicates work done while a student/postdoc

1361-S/P

PREVALENCE OF GROUP A STREPTOCOCCAL DISEASE IN AFRICA Dylan Barth*, Annesinah Moloi, Ardil Jabar, Bongani Mayosi, Mark Engel (University of Cape Town)

Introduction: The prevalence of severe group A streptococcal (GAS) disease is > 18.1 million cases with an incidence estimate of > 1.78 million cases py. GAS is a significant cause of mortality and morbidity on the global scale and in developing countries. However, the burden of GAS disease in Africa is not known. **Methods:** We conducted a comprehensive literature search in a number of databases, using an African search filter to identify GAS prevalence studies that have been published. Full copies of articles were identified by a defined search strategy and were considered for inclusion against predefined criteria. Statistical analysis included two steps: (1) identification of data sources and documenting estimates and (2) the application of the random-effects meta-analysis model with Freeman-Tukey transformation to aggregate prevalence estimates and account for between study variability by calculating the overall pooled estimates and 95% CI for GAS prevalence. Heterogeneity was evaluated using the I² statistic to determine the extent of variation in effect estimates that is due to heterogeneity (H₀) rather than chance. This systematic review is reported according to the Preferred Reporting Items for Systematic reviews and Meta- Analyses (PRISMA) 2009 Statement. **Results:** Of 47 articles retrieved, 12 met inclusion criteria of which 1 contained invasive GAS isolates. We excluded articles where a denominator was not stipulated. Meta-analysis revealed a pooled prevalence estimate of 20% (95% CI, 16 – 25%). Two articles reported on molecular characterisation of isolates from which 15 emm-types were documented. **Conclusion:** Pooled GAS prevalence is 20% among symptomatic individuals residing in Africa. There is a dearth of data on GAS molecular strain characterisation, thus emphasizing the need for further studies, so as to contribute to vaccine efforts.

1363-S/P

THE ASSOCIATION BETWEEN CURRENT CARDIOPULMONARY RESUSCITATION (CPR) TRAINING STATUS AND PREVENTIVE HEALTH BEHAVIORS Audrey Blewer*, Shaun McGovern, Jiaqi Li, Marion Leary, Benjamin Abella, John Holmes (University of Pennsylvania)

Background: Recent work has demonstrated that U.S. CPR training rates are low. Few studies have assessed the association of current CPR training status with other preventive health behaviors. Quantifying this association could help inform future targeted CPR education initiatives. **Objectives:** To test the hypothesis that those who engage in preventive health behaviors are more likely to have received current CPR training. **Methods:** We assessed engagement in CPR training and preventive health behaviors using data from the 2015 Health Household Survey (HHS), a biennial survey of 10,000 households in Southeastern Pennsylvania. Participants were contacted via random-digit-dialing using stratified sampling. We defined compliance with preventive behaviors from guidelines of the American Cancer Society, American Heart Association, and American Dental Association. Analysis used logistic regression controlling for age, gender, and insurance status. **Results:** From 12/2014-02/2015, 10,048 participants completed the HHS, while the data were regionally weighted (n=3,078,535). Subject mean age was 50 (95% CI: 47, 53) and 54% were female; 18% were currently CPR trained (<= 2yrs). Those who were compliant with blood pressure screening were more likely to be currently CPR trained (OR=2.38, 95% CI: 1.47-3.84, p<0.01). Additionally, those who exercised or visited a dentist within the recommended guidelines were more likely to have had current CPR training (OR=1.58, 95% CI: 1.23-2.02, p<0.01 and OR=1.41, 95% CI: 1.18-1.68, p<0.01 respectively). Compliance with gender-specific cancer screenings was associated with current CPR training (OR=1.10, 95% CI: 1.02-1.20, p=0.03). **Conclusions:** Complying with cardiac preventive health behaviors and cancer screenings were positively associated with current CPR training status. This work has implications for future targeted CPR training initiatives.

1364-S/P

BENZNIDAZOLE TREATMENT IS ASSOCIATED WITH LOWER BNP LEVELS IN CHAGAS CARDIOMYOPATHY PATIENTS

Clareci Cardoso*, Ester Sabino, Claudia Oliveira, Lea Oliveira, Ariela Ferreira, José Luiz Silva, André Antunes, Antonio Ribeiro (University of California, Berkeley, United States of America, Federal University of São João del-Rei, Brazil)

Background: Chagas Disease (ChD) remains as one of the most neglected diseases in the world and only one marginally effective therapeutic. The lack of good biomarkers for active infection or clinical end-points poses a problem for assessing the performance of interventions. Among the biomarkers, several studies showed that Brain Natriuretic Peptide (BNP) is accurate maker of left ventricular systolic and diastolic dysfunction. Aim: To evaluate the impact of the use of benznidazole (BZN) in NT-ProBNP levels in patients with Chronic Chagas Cardiomyopathy (CCC). **Method:** We have established a cohort of 2,157 patients with CCC to evaluate biomarkers can be useful in clinical practice. Patients with reported ChD with typical ECG findings were submitted to interview, blood sample collection and ECG. We recognized CCC subjects that received at least one course of treatment with BZN, defined as treated group (TrG), and used Genetic Matching to select a comparison group (CG) of CCC patients with similar characteristics. Gender, age, income, literacy, time of known ChD and use of diuretics were used for pairing. **Results:** The cohort was conducted in 21 cities of the north of state of Minas Gerais, Brazil, a highly endemic region, from 2013-2014. In base line, a total of 2,157 patients were interviewed and 1,959 (90.8%) of them had positive serology for ChD, of which 1803 with NT-BNP results were studied. The mean age was 59 years and 68% were female. A total of 491 patients reported previous use of BZN with average time of use of 90 days (TrG), 75% treated more than five years. The matched CG had frequencies of covariates identical to the TrG. In paired group analysis, log NT-ProBNP is significantly reduced with previous use of BZN (TrG: 4.63 versus CG: 4.97, difference: -0.38; CI: -0.46; -0.31). **Conclusion:** Patients previously treated with BZN had lower levels of NT-ProBNP, showing that empiric specific treatment may reduce the severity of CCC.

1366

THE EFFECT OF THE POLICY FOR RELIEVING CATASTROPHIC HEALTH EXPENDITURE DUE TO CARDIOVASCULAR DISEASES IN KOREA Hee-Sook Kim*, Seol Hee Chung, Hansang Kim, Hyun Joo Kim, Jin Yong Lee (HIRA Research Institute, Health Insurance Review and Assessment)

Cardiovascular diseases is one of the leading causes resulting in catastrophic health expenditure in Korea. In general, 10,000 USD is considered as the beginning of catastrophic health expenditure in Korea. To reduce the economic burden due to cardiovascular diseases, Korean government are implementing several political approaches using the National Health Insurance Scheme such as reducing rate of deductible or co-payment. In theory, there should be no more patient with cardiovascular diseases over 10,000 USD as medical costs. However, effect of the policy has not been evaluated. The aims of this study were to evaluate the effect of policy and to investigate any unintended consequences. Using the National Health Insurance database, we extracted the total cardiovascular patients who admitted hospitals in 2013 and calculated their annual medical costs. Cardiovascular diseases refer D15, I01, I05-I09, I20-I25, I26, I28, I30-I51, I70, I71, I79, M31, Q20-Q25, Q26, S25, S26 based on ICD-10 codes. There were 218,501 patients with cardiovascular diseases in Korea. Among them, 1,358 patients still spent more than 10,000 USD as medical costs. Their main reasons were due to intensive care and long term admission. In particular, the costs from special injection such as expensive antibiotics and blood products (e.g., condensed red blood cells or platelets) and the costs from special treatments including artificial ventilation and continuous renal replacement were main causes. In conclusion, it seems the policy of Korean government has reached the goal. However, we also find out the unintended consequence that some patients have still been suffering from catastrophic health expenditure. Therefore, Korean government consider new approaches to reduce their medical costs.

1365-S/P

CONTRIBUTION OF TOBACCO USE AND DIETARY RISKS TO THE CARDIO VASCULAR DISEASE (CVD) DEATHS IN IRELAND BETWEEN 1990 AND 2013 Shelly Chakraborty*, Kevin Balanda, Ivan Perry, Zubair Kabir (University College Cork, Ireland)

Background: CVD accounts for 33% of deaths and is the most common cause of death in Ireland. The major risk factors being tobacco smoking and improper diet. **Methods:** We accessed the publicly available data from the Institute of Health metrics and evaluation (IHME), United States. Irish data extracted were: CVD and risk factors for two calendar periods 1990 and 2013. CVD deaths were grouped into: Ischemic heart disease (IHD), stroke, other cardiovascular and circulatory disease. The risk factors were tobacco smoking and improper diet (five subgroups: diet high in processed meat, diet high in sodium, diet high in trans-fatty acids, diet low in fruits, diet low in vegetables). The absolute number of CVD deaths, the population-attributable-risk % (PAR) of risk factors and CVD deaths attributable to these risk factors were calculated. Individual PAR% may add up to >100% (Rothman et al). **Results:** Total CVD deaths in 1990 and 2013 were 11446 (IHD=9232, Stroke=1891 and other cardiovascular and circulatory=322) and 8352 (6447, 1463, and 442) respectively. The respective CVD deaths attributable (PAR%) to the risk factors for 1990 and 2013 were: smoking-attributable deaths declined from 2407 (56.3%) to 991 (23%), deaths attributable to diet high in processed meat increased from 1016 (11%) to 1024 (15.9%), deaths attributable to diet high in sodium declined from 1233 (29.1%) to 780 (25%), deaths attributable to diet high in trans-fatty acids declined from 499 (5.4%) to 188 (2.9%), deaths attributable to diet low in fruits declined from 1770 (39%) to 1037 (32.6%), deaths attributable to diet low in vegetables declined from 1655 (36.4%) to 1018 (31.7%). In total, 3550 CVD deaths were averted between 1990 and 2013 attributable to two major risk factors (tobacco use and improper diet). **Conclusion:** CVD deaths have declined in Ireland and improvements in population risk factors are crucial. However, aggressive tobacco and food policies can further accelerate the observed decline in CVD deaths.

1367-S/P

FACTORS ASSOCIATED WITH THE NUTRITIONAL OUTCOMES IN THE MOTHER-CHILD DYAD: A POPULATION-BASED CROSS-SECTION STUDY Mariana dos Santos Felisbino Mendes*, Tatiane Géa-Horta, Rita Silva, Rosemeire Fiaccone, Maurício, Barreto Gustavo Velasquez-Melendez (Universidade Federal de Minas Gerais)

Objective Estimate factors associated with double burden of nutritional outcomes in the mother-child dyad at the household level (child stunting and/or maternal overweight). **Design** Cross-sectional study using Brazilian Demographic and Health Survey. The nutritional outcomes were: mother with normal weight and child with normal height; overweight mother and child with normal height; mother with normal weight and short-stature child and overweight mother and children with short stature (double burden). The child was classified as short when the height-for-age (Z score) was < -2 standard deviations and the mother was classified as overweight when the body mass index was ≥ 25.00 kg/m². Socioeconomic status, environment, social vulnerability, maternal characteristics and the child's food intake were the exposure factors. Hierarchical multinomial logistic regression analysis was used to assess the associations. Setting National Demographic and Health Survey of Children and Women conducted in Brazil. Subjects 3,676 dyads. **Results After adjustments**, lower maternal educational level (OR=3.53; 95% CI 1.33-9.33) and inadequate households (non-masonry house) (OR=2.54; 95% CI 1.39-4.66) were associated with the double burden of malnutrition. Mothers with short stature (OR=3.41; 95% CI 1.76-6.61), child's vegetables intake less than 4 days a week (OR=2.21; 95% CI 1.03-4.75) and inadequate households (non-masonry house) (OR=2.29; 95% CI 1.36-3.87) were associated with child's short stature. The lack of breastfeeding (OR=2.0; 95% CI 1.07-3.72) was associated with maternal overweight. **Conclusions** The findings of this study contribute to establish health and healthy diet-promoting strategies, considering the growth deficit and overweight/obesity concomitantly. **Keywords:** Nutritional Assessment, Obesity, Epidemiology, Child Growth, Women

1368

TIME OF SMOKING CESSATION, SECOND HAND SMOKING AND LEVELS OF C-REACTIVE PROTEIN IN BRAZILIAN LONGITUDINAL STUDY OF ADULT HEALTH (ELSA-BRASIL) Luana Giatti*, Flavia Soares, Peres Lidyanedo Valle, Camelo Antonio Pinho Ribeiro, Pedro Vidigal, Bruce Duncan, Sandhi Maria Barreto (Universidade Federal de Minas Gerais)

OBJECTIVE: High levels of C-reactive protein (CRP), a marker of systemic inflammation, are more common in smokers. We investigated the association between time of smoking cessation and CRP levels and whether this association is independent of exposure to second-hand smokers (SHS) in Brazilian adults. We also examined the association between SHS and CRP levels. **METHODS:** The descriptive sample included 14443 from the ELSA-Brasil baseline (2008-2010). In the association analyses, it was included 12544 individuals due the exclusion of current smokers. The response variable was CRP (continue). Time of smoking cessation (never smoked, time since smoking cessation 20 years, 11-19 years, 6-10 years, 5 years) and SHS (no, yes) were explanatory variables. Generalized linear models (GLM) models with gamma distribution and logarithmic function were used to estimate the association between time since smoking cessation and CRP adjusted by sex, age, education, alcohol consumption, physical activity, BMI, ratio cholesterol/HDL and SHS. The same models were estimated for the SHS explanatory variable, adjusting for time since smoking cessation. **RESULTS:** About 30% of the participants were former smokers, 11% were smokers and 25% were SHS. CRP median levels varied according to time of smoking cessation, being higher in smokers (1.9mg/L) and lower among former smokers with time of cessation >20 years and among never smokers (both 1.4mg/L) ($p < 0.001$). Compared to non-exposed to smoking, the CRP median was also higher in SHS (1.6mg/L) ($p < 0.001$). Former smokers who stopped smoking 5 years presented higher serum CRP levels [arithmetic mean ratio (AMR): 1.13 95%CI:1.04-1.23] after adjustment for all variables. In the final model, SHS was associated with higher levels of CRP compared to non-exposed [AMR: 1.05 95%CI:1.00-1.10 $p=0.026$]. **CONCLUSION:** CRP mean values reach those of never smokers about five years after smoking cessation. CRP mean levels are also higher in SHS. Results reinforce the need to promote

1370-S/P

PREVALENCE OF CARDIOVASCULAR DISEASES RISK FACTORS AMONG RURAL DIABETIC PATIENTS IN A PERIPHERAL DISTRICT OF BANGLADESH Shirin Jahan Mumu*, Liaquat Ali (Bangladesh University of Health Sciences)

Aim: Individuals with diabetes in combination with one or more risk factors of cardiovascular diseases (CVD) are more likely to develop heart disease. To plan high-risk strategies for prevention, the prevalence of major risk factors of CVD in diabetic patients must be known. The aim of this study was to estimate the prevalence of CVD risk factors among rural diabetic patients of Bangladesh. **Method:** Under a cross-sectional design a total of 263 (aged 20 years) registered diabetic patients of Thakugaon Swasthoseba Hospital (a peripheral level hospital) of Bangladesh were selected. Data were collected by interviewer administered questionnaire. Anthropometric measurement and HbA1c, lipid profile were done. Dietary data was collected using a 24-hour recall method. **Result:** Overall prevalence of smoking, smokeless tobacco, hypertension, obesity were 16%, 49%, 65% and 41% among respondents. Proportion of smoking was higher in men (33%) than in women (2%) ($p=0.0001$) while more women (70%) were found to use smokeless tobacco than men (61%). Significant higher values were noted for SBP (134 ± 20 vs 127 ± 22 mmHg; $p=0.006$) and lower values for waist circumference (83 ± 10 vs 86 ± 10 cm; $p=0.016$) & HbA1c (8.6 ± 2.8 vs 9.3 ± 2.7 ; $p=0.028$) in male than in female. Mean BMI, DBP, TG, TC, LDL and HDL were 22 ± 3 kg/m², 83 ± 10.8 mmHg, 198 ± 99.1 mgm/dl, 211 ± 52 mgm/dl, 133 ± 72 mgm/dl and 44 ± 10 mgm/dl, respectively. There were no significant differences between male and female in these variables. Mean carbohydrate and protein intake (in gm) of male were 239 ± 140 & 32 ± 15 and the corresponding values for female were 239 ± 145 & 36.5 ± 22 . Fat intake among female & male were median (range), 4(0-51) & 5(0-42) gm; $p=0.05$. Higher proportion of energy came from carbohydrate ($80.02 \pm 10\%$), followed by protein ($12 \pm 4.5\%$). **Conclusion:** The prevalence of CVD risk factors is found higher even in peripheral rural diabetic patients. The big source of energy is carbohydrate which should be taken into account to adapt intervention given to the diabetic population.

“-S/P” indicates work done while a student/postdoc

1369

CHANGE IN EXPOSURE TO SECONDHAND SMOKE AMONG NON-SMOKERS WITH HIGH-RISK FOR CARDIOVASCULAR DISEASE IN THE US: A POPULATION-BASED ANALYSIS USING NHANES (1999-2012) Tulay Koru-Sengul*, Alain Pujolar, Taghrid Asfar, WayWay H Hlaing (University of Miami Miller School of Medicine)

Background: Individuals with risk factors to cardiovascular diseases (CVD) are at high risk for exposure to secondhand smoke (SHS). Exposure to SHS has declined lately in the US; however, such information among this population is still not available. **Methods:** Secondary data analysis using the National Health and Nutrition Examination Survey (NHANES) 1999-2012 cycle ($n=36,611$) was performed accounting for the complex sampling design. Analysis was restricted to non-smoking adults (>20 years) with at least one risk factor for CVD (including high cholesterol, hypertension, or diabetes). Main outcome was exposure to SHS at home and at work. Weighted frequencies were calculated to examine the change in prevalence of SHS exposure. A multivariable logistic regression model was fitted to estimate adjusted-odds-ratio (OR) and 95% confidence interval (95%CI) for exposure to SHS at home or at work. **Results:** Overall prevalence of exposure to SHS was higher at work 1,662 (14.6%) compared with exposure at home 1,541 (6.6%). From 1999 to 2012, SHS exposure at work declined from, 18.1% to 9.7% and at home declined from, 9.1% to 4.4%. In the adjusted model, older individuals, Blacks, individuals with lower education and without health insurance were more likely to be exposed to SHS at home, while older males with lower education and without health insurance were more likely to be exposed to SHS at work. **Conclusions:** Exposure to SHS among nonsmoking adults at high risk for CVD is higher at work than at home. More emphasis on implementing and enforcing smoking ban policies at work is needed to help reduce SHS exposure.

1371-S/P

HEALTH OUTCOMES ASSOCIATED WITH HEART FAILURE AMONG CALIFORNIA ADULTS: RESULTS FROM THE 2011-2012 CALIFORNIA HEALTH INTERVIEW SURVEY Yue Pan*, Weize Wang, Ke-sheng Wang, Kevin Moore, Erin Dunn (University of Miami)

Objective: To examine the prevalence and to identify risk factors associated with Heart Failure (HF) among California adults. **Participants:** A total of 1,274 adults with HF and 38,545 controls were selected from the 2011-2012 California Health Interview Survey (CHIS). Weighted bivariate and multiple logistic regression were used to estimate the odds ratios (ORs) with 95% confidence intervals (CIs). **Results:** The prevalence of HF was significantly higher among males (2.4%) and elderly (age ≥65) (7.9%) compared to females (1.6%) and young adults (age<64) (1.0%). African Americans (3.1%) showed a higher HF prevalence than Whites (2.3%), while Asians and Latinos showed lower prevalence (1.4% and 1.4%, respectively). The prevalence of serious psychological distress (SPD) was 7% in HF compared to 3% in controls. Bivariate logistic regression revealed that all demographic characteristics, health condition, modifiable lifestyle factors, and SPD were significantly associated with HF ($P<0.05$). In multivariable analyses, participants who were elderly, current or past smokers, obese, having type 2 diabetes, hypertension, or SPD showed increased odds of having HF. Furthermore, female, employment, frequent binge drinking and physical activity were associated with reduced risk for HF. **Conclusions:** Our results identified associations between several risk factors and HF. More efforts are necessary to promote healthy lifestyles and to reduce SPD in order to target and to prevent HF.

1380

ENDOCRINE LEVELS AS SENSITIVE ALTERNATIVES TO TANNER STAGING TO DETECT PUBERTY ONSET Anna J. Ciesielski Jones*, Christie Barker-Cummings, John A. McGrath, Deborah Cousins, Juliana W. Meadows, James S. Kesner, Michele Marcus, Dale P. Sandler (Social & Scientific Systems, Inc.)

Background: Sensitive measures are needed in population studies to assess puberty onset. We examined whether changes in non-invasive endocrine levels are more sensitive markers of puberty onset than Tanner self-assessments. **Methods:** Children ages 7-12 years whose parents are participating in the Agricultural Health Study self-rated their Tanner stages and contributed 3 pairs of final night and first morning urine samples 3 months apart, plus morning saliva. Linear regression (controlling for BMI) was applied to log-transformed values to determine whether children remaining at stage 1 showed hormonal increases across visits indicating puberty onset. **Results:** Tanner self-ratings generally paralleled endocrine levels across the study for girls (N=35) and boys (N=42). Among 11 girls in Tanner breast stage 1 at the third visit, urinary FSH levels rose over visits, being significantly lower at visit 1 but not visits 2 or 3 than levels from higher stage girls. Repeated measures analysis within these 11 girls also demonstrated FSH was significantly higher at the third visit versus the first visit. Results were similar for 10 girls in Tanner pubic hair stage 1: by their third visit, FSH levels did not differ significantly from those for higher stage girls (marginally supported by repeated measures analysis). In 7 boys reporting Tanner genital stage 1 at the third visit, salivary DHEA levels rose over visits to levels no longer significantly different from those for boys at Tanner stages 2, 3, or 4 (supported by repeated measures analysis). DHEA also rose among 8 boys reporting Tanner pubic hair stage 1 by visit 3, to levels no longer significantly different from those for stage 2 or 3 boys. **Conclusion:** We present evidence that urinary FSH levels in girls and salivary DHEA levels in boys provide measures of puberty onset that are more sensitive than Tanner staging. These endocrine indices may also be less intrusive to children than Tanner self-examinations.

1382

MATERNAL PRENATAL ALCOHOL AND CHILDHOOD IQ AT 7 YEARS OF AGE: WITH RESPECT TO AREAS OF COGNITIVE FUNCTIONING. Beverly Insel*, Pam Factor-Litvak, Xinhua Liu, Virginia Rauh (Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, New York, USA)

Introduction While studies clearly show that high levels of prenatal alcohol consumption are associated with intelligence quotient (IQ) deficits in the child, the evidence for moderate and low levels of consumption is inconclusive. **Methods** In a follow up of 480 non-smoking inner-city women and their children from the Columbia Center for Children's Environmental Health birth cohort, the Wechsler Intelligence Scale for Children, 4th edition was administered at child age 7 years; a total score and scores on four cognitive subscales are obtained. Maternal prenatal alcohol consumption was based on maternal report during third trimester. Low drinkers were defined as having < 1 daily drink and moderate drinkers as having 1 daily drink. We controlled for maternal ethnicity, marital status, education, IQ, Home Scale, and child sex. Linear regression was used to estimate the relationship between prenatal alcohol use and child IQ measures. **Results** Among the 120 (25%) women who acknowledged drinking during pregnancy, 88 were classified as low and 27 were classified as moderate consumers (5 were missing data on level of consumption). Only six women reported having at least 3 alcoholic drinks daily. Moderate prenatal alcohol was significantly associated with child full-scale IQ (b: -5.92, 95% confidence interval [CI]: [-10.8, -0.1.04], perceptual reasoning (b: -5.99, 95% CI: [-11.33, -0.64]) and working memory speed (b: -3.31, 95% CI: [-6.24, -0.98]) compared with nondrinkers. In contrast, low alcohol was associated with processing speed (b: -5.79, 95% CI: [-9.30, -2.27]) compared with non-drinkers, while moderate alcohol was not significantly associated with processing speed. We found no association between verbal comprehension and any prenatal alcohol exposure. **Conclusion** Low/moderate alcohol intake during pregnancy may affect some areas of cognitive function in inner city minority children. Because prior research focused on high alcohol intake, these results require replication.

"-S/P" indicates work done while a student/postdoc

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CONCISE TOOL FOR IDENTIFYING CHILDREN AT RISK FOR SPECIFIC LANGUAGE IMPAIRMENT Paul H. Verkerk*, F. Babette Diepeveen, Paula van Dommelen, Anne Marie Oudesluys-Murphy, Elise Dusseldorp (TNO, dpt Child Health)

Background Specific language impairment (SLI) is among the most prevalent developmental disorders. Children with SLI are often detected late, while early identification may improve their well-being and optimal development. We aimed to develop a concise tool, using language milestones, to improve early identification of children with SLI. **Methods** We used data from a nested case-control study. Cases were children attending special schools for severe speech and language difficulties in the Netherlands. Cases were matched for sex and age with control children attending mainstream education. For the tool we used the following eight language items between 24 and 45 months of age; "Says 2 word 'sentences'" and "Points at 6 parts of a doll's body" at 24 months, "Refers to self, using me or I" and "Points at 5 pictures in a book" at 30 months, "Says 'sentences' of 3 or more words" and "Speech is understood by acquaintances" at 36 months, and "Talks spontaneously about events at home/playground" and "Asks questions about 'who', 'what', 'where' and 'how'" at 45 months of age. **Results** In total data of 253 cases and 253 controls were available for analysis. The optimal combination yielded a specificity of 95% and a sensitivity of 75%. **Conclusion** We constructed a concise tool with adequate predictive properties for detecting SLI.

1383-S/P

CONGENITAL HEART DEFECTS AND ACADEMIC ACHIEVEMENT IN A NATIONWIDE COHORT OF 458,318 DANISH CHILDREN Niels Matthiesen*, Signe Holm Larsen, Tine Brink Henriksen, Cathrine Carlsen Bach, John Rosendahl Ostergaard, Vibeke Hjortdal (Perinatal Epidemiology Research Unit and Department of Pediatrics, Aarhus University Hospital, Aarhus University, Denmark)

Background: Congenital heart defects (CHD) are the most common birth defects, present in up to 1 % of all children. Over the last decades survival has improved immensely, but concurrently it has become clear that up to 50 % of the children present with abnormal neurodevelopment. Nonetheless, the impact of CHD on the academic achievement of the children remains widely unknown. **Methods:** We identified a nationwide cohort of 458,318 liveborn Danish children, 1997-2005. CHD was present in 3201 children. Academic achievement was assessed by mandatory national public school tests of reading and mathematics. CHD and potential confounders were identified in national registries. We estimated standardized mean test score differences by random effects linear mixed models adjusted for potential confounders, comparing children with CHD to the general population. **Results:** Overall, in CHD the standardized mean difference in reading was -0.10 (95%CI -0.13, -0.07). The results were similar in the subdomains language comprehension, decoding, and reading comprehension. Regarding mathematics, the estimate was -0.11 (95%CI -0.14, -0.07). The results were similar in the subdomains numbers and algebra, geometry, and applied mathematics. Several subgroups of CHD were associated with discretely lower scores in both reading and mathematics. The subgroup with the lowest scores was hypoplastic left heart syndrome [language comprehension -0.50 (95%CI -0.97, -0.02), decoding -0.85 (95%CI -1.36, -0.34), reading comprehension -0.43 (95%CI -0.93, 0.06), and mathematics -0.63 (95%CI -1.17, -0.08)]. **Conclusion:** Children with CHD constitute a distinct population prone to impaired neurodevelopment, including poor academic achievement. The heterogeneity of the academic achievements within subtypes of CHD was striking; some subtypes of CHD were associated with discrete difficulties while several other subtypes, e.g. hypoplastic left heart syndrome, were associated with markedly poorer academic achievement.

1384

INTERGENERATIONAL TRANSMISSION OF MATERNAL ADVERSE CHILDHOOD EXPERIENCES Sheila McDonald*, Geeta Modgill, Dawn Kingston, Suzanne Tough (University of Calgary)

Early maltreatment and adversity can lead to changes in a child's stress response with long term risks for poor mental and physical health. There is limited research on the intergenerational effects of maternal childhood adversity and offspring adjustment at 36 months. Data were analyzed from the All Our Babies Study (2008-2015), a community-based prospective pregnancy cohort investigating relationships between maternal mental and physical health and child development. Participants completed 2 questionnaires during pregnancy and at 4, 12, 24 and 36 months postpartum. Information on maternal Adverse Childhood Experiences (ACEs) were collected at 36 months, and included questions about a history of abuse and growing up amongst household dysfunction (eg., domestic violence, mental illness). Among mothers (n=1994) in the present study, 37.6% reported 0 ACEs, 37.3% reported 1 to 2 ACEs, and 25.1% reported 3 or more ACEs. Mothers who experienced 3 or more ACEs were more likely to report post-partum depression and/or anxiety, lower parenting morale, and recent stressful life events. In multivariable analysis, factors that predicted problems at 36 months were: male, first parity, history of mental health problems, lower pregnancy optimism, lower parenting self-efficacy postpartum depression or anxiety. After controlling for confounding and mediating factors, a history of maternal ACEs remained a significant independent risk factor for child behaviour problems (hyperactivity/inattention; OR: 1.44 (1.03-2.02)) and temperament (negative affectivity; OR: 1.49 (1.07-2.08) and surgency/extraversion; OR: 1.33 (1.03-1.72)). Maternal ACEs may impact parenting behaviours and mental health, which subsequently influence the risk for child behaviour problems and poor self-regulation. Recognizing the influence of ACEs may help identify parents who would benefit from additional supports to optimize child development.

1386-S/P

THE IMPACT OF FERTILITY TREATMENT ON MOTHER-INFANT BONDING IMPAIRMENT AT 4 MONTH POSTPARTUM: A JAPANESE POPULATION BASED STUDY Makiko Sampei*, Takeo Fujiwara (National Research Institute for Child Health and Development; Doctoral course, Department of Developmental Social Medicine, Mie University Graduate School of Medicine)

Objective: Little is known about the impact of fertility treatment on mother-infant relationship. This study examines association between fertility treatment and mother-infant bonding impairment in a population based sample of mothers with 4 month old infants in Japan. **Methods:** Women who participated in a 4-months health-checkup program in Aichi prefecture, Japan (n= 6590; response rate, 68%) were asked to a complete a questionnaire including fertility treatment history for the delivered infant and the Mother to Infant Bonding Scale Japanese version, composed of 2 subscales ("lack of affection" and "anger and rejection"). We used multiple logistic regression to assess the association between fertility treatment history and mother-infant bonding impairment adjusted for maternal, infant and family characteristics. **Results:** Women who underwent fertility treatment were 1.22 times more likely to show mother-infant bonding impairment after adjustment for maternal, infant and family covariates (odds ratio [OR] = 1.22; 95% confidence interval [CI]:1.02, 1.47). Further, women with fertility treatment were 1.37 times more likely to show "anger and rejection" (OR = 1.37; 95% CI:1.14, 1.64), while no association was found for "lack of affection" (OR = 1.08; 95% CI:0.90, 1.30). **Conclusions:** Women underwent fertility treatment were at higher risk on mother-infant bonding impairment, particularly they may show anger and rejection towards their infants. Further intervention is needed targeting women with infertility treatment to prevent mother-infant bonding impairment, specifically targeting anger and rejection on infants.

1385

THE ASSOCIATION BETWEEN CAREGIVER'S SPANKING BEHAVIOR AND PRE-ADOLESCENT BODY MASS INDEX: A NATION-WIDE BIRTH COHORT STUDY IN JAPAN Okuzono Sakurako*, Takeo Fujiwara (National research institute for child health and development)

Background: Child obesity is serious public health problem globally. It is known that abused children are more likely to be obese. However, few study investigate the impact of less frequent physical punishment (i.e. spanking) on child obesity. We hypothesized that children who have experienced less frequent spanking by their caregiver increase the risk of overweight. **Method:** We used data from the Longitudinal Survey of Newborns in the 21st Century in Japan, a population-based birth cohort data collected by the Japanese Ministry of Health, Labour, and Welfare (N=26,074). Frequency of spanking ("never", "sometimes", and "always") was assessed via questionnaire at 3.5 years old, and children's body mass index were calculated via height and weight obtained from questionnaire measured at 9.5 years old, both responded by caregivers. Overweight was defined as 1 SD z score or higher using WHO standard. We used propensity score matching to compare children's overweight and underweight between three groups ("always", "sometimes", "never"), adjusting for parental socioeconomic status, child temperament, and parenting behavior other than spanking. **Results:** 19.0 percent of the children were overweight, and the prevalence of "never" spanking, "sometimes" spanking, and "always" spanking was 22.6%, 67.7%, and 9.8%, respectively. Less frequent spanking was not associated with an increased risk of overweight ("sometimes" vs. "never": odds ratio 1.11, 95% confidence interval, 0.93-1.32), and the same is true for frequent spanking ("always" vs. "never": odds ratio 0.98, 95% confidence interval, 0.89-1.09). **Conclusions:** In a sample of preschool children from Japanese birth cohort, maternal self-report of less frequent spanking at age 3.5 years old were not associated with neither increased risk of overweight at age 9 years old, suggesting that less frequent spanking was not a risk factor of overweight.

1387

CAN A CHILD'S DEVELOPMENT PREDICT COGNITION AND HEALTH-RELATED QUALITY OF LIFE IN YOUNG ADULTHOOD? Paula van Dommelen*, Stef van Buuren

Aim: To study the predictive validity between a child's development in the first two years of life and cognition and health-related quality of life (HRQoL) in young adulthood. **Methods:** We included individuals without severe complications and born with a very low birth weight (<1500 grams) or small for gestational age in the Collaborative Project on Preterm and SGA Infants (POPS-cohort). Development (gross/fine motor skill, language behavior, adaptive behavior, personal-social behavior) were summarized by the Developmental score (D-score) and adjusted for GA. Cognition was defined by the Multicultural Capacity Test-Intermediate Level (MCT-M), HRQoL by the London Handicap Scale (LHS) and the Health Utility Index Mark 3 categorized into 4 levels (Multi-Attribute Utility, MAU). We adjusted for potential confounders. **Results:** 449 individuals were available for analysis. Most adults were born preterm (98%). A +1 SD increase in the D-score increased the MCT-M by 2.25 points (95% CI 0.86-3.63), decreased the odds of no perfect health by 0.68 (95% CI 0.54-0.87), and decreased the odds of less functional capacity by 0.84 (95% CI 0.70-0.98) in young adulthood. **Conclusion:** There is a strong predictive validity between a child's development in the first years and later cognition and HRQoL when born preterm.

1390

TAKING ACTION ON ENVIRONMENTAL CHANGES IN BANGLADESH: CHANGES TO LIVELIHOODS AND LIFESTYLES Aniq Tasnim Hossain*, Arif Al Mamun (BBC Media Action)

Bangladesh is one of the most vulnerable countries to the impacts of climate change. In order to understand how Bangladeshi people live with climate change, what the key barriers and motivations for taking action are and what are the most effective ways to support people to adapt to social and environmental changes, BBC Media Action conducted a nationally representative survey in 2014 under its resilience project. This project aims to seek to address high vulnerability to shocks and hazards caused by extreme weather; by improving understanding of the importance of preparation; by improving access to information about adaptations people can make; and by motivating people to take action that will help them cope better with natural crises. It is doing this through a TV factual programme 'Amrai Pari' (i.e. Together we can do it), launched on BTV, the nationally broadcasting state owned television channel of Bangladesh, in May 2014. In addition to that, the resilience project is trying to influence people to take actions for coping with the climate change issues through some other radio and outreach activities. The baseline survey, conducted prior to project launch has examined trends from previous BBC Media Action research conducted in Bangladesh, 'Climate Asia' – a similar nationally representative survey conducted in 2012 (see <http://www.bbc.co.uk/mediaaction/climateasiadataportal>) and has found key changes in how people in Bangladesh are coping and responding to extreme weather and other environmental issues they face, including notable changes people are making to their livelihoods and lifestyles. This presentation will examine some of those key changes people are making and what groups and areas are more likely to be making changes and why. It will also look at some of the key motivations and barriers to making changes to respond to environmental hazards such as extreme weather.

1400-S/P

UNDERSTANDING THE UNMET HEALTH CARE NEEDS OF ABORIGINAL CANADIANS Helen Cerigo*(McGill University)

First Nations, Inuit, and Métis peoples continue to experience worse health outcomes compared to non-Aboriginal Canadians despite improvements in the health of Canadian Aboriginal populations in recent years. One potential pathway through which these health inequalities persist is through differentials in health care access. In Canada the off-reserve Aboriginal population has been shown to have a higher prevalence of unmet health care needs than non-Aboriginal Canadians, even after the effects of household income and health status were considered. However, it is not yet clear which factors are associated with unmet needs among the off-reserve Aboriginal population and what type of barriers exist. The purpose of this project is to determine the risk factors for unmet health care needs among First Nations people living off reserve, Métis, and Inuit, aged 18 years and older. Using data from the 2012 wave of the Aboriginal Peoples Survey (n = 50,000), the association between self-reported unmet health care needs in the previous 12 months and relevant demographic, social-economic status, geographic, health and social context covariates will be explored. Multivariate logistic regression with bootstrapping to account for sample weights and survey design will be used. Understanding determinants of unmet needs and how they vary across Aboriginal groups and health needs is important to help guide Aboriginal health policy and identify potential areas to improve health care access to this population.

1402

HAITIANS IN THE AMAZON STATE OF MATO GROSSO: AN ANALYSIS OF THE HEALTH, WORK AND ENVIRONMENTAL RELATIONS Ana Paula Muraro*, Luís Henrique da Costa, Leão Fabiano Tonaco, Borges Maria Angela Conceição, Martins Marta de Lima Cássia Carraco Palos (Universidade Federal de Mato Grosso)

Objective: To analyze the inclusion of Haitian immigrants in work processes of Mato Grosso-MT considering their working conditions, health risks and environmental vulnerabilities. **Methods:** An exploratory study based on both qualitative and quantitative data from primary and secondary data source. Primary data were obtained through a survey applied to the Haitians in Cuiabá, the capital city of Brazilian state of MT, in 2014/2015. The secondary databases included: Pastoral Land Commission (CPT), Annual Report of Social Information (RAIS), Pastoral Center for Migrants (CPM) records and data from the Institute of Agricultural Protection (INDEA). **Results:** According to data from RAIS, in 2013, there were 1125 records of Haitian workers in the formal market in MT, distributed in 19 cities. Haitian workers were registered in 4 of 16 registered cities by the MTE, by submitting workers to slavery-like condition, and in 5 of 11 cities with the highest use of pesticides in the agricultural production process. Two sectors of the economy stood out in the absorption of Haitian workers: the manufacturing industries (especially in the group of slaughter and manufacture of meat products) and construction (mainly in Beijing Urban Construction Group). Most of the 452 individuals interviewed by the survey reported to be working (52.7%), and 26.5% of these reported working more than 48 hours weekly. Physical risk and accidents were the main risks perceived by immigrant workers in the two main groups of occupations in Cuiabá (construction and services). **Conclusion:** The use of Haitian immigrants' workforce in MT has occurred predominantly in productive chain of agribusiness, construction and services sectors - sectors responsible for the economic development of this Brazilian state and in productive areas and productive processes of high environmental risk and health impacts. Therefore, calls attention to the challenge of public health and other sectors of the State for the universal rights.

1401-S/P

DIABETES IN PREGNANCY AND IMPACT ON BIRTH OUTCOMES IN FIRST NATIONS AND NON-ABORIGINAL POPULATIONS IN QUEBEC Lu Chen*, Lin Xiao, Nathalie Auger, Jill Torrie, Nancy McHugh, Zhong-Cheng Luo (Shanghai Key Laboratory of Children's Environmental, Health Xinhua Hospital, Shanghai Jiao Tong University School of Medicine)

Objective: Diabetes in pregnancy is much more common in First Nations than non-Aboriginal populations in Quebec, Canada. It is unknown whether diabetes in pregnancy may have differential impact on birth outcomes in First Nations vs. non-Aboriginal populations. **Methods:** This was a retrospective birth cohort study, based on the linked birth-infant death database for singleton births (15090 First Nations, 217760 Non-Aboriginal) in Quebec 1996-2010. The primary outcomes were macrosomia (large-for-gestational age/LGA, birth weight > 90th percentile), perinatal death and postneonatal death. **Results:** The risk of LGA approximately doubled for both pre-gestational and gestational diabetes in First Nations, and increased by 2.4 times for pre-gestational diabetes and 1.7 times for gestational diabetes in non-Aboriginal births. Pre-gestational diabetes increased the risk of perinatal death by 4.8 (95% CI: 2.8, 8.1) times ($P < 0.0001$) in First Nations, much higher than that of 1.8 (1.2-2.7) times in non-Aboriginal births, and did not increase the risk of postneonatal death in First Nations but increased the risk by 3.5 (1.7-7.0) times in non-Aboriginal births. Gestational diabetes did not significantly affect the risk of postneonatal death in both First Nations and non-Aboriginal infants, but surprisingly was associated with a marginally significantly lower risk of perinatal death ($RR = 0.72, P = 0.04$) in non-Aboriginal (but not First Nations) births. **Conclusions:** The much greater risk elevation in perinatal death associated with pre-gestational diabetes in First Nations may be due to poorer glycemic control, while the absence of impact on postneonatal death may be due to more "censoring" (earlier) deaths during the perinatal period. Better glycemic control in pre-gestational diabetes might "delay" some deaths from perinatal to postneonatal periods in non-Aboriginal population. The lower risk of perinatal death in gestational diabetes in non-Aboriginal population suggests that well glycemic control may lead to better perinatal outcomes.

1403

THE IMPACT OF ACCULTURATION ON THE AFRICAN DIASPORA: A CLOSER LOOK AT THE SELF-RATED HEALTH AND HEALTH BEHAVIOR OF AFRICAN IMMIGRANTS IN THE UNITED STATES Maria-Theresa Okafor* (University of Maryland, Baltimore County)

Background: Acculturation has been shown to relate both positively and negatively to health outcomes in Hispanic and Asian immigrant populations. However, little is known about the relationship of acculturation to health outcomes among African immigrant adults. **Objective:** To investigate potential associations between acculturation, current self-rated health and health behavior, among African immigrant adults residing in the United States. **Methods:** A cross-sectional, mixed methods secondary data analysis was performed on baseline data from the African immigrant adult subsample (n=763) of the 2003 New Immigrant Survey. **Results:** Limited English proficiency (LEP) immigrants had higher odds of rating their health good/fair/poor (OR: 0.282, 95% CI: 0.158-0.503, $p < 0.0001$) and engaging in poor health behavior than English proficient (EP) immigrants (OR: 0.310, 95% CI: 0.165-0.585, $p < 0.0003$). EP women had lower odds of engaging in poor health behavior than EP men (OR: 0.3446, 95% CI: 0.2129-0.5576, $p < 0.0001$). Immigrants reporting moderate dietary change had higher odds of rating their current health as good/fair/poor than those with low dietary change (OR: 1.903, 95% CI: 1.143-3.170, $p = 0.0134$). Immigrants residing in the U.S. > 5 years had higher odds of engaging in poor health behavior than those in the U.S. < 5 years (OR: 2.030, 95% CI: 1.314-3.135, $p = 0.0014$). Immigrants > 41 years of age at immigration had higher odds of rating their health as good/fair/poor than those who arrived at a younger age (OR: 4.293, 95% CI: 1.830-10.071, $p = 0.0008$). Immigrants with chronic disease had higher odds of rating their health as good/fair/poor current than those without chronic disease (OR: 4.173, 95% CI: 2.525-6.897, $p < 0.0001$). **Conclusion:** LEP, moderate to high dietary change, increased duration of residence in the United States, older age at immigration, being male, poor pre-migration health and chronic disease were associated with poorer self-rated health and engaging in poor health behavior.

1404

PREVALENCE AND DETERMINANTS OF TOBACCO CONSUMPTION AMONG SANTAL INDIGENOUS POPULATION IN BANGLADESH Sharmin Sultana*, Palash Chandra Banik, Shirin Jahan Mumu, Liaquat Ali (Department of Noncommunicable Diseases, Bangladesh University of Health Sciences (BUHS))

Background and Aim Santals are one of the oldest indigenous groups of South Asia who, according to anthropological evidences, are thought to be the origins of the Bengali race. The aim of this study was to explore, for the first time, the prevalence and to find out the determinants of tobacco consumption in this relatively isolated and marginalized indigenous group. **Subjects and methods** Under a cross-sectional analytical design, the study was conducted on adult (age 18 years) Santals of a village located in a remote rural area of northern Bangladesh. Subjects were selected by purposive sampling and data were collected by interviewer administered pretested questionnaire. **Results** Among the total respondents, 52.7% were women and mean age of the respondents was 38.05 ± 15.26 years, more than half (54.2%) of them were illiterate. The prevalence of smoking was 45.2%. Among them 73.4% men and 20% women were smoker ($p=0.001 < 0.05$). The mean \pm SD of starting age of smoking was 18.51 ± 6.06 years. The mean \pm SD sticks consumed per day was 9.85 ± 5.75 . About 71% of the respondents consumed 'Biri' as a form of smoking and the rest of them use cigarette, churut and other forms. In case of smokeless tobacco, 65.3% were current user and among them 82.6% were men and 49.8% were women ($p=0.001 < 0.05$). Men ($p=0.001$, OR=12.057; CI: 6.34-22.93), married respondents ($p=0.013$, OR=3.127; CI: 1.267-7.717), those who had less than primary level education ($p=0.025$, OR=0.652 CI: 0.32-1.35), were found as the major determinants of smoking. **Conclusions** Tobacco consumption (both smoking and smokeless form) was found higher among the respondents than the mainstream population which is alarming. Special attention needed to control tobacco consumption behavior among Santal Adivasis to prevent this marginalized indigenous population from major noncommunicable diseases (NCDs).

1405-S/P

INVESTIGATING ANTIBIOTIC DISPENSATION RATES BY AGE, GENDER AND ANTIBIOTIC CLASS AMONG PARTICIPANTS OF COMMUNITY H. PYLORI PROJECTS IN ARCTIC CANADA. Kathleen Williams*, Emily Walker, Rachel Munday, Monika Keelan, Yutaka Yasui, Karen J Goodman (Canadian North Helicobacter pylori (CANHelp) Working Group University of Alberta)

Chronic H.pylori infection leads to peptic ulcers and gastric cancer. Community-driven projects conducted in Arctic Aboriginal communities by the CANHelp Working Group estimate prevalence at 57-68%; these projects show frequent failure of treatment to eliminate H.pylori among participants. Treatment effectiveness is reduced by antibiotic resistance of infecting H.pylori strains, promoted by frequent exposure to antibiotics used to treat other infections. This analysis compares antibiotic dispensation rates in Canadian Arctic communities to a southern Canadian urban population by gender, age and antibiotic class. Community project staff collected antibiotic exposure histories for 297 participants enrolled during 2007-2012 in Aklavik, Tuktoyaktuk, Fort McPherson, Northwest Territories, and Old Crow, Yukon. Medical chart reviews collected data on antibiotic prescriptions for the 5-year period before enrolment for each participant. Antibiotic dispensation data for Edmonton, Alberta (average population ~860,000) during 2010-2013 were obtained from the Alberta Government Interactive Health Data Application. Antibiotic dispensation rates, estimated as prescriptions/person-years(95%CI) were: in Arctic communities, 0.89 (0.84,0.94) overall, 0.64(0.58,0.71) in men, 1.1(1.0,1.2) in women, 0.85 (0.80,0.90) in people <60 years old, 1.1(0.98,1.3) in people 60 years old; in Edmonton, 0.555(0.554,0.556) overall, 0.450(0.449,0.451) in men, 0.662 (0.661,0.664) in women, 0.514(0.513,0.515) in people <60 years old and 0.768 (0.765,0.770) in people 60 years old. For antibiotic class, the highest dispensation rates occurred for -lactams and macrolides in both regions. These results show more frequent antibiotic dispensation in Arctic communities relative to a southern Canadian urban population, with higher dispensation for women and older age groups in both regions. Further analysis will identify factors associated with antibiotic-resistant H.pylori infection.

1410

SELF FOOT-CARE PRACTICE AND ITS DETERMINANTS AMONG BANGLADESHI TYPE 2 DIABETIC PATIENTS Palash Chandra Banik* (Bangladesh University of Health Sciences (BUHS))

Background and aims: Self foot care practice is an important preventive measure for diabetic foot complications. The aim of this study was to assess the practice and its determinants among Bangladeshi type 2 diabetic subjects. **Materials and Methods:** A multi-center hospital based cross-sectional study was conducted among 1200 type-2 diabetic subjects (age, 51.6 ± 11.8 yrs, duration of DM, 7.0 ± 5.0 yrs, $M \pm SD$) selected from central and northern part of Bangladesh. Of total respondents, 53.3% (640) were from central and 46.7% (560) were from peripheral area. Procedures of foot care hygiene, type of footwear, footwear materials and pattern of foot self care examinations were assessed. **Results:** The percentage of subjects practicing various foot care methods: washing feet (82.3%), trimming nail (54.7%), usage of oil (32.1%) and petroleum gel (15.0%). Other respondents used other methods (Anti-microbial cream, changing socks etc) which ranged from 1.9%-3.6%. Significant difference between central and peripheral areas were found only for practice in trimming nail ($p=0.001$) and changing socks ($p=0.046$). The respondents who examined their feet for any cut injury, broken skin, skin infection, foot abscess, limited foot mobility, changes of foot temperature, presence of swelling and changes of foot color ranged only from 3.2% to 32.9% and significant difference was found between two areas in examining skin infection ($p=0.022$), foot temperature ($p=0.001$) and foot mobility ($p=0.001$). On logistic regression, self foot hygiene practice were found to be significantly associated ($p<0.05$) with educational and socio-economic status; and living area, sex, age, education and socio-economic status were found to be significantly associated with self foot care examination ($p<0.05$). **Conclusion:** More than half of the diabetic patients in Bangladesh do not examine their foot for the prevention of diabetic foot, and even those who examine they do not look for the principal components at desired level.

1412-S/P

HEALTH DISPARITIES IN ASIAN AMERICANS AND PREDIABETES: THE CALIFORNIA HEALTH INTERVIEW SURVEY Brittany Garcia*, Lorena Garcia, Diana Cassidy, Heejung Bang (University of California Davis)

Background: Diabetes and heart disease are two of the leading causes of death and disability in the US. Prediabetes is a modifiable risk factor for diabetes and heart disease but limited information is known for Asian Americans. The purpose of this study was to examine the association of social and demographic factors on prediabetes status by Asian American subgroups. **Methods:** The California Health Interview Survey (CHIS), California's largest annual health interview survey was used. CHIS is a population-based, random digit dialing phone survey that reaches every county in California. Participants (weighted $n=3329018$) for this study included adults who self-identified as Asian American. Data from the 2011-2012 CHIS were used. To describe and examine the association between social and demographic factors and prediabetes status by Asian American subgroups, logistic regression was used to estimate odds ratios (ORs) and their respective 95% confidence intervals, accounting for survey design. **Results:** The overall prevalence of prediabetes for Asians was 2.04%, the highest was for Koreans (3.5%), followed by Chinese and Filipino (2.2%), South Asian (1.7%), and Vietnamese (0.7%). Older age, US-born, being married, higher body mass index, fast food consumption, and higher blood pressure were significantly associated with prediabetes status. In adjusted models for age, gender, nativity status, BMI, smoking, fast food consumption, physical activity, blood pressure, education, and household income, the odds of prediabetes was lower for Vietnamese compared to Chinese ($OR=0.31$; 95% $CI=0.13, 0.77$). Prediabetes status was not significantly associated for Filipino, Korean, and South Asian subgroups. **Conclusion:** Health disparities exist in prediabetes by Asian subgroup, social and demographic factors may be useful in developing prevention programs for these at risk communities.

"S/P" indicates work done while a student/postdoc

1411

SURVEY ON HERBAL MEDICINE USE AMONG DIABETIC AND HYPERTENSIVES PATIENTS Adriana Barros*, Taís Batista Virginio, Eduardo Rodrigues Mota, Diego Bernarde Souza Dias, Virginia Oliveira Fernandes, Renan Magalhães Montenegro Júnior, Adriana Rolim Campos Barros (University of Fortaleza)

Background and aims: The increasing consumption of herbal medicines in the world raises a concern about their rational use by the population. The World Health Organization has recognized the potential risks of uncontrolled use of herbal medicines in conjunction with other medicines. In Brazil, 66% of the population have no access to commercial medicines and herb-drug interactions have not been reported, demonstrating the difficulties in collection of such data by the pharmacovigilance system. The aim of the study was the identification of the most frequently used plants by patients with diabetes and/or hypertension with access to public health services in Fortaleza, Brazil. **Materials and methods:** 122 diabetics and/or hypertensives patients from different health centers located in Fortaleza (Ceará, Brazil) were interviewed using structured questionnaires. The Relative Frequency of Citation (RFC) was analyzed to determine the well-known and most useful species in the area. In order to identify possible herb-drug interaction, electronic searches were conducted in multiple databases. **Results:** 76 (62.3%) patients reported to use herbal medicine. Co-administration of herbal medicines with hypoglycemic/antihypertensive agents was done by 60.5% respondents. Relatives and friends were the main source of information for most patients (69.5%) and 78.3% were using herbal medicines unbeknownst to their physicians. A total of 49 plant species distributed over 34 families were documented to be traditionally used by diabetics and hypertensives. The most encountered medicinal plants families were Lamiaceae and Liliaceae. *Lippia alba* (mil) N.E. Brown, *Cymbopogon citratus* (DC) Stapf, *Bauhinia* sp and *Passiflora* sp had the highest values of RFC (0.23, 0.21 and 0.17, respectively). No data regarding interactions between the herbal medicines and hypoglycemics or insulin or antihypertensive agents were found. **Conclusion:** Although previous studies have reported hypoglycemic or antihypertensive activities for

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DEVELOPMENT OF THE DIABETES TYPOLOGY MODEL FOR DISCERNING TYPE 2 DIABETES MELLITUS WITH NATIONALLY REPRESENTATIVE SURVEY DATA Sharon Jackson *, Anna Bellatorre, Kelvin Choi (HHS/NIH/NIMHD)

Although data from population-based studies have been used to estimate diabetes prevalence, it has been challenging to use these data to estimate the prevalence of diabetes type. This also hampers our ability to discern heterogeneity in undiagnosed populations. We examined data from 3 cohorts of the National Health and Nutrition Examination Survey (NHANES) and the 2010 Coronary Artery Risk Development in Young Adults survey (CARDIA), each with over 3,000 respondents providing biological and survey data. Diabetes prevalence, defined as reporting being diagnosed with diabetes or Hemoglobin A1C > 6.5 , was between 9-13%. Six indicator variables (HOMA-IR, HOMA-%B, HOMA-%S, BMI, glucose to insulin ratio, and fasting insulin) were entered into a latent class analysis to discriminate diabetes type among individuals with diabetes. Three latent classes: likely type-1 diabetes, likely type-2 diabetes, and atypical diabetes, were confidently discerned in each of the 4 datasets. Using low C-peptide as a marker of likely type-1 diabetes in each latent class identified revealed that 97.4%, among those in the likely type-2 group, did not have low C-peptide. Additionally, after excluding likely type-1 and atypical diabetes classes, known risk factors of type 2 diabetes (e.g., race/ethnicity, waist circumference) accounted for an additional 3-5% of variance in diabetes cases compared to models including all diabetes classes. Here, we describe a novel tool for classifying diabetes type from large population-based datasets, which will improve how we use these vast datasets to examine the behavioral and environment factors associated with each type of diabetes.

1414- S/P

ALERTNESS OF DIABETES AMONG THE POKHARA RESIDENTS OF NEPAL Sana Khan* (MBBS Student)

Background: Diabetes was once thought to be a problem exclusively of developed countries and the wealthy. Now the scenario has changed and the disease burden is prevailed in both developed and developing countries. According to WHO, diabetes affects more than 436,000 people in Nepal and this number will rise to 1,328,000 by 2030. **Objectives:** To evaluate the knowledge and attitude regarding Diabetes Mellitus among the adults of 30 yrs and above. **Methods & Materials:** A questionnaire based descriptive study was done in Pokhara, Nepal between 1st January 2015 and 28th February 2015. The tools used were demographic proforma, knowledge questionnaire and attitude scale on Diabetes mellitus. Purposive sampling technique was used to gather 235 samples. The data were analyzed using SPSS for Windows Version 16.0. Results: 50.2% of the respondents had good knowledge and 71.9% had a favorable attitude towards diabetes mellitus. There was a significant association of knowledge with level of education ($p = 0.002$) and monthly family income ($p = 0.0002$). There was a significant association of attitude with age ($p = 0.04$), religion ($p = 0.002$), ethnicity ($p = 0.03$) and level of education ($p = 0.003$). There was a positive correlation between Knowledge & Attitude ($r = 0.414$). **Conclusion:** Nepal is a low income country and the residents have inadequate knowledge on aspects like risk factors, medications to treat diabetes and complications of Diabetes. Key Words: Knowledge, Attitude, Diabetes mellitus, Adults, Nepal

1415-S/P

COMPARISON OF DIABETES BURDEN AND SEQUELAE BETWEEN SLUM AND NON-SLUM RESIDENTS IN A LARGE URBAN CENTER IN BRAZIL Robert E Snyder* Guilherme S., Storch Renata, G.P. Almeida Fabio, A. Alves, Claudete A. Cardoso, Lee W. Riley (University of California, Berkeley, School of Public Health, Division of Epidemiology)

Residents of urban slums are at increased risk for both communicable and non-communicable disease (NCD). As the diabetes prevalence rapidly increases in developing countries, the burden of communicable and NCD in slums also increases. We hypothesize that diabetes contributes to a greater burden of communicable and other NCD in slum than in non-slum residents. A cross-sectional survey was done in two health facilities (slum and non-slum) in Niterói, Brazil. Disease burden was compared between 1) diabetic slum residents, 2) non-diabetic slum residents and 3) diabetic non-slum residents. Unadjusted and adjusted (age, sex, diabetes type, time with disease) models were fit to compare risk of acute myocardial infarction (AMI), stroke, urinary tract infection (UTI), and skin and soft-tissue infection (SSTI) between slum and non-slum diabetics. From 12/2014 to 10/2015, 501 people were interviewed; 373 (97.1%) of 384 slum and 90 (78.3%) of 115 non-slum patients were eligible for inclusion. Diabetics comprised 165 (35.6%) of slum residents and 90 (100%) of non-slum residents. Only 100 (64.1%) slum diabetics saw a physician every six months, compared with 70 (80.5%) non-slum diabetics ($p < 0.01$). AMI occurred in 28 (17%) slum diabetics and in 9 (0.1%) non-slum diabetics ($p = 0.15$). Slum diabetics reported 25 (15.2%) strokes compared with 7 (7.9%) in non-slum diabetics ($p = 0.1$). There were 38 (23.2%) UTI and 21 (12.8%) SSTI in slum diabetics and 16 (17.8%) UTI and 9 (10.1%) SSTI in non-diabetics ($p = 0.32$ and 0.53 , respectively). No potential confounders or effect modifiers were significant in final models. There was no significant difference in diabetes sequelae in residents of slum and non-slum communities in Niterói. The differences in rates of care and lack of a difference in sequelae may indicate that diabetes is under diagnosed. Alternatively, differential recruitment in slums and non-slums may have led to the study being underpowered.

1420-S/P

ASSOCIATION BETWEEN DAILY AIR POLLUTION LEVELS AND ASTHMA EMERGENCY DEPARTMENT VISITS IN JUBAIL INDUSTRIAL CITY, SAUDI ARABIA Salem Albalawi*

Newcastle University Introduction: Air pollution is a known risk factor for adverse cardio-respiratory health effects. A large number of epidemiological studies have supported an association between air pollution and asthma-related hospital visits. However, most of these studies were conducted in Europe and North America where there is a temperate climate with distinct seasons. To the best of my knowledge, no study exploring this issue has been conducted in a hot and dry industrial city in the Middle East. This study used time-series analysis to investigate the statistical association between exposure to air pollution and asthma-related emergency department visits (AEDv) in Jubail Industrial City in Saudi Arabia. **Methods:** Daily AEDv, air pollutants (SO₂, NO₂, CO, PM_{2.5} and PM₁₀), temperature and relative humidity were constructed from the Royal Commission of Al Jubail Industrial City in the period 2007 to 2011. The relative risk (RR) [95% confidence interval (CI)] was estimated using time-series analysis approach, generalised linear model (GLM) with Poisson regression, controlling for weather variables, day of the week and holiday indicator for lag times of 0-7 days. **Results:** The association between AEDv with change of SO₂, NO₂, PM_{2.5} and PM₁₀ remained positive and statistically significantly after adjustment in the multi-pollutants model. The RR (in percent %) for asthma visits increased by 11.2% (95% CI: 5.3, 17.3) at lag 2 for SO₂, 2.5% (95% CI: 0.7, 4.4) at lag 3 for NO₂ and 1.0% (95% CI: 0.7, 1.3) at lag 0 for PM_{2.5} and 0.2% (95% CI: 0.1, 0.3) at lag 0 for PM₁₀. No significant associations between AEDv and CO were found. **Conclusion:** The current levels of ambient air pollution were associated with increased risk of AEDv in Jubail Industrial City. Reductions in air pollution levels are necessary to protect the health of the community.

1422-S/P

AGRICULTURAL CROP DENSITY AND RISK OF CHILDHOOD CANCER IN THE MIDWESTERN UNITED STATES: AN ECOLOGIC STUDY Benjamin Booth*, Mary Ward, Mary Turyk, Leslie Stayner (National Cancer Institute/University of Illinois at Chicago)

Background: Numerous studies have evaluated exposure to pesticides and childhood cancer and most found positive associations. However, few studies have examined crop density as a surrogate for residential exposure to agricultural pesticides. **Methods:** We linked county-level agricultural census data (2002 and 2007) and cancer incidence data for children ages 0-4 diagnosed between 2004 and 2008 from cancer registries in six Midwestern states. Crop density (percent of county area that was harvested) was estimated for total agricultural land, barley, dry beans, corn, hay, oats, sorghum, soybeans, sugar beets, and wheat. Rate ratios and 95% confidence intervals were estimated using generalized estimating equation Poisson regression models and were adjusted for race, sex, year of diagnosis, median household income, education, and population density. **Results:** We found statistically significant exposure-response relationships for dry beans and total leukemias (RR =per 1% increase in crop density=1.09, 95% CI=1.03-1.14) and acute lymphoid leukemias (ALL) (RR=1.10, 95% CI=1.04-1.16); oats and acute myeloid leukemias (AML) (RR=2.03, 95% CI=1.25, 3.28); and sugar beets and total leukemias (RR=1.11, 95% CI=1.04, 1.19) and ALL (RR=1.11, 95% CI=1.02, 1.21). State-level analyses revealed additional positive associations for total leukemia and CNS tumors and differences among states for several crop density-cancer associations. However, some of these analyses were limited by low crop prevalence and low cancer incidence. **Conclusions:** Publicly available data sources not originally intended for health research can be useful for generating hypotheses about environmental exposures and health outcomes. The associations observed here need to be confirmed by analytic epidemiologic studies using individual level exposure data and accounting for potential confounders.

1421

IDENTIFYING RISK PROFILES FOR EXCESSIVE SEDENTARY BEHAVIOR IN CHILDREN USING RECURSIVE PARTITIONING BASED ON INDIVIDUAL, FAMILIAL, AND NEIGHBORHOOD FACTORS Tracie Barnett*, Gisele Contreras, Andraea Van Huslt, Marie-Ève Mathieu, Melanie Henderson (INRS- Institut Armand-Frappier)

Background: Sedentary behaviour (SB) is an important predictor of obesity in youth. We compared risk profiles from multiple levels of influence to predict excessive SB (>50% waking hours) among children participating in the QUALITY cohort at ages 8-10 and 10-12 years. **Methods:** QUALITY is an ongoing study of the natural history of obesity in Quebec youth. Physical activity (PA) and SB were measured using accelerometers, worn for >10hours/day for at least 4 days. Complete data at both time points were available for 294 participants. Recursive partitioning analysis was performed using individual- (meeting PA guidelines of >60 min/day of moderate- to vigorous-intensity PA; screen time on weekdays and weekends), familial- (household income) and area-level (neighborhood disadvantage; nearby parks; density of dwellings; connectivity and land-use mix) factors. Groups that best predicted excessive SB, defined as >50% of waking hours at <100 counts/min, were identified. **Results:** At 8-10 years, 5 variables were retained to build the classification tree: meeting PA guidelines, weekday screen time, dwelling density, nearby parks, and neighborhood disadvantage. The risk profile of the most sedentary group (73%) at ages of 8-10 years included: not meeting PA guidelines, >2 hours of weekday screen time, low dwelling density, <4 nearby parks and high neighborhood disadvantage. In these same participants two years later only 3 variables were retained to build the classification tree: meeting PA guidelines, weekend screen time, and neighbourhood disadvantage. The risk profile of the most sedentary group (70%) was described by not meeting PA guidelines, >2 hours of weekend screen time, and living in low disadvantage neighborhoods. **Conclusions:** Risk profiles for excessive SB differ as children age, possibly due to increasing independent mobility. Interventions targeting highly sedentary youth should consider individual lifestyle, developmental, and contextual factors.

1423-S/P

NATIONWIDE SOCIOECONOMIC AND RACIAL DISPARITIES IN NOISE POLLUTION Joan Casey*, Peter James, Rachel Morello-Frosch (Robert Wood Johnson Health and Society Scholars Program, UC Berkeley and UC San Francisco)

Background: Noise – unwanted sound – has been linked to multiple health outcomes ranging from disturbed sleep to impaired cognition to cardiovascular disease. Like other types of pollution, noise may disproportionately affect disadvantaged members of society; unlike most other pollution, noise pollution is still worsening. **Methods:** We evaluated the relationship between the social environment and noise pollution at several geographic resolutions. Noise estimates were derived from a 14-year averaged (2000-2014), modeled nationwide noise map with 270m resolution developed by the US Park Service. The Park Service measured sound at 492 rural and urban sites in the continental US and then fit a model using tree-based machine learning, which incorporated measured sound, elevation, season, wind, land cover, distance to roads, and other factors. Social environment data was derived from 2013 5-year American Community Survey data. **Results:** The five loudest counties in the United States are New York and the Bronx in New York, the District of Columbia, Norfolk, Virginia, and Milwaukee, Wisconsin. Sound pressure levels in these counties exceeded 50 decibels (dB) at least half the time. Counties where greater than 10% of residents were black had, on average, sound pressure levels 3 dB higher than other counties. Controlling for population density, a 1% increase in proportion of black residents was associated with a 10% increase in average sound pressure levels. We will conduct future analyses at the census block group level and evaluate relationships with unemployment, educational attainment, and poverty. **Conclusion:** No prior studies, to our knowledge, have evaluated the spatial distribution of noise exposure across the entire continental United States. Preliminary evaluation suggests that noise pollution, like air pollution, may represent an issue of environmental justice.

1424-S/P

THE RELATIONSHIP BETWEEN MATERNAL RACE-ETHNICITY, IMMIGRANT STATUS AND COUNTRY OF BIRTH AND THE RISK OF HAVING A CHILD WITH AUTISM SPECTRUM DISORDER IN WESTERN AUSTRALIA

Jenny Fairthorne *, Nick de Klerk, Helen Leonard (Telethon Kids Institute)

Background The risk of having a child with autism spectrum disorder (ASD) varies by race-ethnicity, immigration status and birth region. In particular, women from Asia and Black women from East Africa, have had higher rates of ASD with ID in their children. Previous studies have lacked the sample size to explore the interplay of race-ethnicity, immigration and birth region. **Aims** We investigated the odds of ASD with and without ID among children born in Western Australia (WA) by maternal race-ethnicity, immigrant status and birth region. **Methods** We linked state-wide databases and examined the odds of ASD with and without ID in children born in WA from 1994-2005, by maternal race-ethnicity, immigration status and birth regions of interest. We adjusted for maternal age, socioeconomic status, parity and birth year group. **Results and discussion** Compared to Caucasian women, non-Caucasian women were less likely to have a child with ASD with ID [OR=0.60(95% CI: 0.5, 0.7)] or without ID [OR=0.17(95% CI: 0.1, 0.4)]. Compared to non-immigrant women, immigrant women were less likely to have a child with either ASD with ID or without ID [OR=0.64(95% CI: 0.6, 0.7), OR=0.62(95% CI: 0.5, 0.8)]. Black women from East Africa were more than seven and a half times as likely to have a child with ASD with ID than Caucasian, non-immigrant women [OR=7.68(2.8, 21)]. Furthermore, no other Black woman from Africa had a child with ASD. **Conclusions** Women of minority race-ethnicities and immigrant women were less likely to have a child with ASD with ID and without ID. We identified a significant interaction effect between race-ethnicity, immigrant status and region of birth with Black women from East Africa, being at increased risk of a child with ASD with ID. Furthermore, the children of women of Asian race-ethnicity from South Asia having about twice the risk of ASD with ID in their offspring. Further research is implicated on specific risk factors for ASD in these children.

1426-S/P

CHEMICAL INTERACTIONS AND RISKS OF SPERM ABERRATIONS

Zaida Figueroa*, Heather Youngm Sunni Mumford, John Meeker, Dana Boyd Barr, George Gray, Melissa Perry (Department of Environmental and Occupational Health, George Washington University, Milken Institute School of Public Health)

Investigating “real-life” environmentally relevant concentrations and mixtures of endocrine-disrupting chemicals (EDCs) is important to identify potential interactions between environmental exposures and reproductive outcomes. This study investigated combined exposures to organophosphate (OP) and pyrethroid (PYR) insecticides and their association with the frequency of sperm chromosomal abnormalities. We evaluated the hypothesis that OP and PYR interactions alter associations of sperm disomy among adult men (n=159). Fluorescence in situ hybridization (FISH) was used to determine XX18, YY18, XY18 and total disomy in sperm nuclei. Urine was analyzed for concentrations of PYR metabolite, 3-phenoxybenzoic acid (3PBA), and for six dialkyl phosphate (DAP) metabolites of OPs. Poisson regression models were used to calculate incidence rate ratios (IRRs) for each disomy type by exposure quartile of OPs and PYR controlling for confounders. Interactions between each DAP metabolite and 3PBA were examined. Significant interactions were found between DAPs and 3PBA for all disomy outcomes. Increased IRRs, higher than the values previously reported for each individual chemical class, were seen by levels of dimethylthiophosphate (DMTP), dimethyldithiophosphate (DMDTP), diethylphosphate (DEP) and diethylthiophosphate (DETP) and 3PBA exposure. Nonmonotonic patterns were observed (U-shaped and inverted-U shaped relationships) for most 3PBA quartiles with increasing individual DAP metabolites. This is the first epidemiologic study to examine the relationship between pesticide mixtures and sperm disomy. Consistent interactions were observed, which strengthened the associations between environmental exposures and sperm chromosomal abnormalities. Nonmonotonic patterns demonstrated that further methods development is needed to investigate interactions in Poisson models and determine an optimized approach for evaluating mixtures (with different EDC modes of action) and their effects on reproductive outcomes.

1425-S/P

RETROSPECTIVE ANALYSIS OF THE HEALTH EFFECTS OF THE JANUARY 2013 BEIJING FOG

Joshua Ferreri*, Georgiana Brooke Anderson, Tiantian Li, Michelle Bell, Roger Peng (Colorado State University)

In January 2013, a severe air pollution episode blanketed Beijing, China. Previous severe air pollution events in North America and Western Europe accompanied severe public health impacts and spurred environmental legislation. Though such pollution episodes have been nearly eliminated from North America and Western Europe, they are distressingly common in regions of the world experiencing rapid industrial and economic growth, such as China. To our knowledge, there has yet to be a study assessing the acute health impact of recent severe air pollution episodes, such as the one in Beijing. Furthermore, there is little knowledge of the effects of fine particulate matter (PM_{2.5}) on health in regions of the world such as China. PM_{2.5} concentration data were obtained directly from officials at the US State Department for 17 February 2009 to 28 February 2013, recorded and published by the U.S. Embassy in Beijing, China on the @BeijingAir twitter feed. We used 24-hour averages for each day, calculated from hourly measurements taken midnight to midnight. The January 2013 episode reached a peak average PM_{2.5} concentration of 569 µg/m³, nearly 23 times World Health Organization guidelines. Daily morbidity rates were modeled using a Poisson distribution with overdispersion for six health outcomes including all-cause, cardiovascular, and respiratory emergency and outpatient visits. A variety of controls were included, such as those for long-term yearly and seasonal trends, mean temperature, an influenza epidemic in Beijing in 2009, holidays including the Lunar New Year, the last two weeks of each year, and day of the week. Variations of this model were employed as sensitivity analysis. Across all models, the RR for all-cause and respiratory emergency visits remained statistically significant, with RR of 1.29 (95% CI: 1.13, 1.46) and 1.33 (95% CI: 1.10, 1.62) respectively. Such findings suggest an association between severe air pollution episodes and acute health outcomes.

1427-S/P

ENVIRONMENTAL FACTORS AND PHYSICAL ACTIVITY IN LEISURE TIME AMONG BRAZILIAN ADULTS - A MULTI-LEVEL ANALYSIS

Fernanda Matozinhos*, Crizian Gomes, Larissa Mendes, Milene Pessoa, Gustavo Velasquez-Melendez (Universidade Federal de Minas Gerais)

Background: The physical activity (PA) practice is highlighted as a strategy to health promotion and to avoid the chronic diseases. In addition to individual factors, environmental characteristics in which people live, may offer opportunities or barriers in adopting healthy habits and this is related to the PA practice. **Objective:** Estimate the association of the built and social environment and PA in leisure time in adults. **Methods:** This is a cross-sectional study, developed using the database of Surveillance System for Risk and Protective Factors for Chronic Diseases by Telephone Survey (Vigitel 2008-2010) in city of Belo Horizonte, Brazil. This database have been inserted georeferenced information of public and private places for PA practice, establishments selling health food, population and residential density, homicide rate and total income of the areas covered by Basic Health Units in the municipality, used as neighborhood unit. Individuals with the habit of practicing PA for at least 150 minutes of moderate-intensity PA or at least 75 minutes of vigorous-intensity PA throughout the week in leisure time were classified as active in leisure time. Sociodemographic and lifestyle characteristics were considered as adjustment. For data analysis, we used multilevel logistic regression. **Results:** This study included 5,779 adults, 58.77% female. Only 34.25% of the individuals practiced PA in leisure time. There was variability of PA in leisure time between area covered by the basic health units (Median Odds ratio= 1.30). After adjusting for individual characteristics, the increase of density of private places for PA (OR=1.31; 95% CI: 1.15-1.48) and the smaller homicide rate (OR=0.82; IC95%: 0.70-0.96) in the neighborhood increased PA in leisure time. **Conclusion:** The evidence of this study showed that environment of the neighborhood may influence the prevalence of PA practice in leisure time and should be considered in future interventions and health promotion strategies.

1428-S/P

AIR POLLUTION AND PRETERM DELIVERY AMONG TWIN PREGNANCIES Sung Soo Kim*, Katherine Grantz, Danping Liu, Yeyi Zhu, Sandie Ha, Maeve Wallace, Anna Pollack, Pauline Mendola (Eunice Kennedy Shriver National Institute of Child Health and Human Development, NIH)

The association between maternal air pollution exposure and preterm delivery is equivocal. Twin pregnancies are more likely to deliver preterm, but whether air pollutants play any role in preterm birth <37 weeks for twins is unknown. In the Consortium on Safe Labor (2002-2008), a retrospective US cohort from 12 clinical centers, 4,802 women contributed twin pregnancies. Exposure to criteria air pollutants was estimated using a modified Community Multiscale Air Quality model. Logistic regression models estimated odds ratios (OR) and 95% CIs for an interquartile range (IQR) increase in the whole pregnancy average up to the week of preterm delivery compared to the same week for ongoing pregnancies for each pollutant adjusted for maternal age, race/ethnicity, parity, insurance, smoking or alcohol use during pregnancy, pre-pregnancy body mass index, pre-pregnancy comorbidity and study site. More than two thirds (67.5%) of twin pregnancies were delivered preterm. Whole pregnancy ozone (O₃) levels were significantly associated with preterm delivery at weeks 27 [OR=1.75 (1.02-3.00)], 30 [OR=1.91 (1.26-2.88)], 32 [OR=1.43 (1.06-1.92)] and 33 [OR=1.48 (1.11-1.98)]. In addition, significant positive associations were observed between preterm delivery and particulate matter < 10 microns [OR=1.40 (1.15-1.70)] and particulate matter < 2.5 microns [OR=1.47 (1.05-2.08)] at week 36, whereas inverse associations were observed for nitrogen oxides (NO_x) at weeks 32 and 33, and sulfur dioxide at weeks 33 and 34. Twins are a potentially vulnerable subpopulation that is understudied with respect to air pollution. Preterm birth among twins may be influenced by ambient air quality, especially O₃, but inverse associations were observed as well.

1430

OZONE EXPOSURE IN THE WEEK PRIOR TO DELIVERY ASSOCIATED WITH THE RISK OF STILLBIRTH Pauline Mendola*, Maeve Wallace, Sandie Ha, Danping Liu, Yeyi Zhu, Anna Pollack, Sung Soo Kim, Seth Sherman, Katherine Grantz (NIH/NICHD)

Both chronic air pollution exposure and acute exposures in the days prior to delivery have been examined in relation to stillbirth, but only in a small number of studies with inconsistent findings. We examined the risk of stillbirth in a retrospective cohort of 223,375 singleton deliveries, 23 weeks of gestation, from 12 clinical sites across the United States. Average exposure to criteria air pollutants was calculated using modified Community Multiscale Air Quality models for the day of delivery and each of the seven days prior, whole pregnancy, first and second trimester. Poisson regression models using generalized estimating equations estimated the relative risk (RR) of stillbirth and 95% confidence intervals (CI) in relation to an interquartile increase in pollutant in single and multi-pollutant models adjusted for age, race, parity, smoking, alcohol, pre-pregnancy body mass index, insurance, marital status, hypertension, diabetes, season of conception, birth year and study site. We observed 992 stillbirths during the study period (0.4%). Ozone (O₃) was associated with a 14-21% increased risk on days 2, 3 and 5-7 prior to delivery in single pollutant models and these findings persisted in multi-pollutant models for days 5 (RR= 1.24, CI=1.08-1.43) and 6 (RR=1.19, CI=1.04-1.36). Particulate matter (PM) <2.5 microns was associated with risk in the day 1 multi-pollutant model (RR=1.15, CI=1.01-1.31) but this was non-significant in the single pollutant model. First trimester O₃ increased risk only in the single pollutant model (RR=1.17, CI=1.01-1.36). First trimester exposures to sulfur dioxide and carbon monoxide were inversely associated with risk. Whole pregnancy and second trimester averages were not related to risk of stillbirth and no significant associations were observed for exposure to nitrogen oxides or PM < 10 microns. This large cohort with rich clinical data suggests that O₃ may have both an early pregnancy and acute relation to stillbirth.

1429-S/P

THE ASSOCIATION BETWEEN VITAMIN D DEFICIENCY AND ANTINUCLEAR ANTIBODIES IN MIDDLE AGE AND OLDER U.S. ADULTS Helen Meier*, Dale Sandler, Eleanor Simonsick, Christine Parks (National Institute of Environmental Health Sciences)

Vitamin D deficiency has been associated with autoimmune diseases, but little is known about the association between vitamin D and the presence of antinuclear antibodies (ANA), a marker of immune dysfunction, in healthy populations. The objective of this study was to determine if vitamin D deficiency is associated with ANA in middle age and older U.S. adults. Using data from the National Health and Nutrition Examination Survey (NHANES), 2001-2004, a nationally representative, cross-sectional survey of the noninstitutionalized U.S. population, we examined the association of serum vitamin D levels and ANA serology in 1,012 adults aged 50 years and older. Serum 25-hydroxyvitamin D levels were measured by radioimmunoassay and categorized as severe deficiency (<10 ng/mL), deficiency (10-19.9 ng/mL), insufficiency (20-29.9 ng/mL) and normal (≥ 30 ng/mL). ANA was measured in a 1:80 dilution of sera using standard immunofluorescence methods and classified as seropositive (scored as 3 or 4) or seronegative (scored 0-2). Greater vitamin D deficiency was associated with higher ANA prevalence in the unadjusted (ptrend = 0.0002) logistic regression model and after adjustment for sex, age, education, race/ethnicity, season and NHANES cycle (ptrend=0.04). In the adjusted model, those with severe vitamin D deficiency had 2.99 (95%CI: 1.25, 7.15) times the odds of ANA than those with vitamin D levels in the normal range and Vitamin D deficient and insufficient individuals had elevated odds of 2.03 (95%CI: 1.16, 3.55) and 2.11 (95%CI 1.15, 3.88) respectively relative to those with normal vitamin D levels. Among U.S. residents aged 50 and older, vitamin D deficiency was associated with higher prevalence of ANA. Vitamin D sufficiency may be important for preventing immune dysfunction in aging populations.

1431

URINARY BISPHENOL A CONCENTRATION AND GESTATIONAL DIABETES MELLITUS IN CHINESE WOMEN Fengxiu Ouyang* (Xinhua Hospital, School of Medicine, Shanghai Jiao Tong University)

Background: Bisphenol A (BPA) has been associated with variable metabolic effects in animal models. It is unknown whether BPA exposure affects glucose tolerance in pregnancy. We aimed to investigate whether maternal urinary BPA concentration is associated with gestational diabetes mellitus (GDM). **Method:** This study included 620 pregnant women from Shanghai, China 2012-2013. Maternal urinary BPA concentration was measured by high-performance liquid chromatography-tandem mass spectrometry (HPLC-MS/MS). GDM (n=79) was diagnosed according to the criteria of the International Association of Diabetes and Pregnancy Study Groups (IADPSG). Multivariate regression was used to explore the relationships of urinary BPA with GDM, plasma glucose levels in the 75 g 2-h oral glucose tolerance test (OGTT), and birth weight. **Results:** The geometric mean of BPA was 1.32 µg/L. After adjustment for maternal age, education, husband smoking during pregnancy, pre-pregnancy BMI, and urinary creatinine concentration, plasma glucose at 2 hour in the 75 g OGTT was 0.39 mmol/L lower (95% CI: -0.76, -0.02, p=0.04) for women with urine BPA in the high vs. the low tertile. For each unit increase in log urinary BPA, the odds of GDM was reduced by 25% (OR=0.75, 95% CI: 0.57, 0.98; p=0.03), and birth weight lower by 28.1 gram (95% CI: -56.9, 0.7; p=0.07). **Conclusions:** Higher maternal urinary BPA concentrations were associated with reduced risk of GDM, and marginally lower birth weight.

1432-S/P

HBA1C AND METABOLIC SYNDROME IN RELATION TO HOUSEHOLD AIR POLLUTION FROM WOOD-BURNING COOKSTOVES IN HONDURAN WOMEN

Sarah Rajkumar*, Maggie L. Clark, Bonnie N. Young, Megan L. Graham, Annette M. Bachand, Robert Brook, Tracy L. Nelson, John Volckens, Stephen J. Reynolds, Christian L'Orange, Sebastian Africano, Anibal B. Osorio Pinel, Jennifer L. Peel (Department of Environmental and Radiological Health Sciences, Colorado State University, Fort Collins, CO, USA.)

Introduction: Household air pollution (HAP), primarily resulting from inefficient biomass-burning cookstoves in low- and middle-income countries (LMIC), is the third leading risk factor for the global burden of disease. Air pollution is hypothesized to be a risk factor for metabolic disorders, a growing burden in LMIC; however, epidemiologic evidence linking HAP and metabolic disorders is lacking. We evaluated the association between exposure to PM_{2.5} (particulate matter <2.5µm) and HbA1c (glycated hemoglobin, a measure of glucose regulation) and metabolic syndrome among rural Honduran women. **Methods:** Female cooks (n109), 25-55 years of age were included in a cross sectional study of traditional and improved-combustion wood-burning cookstoves. 24-hour gravimetric area (inside the kitchen) and personal PM_{2.5} concentrations were measured. HbA1c, assessed via a finger-stick blood sample, was analyzed as a continuous as well as a binary (normal vs pre-diabetic/diabetic) variable. Metabolic syndrome was defined by having a waist circumference ≥80cm plus any two of the following: triglycerides >150mg/dl, HDL <50mg/dl, systolic blood pressure ≥130mmHg, diastolic blood pressure ≥85mmHg or HbA1c >5.6%. Age, dietary diversity score, physical activity, and number of beds per person (a measure of socioeconomic status) were included in all models. **Results:** An interquartile range (IQR) increase in area PM_{2.5} was associated with a 68% higher prevalence of pre-diabetes/diabetes (OR=1.68, 95%CI: 1.06, 2.66) and with a 49% higher prevalence of metabolic syndrome (OR=1.49, 95%CI: 0.97, 2.29). When evaluating HbA1c on a continuous scale, a suggestive association was observed: a 0.06% (95%CI: -0.01, 0.12) increase in HbA1c was associated with an IQR increase in area PM_{2.5}. No associations were observed with personal PM_{2.5} concentrations and either outcome. **Conclusion:** Elevated area PM_{2.5} levels were associated with a higher prevalence of pre-diabetes/diabetes and metabolic syndrome.

1434-S/P

PROXIMITY TO INDUSTRIAL FOOD ANIMAL PRODUCTION AND ASTHMA EXACERBATIONS IN PENNSYLVANIA, 2005-2012

Sara Rasmussen*, Karen Bandeen-Roche, Joan Casey, Brian Schwartz (Department of Environmental Health Sciences, Johns Hopkins Bloomberg School of Public Health)

Background Living near industrial food animal production (IFAP) – large-scale, densely stocked, and highly specialized farms – has been linked to respiratory outcomes. Prior studies have generally found IFAP to be a risk factor for self-reported asthma or asthma symptoms. **Objective** To assess associations of proximity to IFAP with objectively-documented incident asthma exacerbations (hospitalizations, emergency encounters, and oral corticosteroid medication orders). **Methods** We identified asthma exacerbations among asthma patients from 2005-2012 using electronic health records from the Geisinger Health System, in a 38 county region of central and northeastern Pennsylvania. We conducted a case-case (asthma patients with and without exacerbations) analysis to evaluate exposure to swine or dairy/veal IFAP (IFAP within 3 miles of residence) as a risk factor for asthma exacerbations. Analyses were conducted using logistic regression and were adjusted for potential individual and community confounding variables. **Results** We located 123 swine and 203 dairy/veal operations. Of the 35,269 asthma patients, 8,399 (24%) patients lived within 3 miles of IFAP. We identified 3,552 hospitalizations, 1,445 emergency encounters, and 13,137 oral corticosteroid medication orders. Proximity to swine or dairy IFAP was associated with (OR [95% CI]) asthma hospitalizations (1.34 [1.22, 1.47]) and oral corticosteroid medication orders (1.15 [1.09, 1.22]), but not with emergency encounters. **Conclusion** This study contributes to growing evidence that IFAP impacts health, in this case objectively-documented asthma exacerbations.

1433

MORTALITY FROM RESPIRATORY INFECTIONS AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND ASSOCIATIONS WITH ENVIRONMENTAL QUALITY

Kristen M Rappazzo*, Timothy J Wade, Lynne C Messer, Jyotsna S Jagai, Christine L, Gray, Shannon C Grabich, Yun Jian, Danelle T Lobdell (U.S. EPA)

Respiratory infections (RI) and chronic obstructive pulmonary disease (COPD) have been identified by the World Health Organization as conditions which may be strongly influenced by environmental factors. We examined the associations between environmental quality and U.S. county mortality rates for RI and COPD. Daily data from the National Center for Health Statistics were used to calculate age-adjusted RI and COPD mortality rates per 100,000 population for years 2005-2010 for each U.S. county (n=3140). Cumulative environmental quality for 2000-2005 was characterized by five domain indices of the Environmental Quality Index (EQI): air, water, land, built and sociodemographic domains. We used linear regression to estimate county-level rate differences (RD) and 95% confidence intervals for quintiles of EQI domain indices, adjusted for all other environmental domains and county population percent minority; models were also stratified by four levels of urban-rural setting. In the unstratified analysis, COPD death rates increased with worsening air quality (RD 5th compared to 1st quintile: 6.387 (4.565, 8.210)), and decreased with worsening sociodemographic quality (-18.020 (-20.051, -15.989)). RDs for COPD were consistently positive for worsening water quality, and negative for worsening land quality. In the stratified analyses, RDs for the sociodemographic domain were positive (RD 5th to 1st quintile: 14.456 (12.130, 16.781)) in the most urban strata, but remained negative in more suburban and rural strata. Also in the stratified analyses, COPD associations with air quality appear to be driven by most urban counties, while water associations were most influenced by suburban and rural counties. Similar patterns of association were observed with RDs for RI death. Deaths due to COPD and RI appear to have different environmental drivers across rural-urban strata, with air and water quality having adverse impacts. This abstract does not necessarily reflect EPA policy.

1435

MULTI-LEVEL ASSOCIATIONS BETWEEN OBJECTIVE AND SUBJECTIVE REPORTS OF THE RESIDENTIAL ENVIRONMENT AMONG AFRICAN AMERICAN WOMEN

Shawnta Sealy-Jefferson*, Lynne Messer, Jaime Slaughter-Acey, Dawn P. Misra (Virginia Commonwealth University, Department of Family Medicine and Population, Division of Epidemiology)

The relationship between objective (or administratively defined) and subjective assessments of the residential environment is complex and understudied. Using data from the Life-course Influences on Fetal Environments Study (2009-2011) of postpartum African American women in the Detroit-Metropolitan area (n=1,387), we tested whether a neighborhood disadvantage index (including 9 variables from the American Community Survey) was associated with perceptions of the residential environment. Validated neighborhood scales (higher=better) were used to measure women's perceptions of healthy food availability, walkability, danger and safety, and social disorder (higher=more disorder). Random-intercept hierarchical generalized linear models estimated associations between objective and subjective reports of the residential environment, accounting for individual-level covariates. Block-group variance in perceptions of the residential environment ranged from 14%-39%. Accounting for neighborhood disadvantage reduced the block-group variance of perceptions of the residential environment from 29%-50%. Neighborhood disadvantage significantly predicted subjective reports, in fully adjusted models. Specifically, women in the 75th percentile of the neighborhood disadvantage index (more disadvantage) would be expected to report lower (; 95% Confidence interval): danger and safety (-3.53; -3.96, -3.09), walkability (-0.79 ; -0.98, -0.60), healthy food availability (-1.87; -2.21, -1.52), and higher social disorder (2.52; 2.16, 2.89), compared to women in the 25th percentile (less disadvantage). Administratively defined assessments of the residential environment significantly predict subjective reports, though significant unaccounted for variability in subjective assessments remains to be explained. This work suggests that subjective and objective reports of the residential environment may give importantly different information about the neighborhood context.

1436

MYOCARDIAL INFARCTION RISK INDUCED BY AIRCRAFT, ROAD AND RAILWAY TRAFFIC NOISE – A CASE-CONTROL STUDY BASED ON SECONDARY DATA Andreas Seidler*, Mandy Wagner, Melanie Schubert, Patrik Dröge, Jörn Pons-Kühnemann, Enno Swart, Hajo Zeeb, Janice Hegewald (Institute and Policlinic of Occupational and Social Medicine, Faculty of Medicine, TU Dresden)

Background: Several studies point to an elevated risk for myocardial infarction induced by traffic noise. **Methods:** In the Rhine-Main area (administrative region Darmstadt, Rhine Hesse), 19,632 incident cases of myocardial infarction (diagnosed between 2006 and 2010) were compared with 834,734 control subjects. The classification of cases and control subjects was based on insurance claims and prescription data provided by three large statutory health insurance funds. For all insured individuals, address-specific exposure to aircraft, road and railway traffic noise in 2005 was estimated. Odds Ratios (OR) were calculated using logistic regression analysis, adjusted for age, sex, local proportion of persons receiving unemployment benefits, and individual socioeconomic status (as far as the activity keys were known). The continuous sound levels (24 hour levels) were examined by applying linear models and by applying 5 dB categories (reference category <40 dB, persons characterized by a nightly maximum level of more than 50 dB excluded from the reference category). **Results:** A statistically significant linear exposure-risk relationship was found for road traffic noise (2.8% risk increase per 10 dB increase in continuous noise level; 95% CI 1.2-4.5%) and for railway noise (2.3% risk increase per 10 dB increase in continuous noise level; 95% CI 0.5-4.2%), but not for aircraft noise. Aircraft noise levels above 60 dB were associated with an elevated risk for myocardial infarction (OR = 1.42; 95% CI 0.62-3.25), which acquired statistical significance when only patients that died till 2014/2015 were included (OR = 2.70; 95% CI 1.08-6.74). **Conclusions:** Regarding the high prevalence of traffic noise, even low risk increases for frequent diseases are relevant for the population as a whole.

1438-S/P

OZONE AND PM 2.5 EXPOSURE INDEPENDENTLY INCREASE BMI GROWTH FROM 4TH-6TH GRADE Christopher Warren*, Rob McConnell, Nathaniel Riggs, Mary Ann Pentz (University of Southern California Keck School of Medicine)

Background: Recent studies have found significant associations between BMI trajectory and exposure to near-roadway air pollution, but not exposure to regional pollutants such as ozone and PM 2.5. The present study sought to evaluate relationships between exposure to these two regional pollutants and changes in BMI slope from 4th through 6th grade in a different cohort of Southern California schoolchildren. **Methods:** Air pollution exposures were assigned to residential addresses at the census tract level to 709 participants in the Pathways to Health school-based prevention trial, which was implemented in 75 Southern California classrooms from 2009-2011. Ozone and PM 2.5 exposures were three year averages (2009-2011) of the amount of the daily maximum 8-hour ozone concentration over the California 8-hour standard (0.070 ppm), and the annual mean concentration of PM2.5 (average of quarterly means) calculated for the CalEnviroScreen 2.0. Separate linear growth curve models adjusting for SES, ethnicity, gender, and perceived stress were fit to test the independent effects of PM 2.5 and Ozone on participants' change in BMI percentile assessed 4 times over the 3-year period. All models demonstrated excellent fit (TLI .985; RMSEA <.05) and utilized robust standard errors adjusting for classroom-level clustering of participants. **Results:** Ozone exposure was significantly associated with estimated BMI growth over the 3 year follow-up period (B=2.17; 95% CI: .17, 4.18) ($p<.05$) while PM 2.5 exposure demonstrated a marginally significant association (B=0.10; 95% CI: -.01, .22) ($p=.072$). These effects remained even after further adjustment for mean traffic density within each census tract as well as individual differences in participant physical activity or intake of high calorie/low-nutrient foods. **Conclusions:** These findings suggest that increased attention should be paid to the roles ozone and PM2.5 may play in the present childhood obesity epidemic.

1437-S/P

ASSOCIATION BETWEEN PRENATAL ARSENIC EXPOSURE AND ADVERSE PREGNANCY OUTCOME Yu-Hsuan Shih*, Tariqul Islam, Samar Hore, Golam, Sarwar Mohammad, Hasan Shahriar, Joseph Graziano, Faruque Parvez, Habibul Ahsan, Maria Argos (University of Illinois at Chicago, School of Public Health, Chicago, IL)

Background: Chronic arsenic exposure is a public health concern worldwide, with elevated concentrations of arsenic in groundwater posing a threat to millions of people worldwide. Recent evidence suggests that arsenic from food sources may also be a public health concern. Arsenic is an established carcinogen and has been associated with other chronic diseases. However, its relationship to reproductive outcomes is less established. **Objectives:** We evaluated the association between individual-level prenatal arsenic exposure and adverse pregnancy outcomes in a pregnancy study among 598 women nested in a larger population-based cohort in rural Bangladesh. **Methods:** Creatinine-adjusted urinary total arsenic concentration in the prenatal period, a comprehensive measure of arsenic exposure from water, food, and air sources, was available for the study participants. Self-reported pregnancy outcomes (live birth, stillbirth, spontaneous or elective abortion) were ascertained. Generalized estimating equations were used to estimate odds ratios and 95% confidence intervals for associations between arsenic exposure and adverse pregnancy outcomes, adjusting for confounding variables, to account for multiple pregnancies of study participants. **Results:** We observed a significantly elevated association between prenatal urinary arsenic exposure and adverse pregnancy outcome (stillbirth/abortion versus livebirth) for high (adjusted OR=2.52; 95% CI=1.05, 6.03) versus low exposure based on the median. Subset analyses showed similarly elevated risks for stillbirth and spontaneous abortion separately. **Conclusions:** Prenatal arsenic exposure was associated with adverse pregnancy outcomes among a sample of rural Bangladeshi females. Future studies are needed to evaluate in utero and early life health effects of arsenic exposure in children as well as arsenic remediation strategies for women of child-bearing age.

1439-S/P

LOSS OF INCOME AND CONCERN FOR THE ENVIRONMENT AS MOTIVATIONS FOR BEHAVIOR CHANGE AFTER AN ENVIRONMENTAL DISASTER: THE GROWTH STUDY Leah Silversmit*, Arti Shankar, Christopher Mundorf, Jeffrey K Wickliffe, Emily Harville (Department of Epidemiology, School of Public Health and Tropical Medicine, Tulane University)

Background: Previous studies indicate that environmental worry and economic factors may lead to behavior change. We examined how women's environmental concerns as well as their income changes were affected by the Gulf oil spill and if they were associated with behavior changes. **Methods:** 937 women of reproductive age from oil spill affected areas were interviewed between 2012 and 2014. Hodapp et al's environmental worry scale was used to measure personal and general environmental concerns. Women were asked if they had changed behaviors due to the oil spill, including eating seafood, postponing pregnancy, avoiding the coast, and moving out of the region. Bivariate associations were calculated between environmental worry, loss of income as result of the oil spill, and demographic variables, then two log-linear regression models were used to model behavior change as a function of either personal or general environmental concern variables and loss of income, adjusting for demographics. **Results:** 52 (6%) women postponed pregnancy due to the oil spill, 485 (52%) did not eat seafood, 425 (46%) avoided the coast, and 126 (14%) moved out of the region after the oil spill. Loss of income was not associated with personal environmental worry. Women with higher environmental concern scores and those that had experienced income loss were more likely to have reported a change in behavior. Both models using either general and personal environmental worry income loss were significant predictors of in all reported behavior changes, with the exception that loss of income did not predict postponing pregnancy and only personal environmental worry was associated with postponing pregnancy (RR: 1.10 95% CI: 1.01, 1.19). **Conclusions:** Income loss and environmental worry contributed to behavior changes among women after the oil spill, but income loss appeared to be the stronger factor. Environmental decisions are likely not based solely on environmental concerns, but also economic reasons.

1450-S/P

PREDICTION OF PATIENT LENGTH OF STAY INCREASES HOSPITAL EFFICIENCY VIA FAST-TRACKING Laura Bahlis*, Luciano Diogo, Licurgo Almeida, Halley Hunter-Zinck, Aline Villavicencio (UFRGS - epidemiology pos graduation program)

Background: Rising healthcare costs are forcing governments and healthcare systems around the world to utilize clinical resources with increasing efficiency. One major factor in rising costs is patient hospitalization. Studies of patient length of stay in hospitals can help to predict costs while simultaneously improving overall quality of service. **Methods:** We use machine learning techniques and simulations to investigate the length of stay of patients in a mid-size Brazilian hospital. We apply four machine learning algorithms, as well as an ensemble of the different models, to the hospital's electronic medical record data to develop predictive models of length of stay. Additionally, the study explores the importance of different features over the length of stay using two different importance metrics. Finally, we implement a discrete-event simulation of the flux of patients through the hospital in order to test if the predictive models are able to identify candidate patients for clinical fast-track beds based on criteria defined by the Brazilian Ministry of Health. **Results:** All machine learning models show comparable performances despite the different approaches of each algorithm. Specifically, the models predicted the length of stay of patients staying between 2 and 5 days (approximately 50% of the data) with mean square error lower than 2 days when all features are used. The importance analysis suggests that records of antibiotic use work as strong predictors for length of stay. Furthermore, our simulations suggest that the predictive model can select better candidates for fast-track beds when compared to other criteria. **Conclusions:** Overall, the model predicts length of stay with high accuracy and provides a useful tool to improve hospital bed management and patient flux, helping to better allocate resources. This work demonstrates how machine learning methods can help in clinical decision-making in both prediction and interpretation of clinical outcomes.

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PROTECTION MOTIVATION THEORY-GUIDED CUSP MODELING OF CIGARETTE SMOKING AMONG VOCATIONAL HIGH SCHOOL STUDENTS IN CHINA Yunan Xu*, Xinguang Chen (Department of Epidemiology, University of Florida ,Gainesville, FL)

Protection motivation theory (PMT), consisting of a Threat Appraisal and a Coping Appraisal pathway, is a verified conceptual framework to advance tobacco research in different countries across the globe. Empirical data from reported studies suggest that many adolescent health risk behavior, including tobacco use, may be a quantum process, consisting of an intuitive/automatic and a rational/analytical process. This has challenged the traditional linear continuous analytical approach. In this study, we used the cusp catastrophe modeling, a nonlinear method to test if cigarette smoking behavior is quantum. Data from a random sample of vocational high school students (n=553) were analyzed using the multivariate stochastic cusp modeling method with the Cusp Package in R. The outcome variable was the frequency of cigarette smoking (never, occasional, weekly and daily) in the past month and the PMT-based Threat Appraisal and Coping Appraisal were predictor variables. Supporting PMT, result from cusp modeling analysis indicated that Threat Appraisal (as asymmetry variable, $\beta = -0.1987$, $p < 0.001$) and Coping Appraisal (as bifurcation variable, $\beta = 0.1760$, $p < 0.05$) were statistically significant in predicting the frequency of cigarette smoking after controlling for covariates. Furthermore, relative to the alternative linear and logistic regression models, cusp catastrophe model was more efficient in characterizing the relationship between the predictors and the outcome with regard to higher R^2 (0.82 for cusp, but 0.21 for linear and 0.25 for logistic) and smaller AIC (622 for cusp, but 1233 for linear and 1208 for logistic) and BIC (665 for cusp, but 1258 for linear and 1246 for logistic). Study findings support the conclusion that cigarette smoking among adolescents in China is quantum in nature and it can be adequately described by PMT, a western-developed theory.

1451-S/P

DEPENDENT MISCLASSIFICATION IN THE CONTEXT OF A MEDIATION ANALYSIS Corey Benedum*, Joanna Burtner, Matthew Fox, Daniel Brooks (Boston University School of Public Health, Department of Epidemiology)

Mediation analyses decompose total effects into direct and indirect effects. Indirect effects are the pathway from exposure to disease passing through an intermediary variable while the direct effect doesn't. Despite increasing interest in mediation methods, the effects of dependent misclassification (DM) of exposure and mediator on measures of association have yet to be explored. In this simulation study, we attempt to quantify the effect of DM on the direct, indirect, and total effect of a binary exposure. Datasets were simulated with a baseline disease prevalence of 10% and either 10 or 50% exposure prevalence. Baseline mediator prevalence varied between 25-45%. Exposure-disease and exposure-mediator associations were set at a risk ratio (RD)=0.3; the exposure-mediator association was set at RD=0.3. Simulations were conducted with 100,000 subjects with non-differential DM varying between 0-25%. Datasets were analyzed with a mediation analytic method set within the counterfactual framework. For both exposure prevalence levels, the direct effect was biased towards the null as DM increased. When exposure prevalence was 10% we observed that it is possible for DM to bias the direct effect past the null. As DM increased we found that for an exposure prevalence of 10%, the indirect effect increased, with faster rates of change occurring within lower mediator prevalences. Similar results were observed for an exposure prevalence of 50%, except at a mediator prevalence of 45% the indirect effect decreased in comparison to the true effect with increasing levels of DM. Finally, regardless of exposure prevalence, the total effect was biased towards the null with increasing amounts of DM. We found DM biases the true association as a function of the exposure prevalence and mediator prevalence levels. Additionally, we found that even at small levels of DM, the direct effect, indirect effect, and total effect may be quite different compared to the true effect.

1453- S/P

A NEW MEASURE OF BETWEEN-STUDIES HETEROGENEITY IN META-ANALYSIS Alessio Crippa*, Polyna Khudyakov, Molin Wang, Nicola Orsini, Donna Spiegelman (Institute of Environmental Medicine, Karolinska Institutet, Stockholm)

The assessment of the magnitude of heterogeneity in a meta-analysis is a crucial step for determining the appropriateness of combining results or performing meta-regression. The most popular measure of heterogeneity, I^2 , was derived under an assumption of homogeneity of the within-study variances, which is unlikely to hold in many meta-analyses. The alternative measure, R_I , uses the harmonic mean to estimate the average of the within-study variances, and it may be biased as well. Our aim is to present a new measure, R_b , does not depend upon the definition of a within-study variance term, and compare it with the earlier formulations. R_b quantifies the extent to which the variance of the pooled random-effects estimator is due to between-studies variation. We discuss definition, interpretation, properties, point and interval estimation, and formal relationships with the other two measures I^2 and R_I . Furthermore we evaluate the performances of all 3 estimators through an extensive simulation study covering a wide range of scenarios that occur in epidemiologic practice. The use of the aforementioned measures is illustrated in a re-analysis of three published meta-analyses. The proposed measure will be implemented in user-friendly functions available for routine use in R, SAS, and Stata.

1454

ACCOUNTING FOR OUTCOME MISCLASSIFICATION IN OCCUPATIONAL STUDIES OF CARDIOVASCULAR DISEASE RELATED MORTALITY

Jessie Edwards*, Alexander Keil, David Richardson (Epidemiology; UNC Chapel Hill)

Recent studies have suggested a relationship between some forms of ionizing radiation and cardiovascular disease. However, existing studies of underground miners have found no evidence of a dose-dependent relationship between occupational exposure to radon gas and cardiovascular disease mortality. This could be because occupational studies may be susceptible to both healthy worker survivor bias and misclassification of cause of death. Here, we estimate the cumulative incidence of cardiovascular disease related mortality under the natural course (i.e., no intervention on radon exposure) and under a hypothetical intervention to limit radon exposure to 0.33 Working Level Months per month (the current Mine Safety and Health Administration standard) using the parametric g-formula. Workers in the Colorado Plateau Uranium Miners cohort (n = 4134) entered the study between 1950 and 1964 and were followed for cardiovascular disease mortality until 2005. Over this period, 3065 deaths were recorded, and 411 were classified as due to cardiovascular disease. We account for possible misclassification of cause of death using data augmentation priors summarizing our beliefs about the accuracy of cause of death from death certificate based on existing validation studies. Log normal priors were constructed on the parameters determining the measurement process to yield a mean sensitivity of 70% and a mean specificity of 90%, and the measurement error mechanism was assumed to be independent of exposure or covariates. Under the intervention on radon exposure, all-cause mortality at age 80 decreased from 76% (under the natural course) to 71%. In the standard analysis, the cumulative incidence of cardiovascular disease related mortality at age 80 was 10% under the natural course and 9% under the intervention exposure limits. After accounting for outcome misclassification, the cumulative incidence at age 80 was similar under the natural course (6%) and under the intervention (6%).

1456

OPIOID DEATHS: AN EPIDEMIC IN MASSACHUSETTS

Malena Hood, Dana Bernson (MA Department of Public Health)

Since 2012, there have been increasing numbers of fatal opioid-related overdoses in the U.S. and in Massachusetts. While information on these overdoses is present on death certificates, the reality is that real-time counts of deaths and demographics of those dying are lacking. First, most of these cases are referred to the Office of the Chief Medical Examiner (OCME) for investigation and final determination of cause of death. In MA, it has been taking the OCME longer to clear cases and assign causes of deaths than in the past. As such, the closed files for each year contain more records with a cause of death that is pending. Second, the file is not closed until more than a year after the reporting year is done, thus delaying ascertainment and determining if there are trends or a true epidemic can't happen until well after a situation is unfolding. DPH explored the use of predictive modelling to estimate the number of pending cases that will end up an opioid-related overdose. We used closed files for 2008 – 2012 to create and refine a statistical model to predict the likelihood that the cause of death for any person will be an opioid-related overdose. We then added 2011-2015 OCME data, which improved the model greatly. Last, we applied this model to the 2013 to 2015 open files to estimate the number of pending cases that will be an opioid-related overdose. Covariates included age, race, education, gender, year, place of death, autopsy status, OCME narratives, and geography. We calculated monthly estimates and these were very similar across files since December 2014. We've identified that generally younger, white, female, suburban, and less educated have elevated risks of opioid overdose death. We were able to use modelling to project the number of fatal opioid-related overdoses among MA residents from 2013 to 2015. These techniques allowed us to quantify the opioid problem months earlier than usual and can be applied to files going forward in order to create early predictions throughout the year

1455-S/P

INNOVATIVE USE OF SOCIAL NETWORKS IN AN AGENT BASED MODEL

Ava Hamilton*, Magdalena Cerda, Katherine Keyes (Columbia University)

Social networks are an integral aspect of how health behavior is modeled and transmitted, including health behaviors such as firearm carrying. Modeling such networks in epidemiological data often requires advanced techniques. One such technique is using an agent-based model (ABM) to simulate social connections. We used a computational ABM to simulate the effectiveness of implementing firearm ownership restrictions on firearm related homicide rates in the New York City population. The model was calibrated to simulate social networks; an agent had 0 to 9 connections with an average of 3 friends, following the General Social Survey estimates of social ties. Using empirical data for calibration, agents were more likely to have connections in the same demographic categories and firearm-ownership category (i.e. owner versus non-owner). Agents had an average of 67% of friends in the same firearm-ownership category, based on empirical data and predictive models. An agent's connections influenced many of perpetration and victimization of violence. Social networks also affect firearm status. If an agent did not own a firearm they were still able to carry or access a firearm based on social network firearm status. Consequently, the intervention of removing a firearm from an agent did not completely remove access a firearm. Agents who owned a firearm were more likely to be involved in a gun-related homicide (OR=1.41). Consequently, the connections of potential victims of gun-related homicide had a higher homicide probability. If >50% of agent connections had been gun-related homicide victims, the agent was 4.75 times more likely to be involved in a gun-related homicide. If an agent had one or more connections who had been victims of homicide, they were 2.7 times as likely to be involved. Implementing a data-driven social network component to simulation models provides a novel technique to assess how interventions affect health outcomes including firearm-related homicide.

1457

A METHODOLOGICAL FRAMEWORK FOR EVALUATING THE LONG-TERM POPULATION IMPACT OF INTERVENING ON SPECIFIC TARGETS TO REDUCE HIV-RELATED RACIAL/ETHNIC DISPARITIES

Chanelle Howe*, Stephen Cole, Joseph Hogan, Bryan Lau, Heidi Crane, Dan Drozd, Richard Moore, Christopher Mathews, Elvin Geng, Stephen Boswell, Sonia Napravnik, Joseph Eron, Michael Mugavero (Brown University; CFAR Network of Integrated Clinical Systems (CNICS))

Reducing racial/ethnic disparities in HIV-disease is a high priority. Reductions in HIV racial/ethnic disparities can potentially be achieved by intervening on important intermediates that contribute to the disparity. The potential long-term population impact of intervening on intermediates to reduce disparities can be evaluated using observational data when necessary conditions are met. Methods that have historically been used in the observational HIV literature to estimate population impact have yielded results that may not accurately estimate quantities of interest. Using the impact of universal receipt of antiretroviral therapy (ART) on racial disparities in HIV virologic suppression as an example, we describe a useful framework for appropriately evaluating impact using observational data. This framework views relevant scientific questions as questions concerning controlled direct effects (CDEs) and applies g-methods for estimation. This CDE framework circumvents the limitations of the common practice of restricting the analysis sample to individuals at a specific level of the intermediate (e.g., HIV+ persons on ART) followed by standard regression adjustment when evaluating impact. We review various methods within our framework for accurately estimating CDEs and emphasize approaches that use the full unrestricted data in the outcome model which more readily allows for evaluation of gradients of interventions targeted at intermediates (e.g., on ART, 100% adherent; on ART, not 100% adherent; not on ART). We used the framework to analyze modified data on 9,357 participants enrolled in CNICS. Data were modified to complete missing ART adherence information. After accounting for important covariates and assuming necessary conditions hold, we estimated that universal ART receipt with 100% adherence would reduce but not eliminate racial disparities in virologic suppression. Residual disparities may be due to unaccounted for disparities in suboptimal ART regimens.

“-S/P” indicates work done while a student/postdoc

1458

THE REPORTING OF STABILIZED AND RISK-ADJUSTED RATES OF STILLBIRTH AND NEONATAL DEATH BY PLACE OF DELIVERY: MBRACE-UK

Bradley Manktelow*, Lucy Smith, Elizabeth Draper, David Field, Jennifer Kurinczuk (University of Leicester)

Background: The routine collection, analysis and reporting of perinatal death is vital in order to facilitate improvements in obstetric and neonatal care. Information on all stillbirths and neonatal deaths in the United Kingdom (UK) is collected by MBRACE-UK, enabling the calculation of stabilised & adjusted stillbirth, neonatal and extended perinatal mortality rates for the first time for organisations providing maternity services (NHS Trusts and Health Boards) in the UK. **Methods:** In order to compare organisations with similar patient risk profiles, the 162 organisations providing maternity services were divided into 5 'comparator groups' based on the availability of Neonatal Intensive Care and neonatal surgery and the number of births annually. A mixed effects logistic regression model was developed comprising fixed terms for the comparator groups and for baby and mother characteristics (gestational age, socio-economic status, mother's age, ethnicity, sex of baby, multiple birth), and a random term for the organisations. Standardised mortality rates were estimated for each organisation as the ratio of predicted to expected outcomes, which were then multiplied by their comparator group average rates to obtain stabilised & adjusted rates. **Results:** In 2013 there were 780211 births, with 3173 stillbirths and 1334 neonatal deaths. The ranges of stabilised & adjusted rates for the providers were: 3.14 to 5.73 for stillbirths; 1.01 to 3.58 for neonatal death; 4.17 to 9.54 for extended perinatal deaths. **Conclusions:** This methodology provides robust information to support the delivery of high quality care. The reported mortality rate rates for each organisation were stabilised to the average rate for similar organisations both reducing the effect of random variation and allowing more meaningful comparisons to be made. This information is vital to monitoring changes over time and to local, national and international comparisons.

1460

USING GRAPHICAL MODELS IN SOCIAL EPIDEMIOLOGY: IDENTIFICATION OF MARKOV EQUIVALENCE CLASSES FOR NON-MANIPULABLE EXPOSURES

Ashley Naimi* (University of Pittsburgh)

Integrating non-manipulable exposures such as race into the counterfactual framework has not been feasible. This framework requires interpreting causal effects as what would be observed if everyone were exposed versus unexposed. For variables like race, such interpretations are at odds with the complex set of historical and contemporary phenomena that give rise to racially patterned health outcomes. Recent work has shown how techniques for mediation analysis can be used to estimate the magnitude of a disparity that would remain if a third (manipulable) variable were altered. Here, we use graphical models, including directed acyclic and ancestral graphs, to explore the potential impact of the controversial and uncertain causal status of non-manipulable exposures such as race. Our findings have implications for both the interpretation and estimation of associations for such variables. In particular, they suggest the causal uncertainty for variables like race can lead to potential non-identifiability of a mediator effect, even if the mediator is manipulable. This warrants use of doubly- or multiply-robust techniques for health disparities research. We also show that, under certain assumptions, rather than identify the causal effect of race, statistical models may be used to identify a Markov equivalence class defined by the relevant graphical models for the relation between race and a health outcome under study. This enables for an interpretation of race effects which, though not causal, are grounded in causal inference theory.

1459-S/P

PRELIMINARY FINDINGS FROM APPLYING THE NEIGHBORHOOD ENVIRONMENT-WIDE ASSOCIATION STUDY (NE-WAS) APPROACH TO NEIGHBORHOOD INFLUENCES ON PHYSICAL ACTIVITY AMONG OLDER ADULTS

Stephen Mooney*, Magdalena Cerdá, Spruha Joshi, John Beard, Gary Kennedy, Andrew Rundle (Department of Epidemiology, Mailman School of Public Health, Columbia University)

Background As spatially located data from governments, social media, and remote sensing have become more available, researchers using geographic information systems have characterized neighborhoods in increasingly many dimensions. These 'Big Data' enable a Neighborhood Environment-Wide Association Study (NE-WAS) design that uses machine learning to empirically identify neighborhood environment features associated with health. We pilot tested several variable selection techniques for a NE-WAS study exploring predictors of physical activity. **Methods** NYCNames-II was a telephone survey of 3497 New York City residents aged 65-75 in 2010. We compiled 1519 neighborhood measures for each subject from diverse sources including the US Census, municipal records, and a LiDAR scan of the city. We selected the neighborhood features most predictive of self-reported gardening and self-reported walking using three empirical variable selection methods, each fit using 10-fold cross-validation: (1) L1-norm penalized ('lasso') regression, representing a base case, (2) elastic-net regression, which penalizes groups of highly correlated predictors (e.g. measures of neighborhood economic conditions) more strongly, and (3) elastic-net regression exempting individual-level covariates from penalties. For model 3, individual covariates included residential housing type and educational attainment. **Results** In lasso regression, the strongest neighborhood predictor of gardening was owner-occupied housing and highly educated neighbors most strongly predicted walking. In elastic-net regression, more middle-income neighbors predicted gardening and fewer teenage girl neighbors predicted walking. When individual covariates were included unpenalized in the elastic-net model, no neighborhood covariates remained. **Conclusions** The choice of models strongly affected measures algorithmically selected as most predictive. The NE-WAS approach does not obviate the need for inference-appropriate modeling decisions.

1461

A COMPARISON OF TWO MACHINE LEARNING METHODS FOR IDENTIFICATION OF VARIABLE INTERACTIONS IN MORTALITY PREDICTION

Michelle Odden*, Carmen Peralta, Jonathan Snowden (Oregon State University)

The ability to identify interactions in machine learning may help increase the face-validity of a predictive model or be used to better understand etiology. Many methods are 'black box' algorithms that do not allow the researcher to characterize interactions. We compared the interpretability and performance of two methods to predict 10-year mortality risk based on data from the National Health And Nutrition Examination Survey, 1999-2002, linked to data from the National Death Index through 2011, with a focus on identification of interaction terms. The Deletion/Substitution/Addition (D/S/A) algorithm is in the class of forward and backward model selection tools, and fits polynomial regression models based on cross-validation. We also used a cross-validated Gradient Boosted Model (GBM), which is an ensemble method that iteratively fits regression trees in the area where a model performs poorly (i.e. the residuals). Among 11,428 eligible participants, 2,017 deaths (17.7%) occurred within 10 years. The model fit from GBM outperformed the D/S/A; the c-statistics were 0.93 (0.92, 0.94) and 0.88 (95% CI: 0.86, 0.90), respectively, $p < 0.001$. Based on 4 risk groups, the net reclassification index of GBM was 33.5% compared with the D/S/A. GBM identified interactions between age x body mass index (BMI), age x cystatin C, cholesterol x diabetes, cystatin C x HDL-cholesterol, age x HDL-cholesterol. The D/S/A identified interactions between age x BMI, systolic blood pressure x waist circumference, diastolic blood pressure x LDL-cholesterol, and creatinine x BMI. A strength of the D/S/A is that it provides a regression functional form that is interpretable by researchers. Strengths of the GBM include the ability to fit predicted values in the presence of missing predictor data, and a stronger model performance for this research question. The D/S/A and GBM are easy to implement for clinical research questions and perform well for risk prediction in the setting of variable interactions.

1462-S/P

APPLICATION OF ENTROPY BALANCING IN CORRECTING FOR SELECTION BIAS

Isoken Odiya*, Nnadozie Emechebe, Ovie Utuama, Ying Ma, Wei Wang, Henian Chen (University Of South Florida)

Selection bias remains one of the major causes of an estimate to deviate from its true value in observational studies. Selection bias can also occur in randomized controlled trials which are the gold standard for epidemiological studies. With appropriate randomization techniques and blinding to treatment allocation, internal validity of randomized controlled trials is strengthened. However, external validity remains weak because of the constraints usually placed by the exclusion and inclusion criteria on the selection of participants, resulting in a study population that differs greatly from the target population. Inverse propensity score weighting and matching are various techniques that have been applied to both experimental and observational studies in order to improve external validity. The main issues with these adjustments is that they are somewhat tedious to use and they result in low levels of covariate balance in practice. Entropy balancing, a method described by Hainmueller in 2012, addresses these issues and uses a preprocessing scheme where covariate balance is directly built into the weight function that is used to adjust the control units. We illustrate the use of entropy balancing in reducing selection bias in simulation studies of clinical trials. Simulation studies were derived from a hypothetical population with the general characteristics of a population were generated based on predetermined probabilities. In addition, a counterfactual effect on the outcome was generated for each individual based on treatment assignment. The outcome was simulated based on a logistic regression model of the covariates. Biased samples based on specific characteristics of the population were generated. Entropy weighting was then performed to balance out the bias on the selected covariates using Ebal package in R. Future research should look into the application of entropy balancing as a possibility of selection bias correction in epidemiological studies.

1464-S/P

OPTIMALLY COMBINING PROPENSITY SCORE SUB-CLASSES

Kara Rudolph*, K. Ellicott Colson, Elizabeth Stuart, Jennifer Ahern (University of California, Berkeley; University of California, San Francisco)

Propensity score methods, such as subclassification, are a common approach to control for confounding when estimating causal effects in non-randomized studies. Propensity score subclassification groups individuals into subclasses based on their propensity score values. Effect estimates are obtained within each subclass and then combined by weighting by the proportion of observations in each subclass. To our knowledge, this approach of combining subclass-specific estimates has not been compared to other approaches. Combining subclass-specific estimates by weighting by the inverse variance is a promising alternative approach; a similar strategy is used in meta-analysis for its efficiency. We use simulation to compare performance of the two methods while varying: a) the number of subclasses, b) extent of propensity score overlap between the treatment and control groups (i.e., positivity), c) incorporation of survey weighting, and d) presence of treatment effect heterogeneity. Both methods perform well in the absence of positivity violations and treatment effect heterogeneity. Weighting by the inverse variance performs better in the presence of positivity violations, and weighting by the proportion in subclass performs better in the presence of treatment effect heterogeneity. We apply these methods to an illustrative example estimating the effect of living in a disadvantaged neighborhood on past-year anxiety and depressive disorders among U.S. urban adolescents. This example entails practical positivity violations but no evidence of treatment effect heterogeneity. In this case, weighting by the inverse variance when combining across propensity score subclasses results in more efficient estimates that ultimately change inference.

1463

A BOOTSTRAP METHOD FOR ESTIMATING INCIDENCE RATES IN LONGITUDINAL STUDIES WHEN INFORMATION ON CENSORING DUE TO DEATH IS MISSING FOR LARGE NUMBERS OF PARTICIPANTS

Robert Reynolds*, Steven Day, Anne Hackenewerth, Emilie Becker, Alan Shafer (Mortality Research & Consulting, Inc.)

Longitudinal studies of incidence rates must take into account competing risks in determining exposure time for participants who do not experience the event of interest during the study period. One basic competing risk is death; patients who die disease-free must be censored at the time of death. Here we present a method for estimating exposure time when information on deaths is missing for large numbers of participants. Our ongoing investigation of cancer incidence among persons with severe mental illness in Texas merged cancer registry data to client records for over 300,000 publicly-treated outpatient mental health clients over 5 years. The outcome of interest is development of a tumor, for which death from a non-cancer cause is a competing risk. Due to legal and financial constraints obtaining mortality information for all clients is impractical. Without such data the incidence rates obtained from these data would be hopelessly biased, as most clients have no clear exposure time. To obtain estimates of incidence rates for various cancers we began with cohort data from the mental health client records counting the first treatment as the start point for follow-up. We then broke the follow-up into discrete intervals based on calendar year and integer age. We attached an annual general population mortality rate specific to age, gender, and calendar year, then converted it to a probability of dying in each interval. Over 5,000 repetitions we simulated whether or not each client died in each discrete interval (conditional on having survived to the beginning of that interval). If a person "died" in one interval, he was censored at that time. In this way we were able to obtain a bootstrap estimate of the true incidence of cancers in this population over the 5-year period. We provide full methodological details and preliminary results as an illustration of the methods described.

1465

EXAMINER TRAINING AND VALIDITY IN MULTI-CENTER EPIDEMIOLOGICAL STUDY OF DENTAL CARIES

Maria Paula Rando Meirelle*, Maria da Luz Rosário Sousa, Vinicius Lages Aguiar, Virginia Gugelmeier, Patricia Jimenez Del Rio, Heráclito Barboza Carvalho, Maria Paula Rando-Meirelles (Piracicaba Dental School University of Campinas)

Data from epidemiological surveys in Oral Health are necessary for planning and monitoring, however, to collect data, previous training is an essential component of good quality control. The aim of this study was to evaluate the validity of dental caries examination performed by dentists of South America countries in a multi center study. The training was performed for the data collection of Saycare Study, a multicenter pilot study, that was held in seven South American cities: São Paulo and Teresina (Brazil), Buenos Aires (Argentina), Santiago (Chile), Montevideo (Uruguay), Lima (Peru) and Medellín (Colombia). A benchmark examiner conducted all training sessions and validity was verified by comparing the test of this with the other examiners. Six experienced examiners, previously calibrated in using the International Caries Detection and Assessment System (ICDAS), performed a new training (4 hours of theoretical training and 8 hours of practice training). A total of 1878 surfaces ranging of score 0 (Sound surface) to 6 (Extensive distinct cavity with visible dentine), were assessed in 12 children, aged 7 to 10 years, in schools in Piracicaba (Brazil) and Buenos Aires (Argentina). Inter-examiner reproducibility was evaluated using weighted kappa. All analyses were performed separately for proximal, occlusal and smooth surfaces. Overall agreement between the pairs ranged from 81 to 100% and the Weighted Kappa values between each examiner and the benchmark examiner ranged from 0.62 to 1.0, considered moderate. The examination performed at buccal and lingual surfaces presented higher figures than those obtained for mesial. ICDAS codes 1 and 2, that detect different stages of carious activity, showed less agreement. The examiners reached acceptable levels of agreement with the benchmark examiner and hence of the validity, however, it was recommended continuation of training with their local teams before the data collection, including reproducibility of 10 % of the sample.

1466

ACCURACY OF THE SMOKING QUESTIONNAIRE Zheng Sponsiello-Wang*, Zheng Sponsiello-Wang, Guillaume de La Bourdonnaye Morgane, David Gizelle Baker, Frank Luedicke, Rolf Weitkunat (PMI Research & Development, Philip Morris Products SA, Quai Jeanrenaud 5, 2000 Neuchâtel, Switzerland)

To address the problem of heterogeneity of exposure assessment across studies, the smoking questionnaire (SQ) covering the major dimensions of cigarette smoking was developed. The SQ is comprised of 8 items, 6 related to smoking behaviors and 2 to past quitting. The SQ was used in a clinical study conducted in adult American smokers. The SQ and the Behavioral Risk Factor Surveillance System (BRFSS) questionnaire were administered at two timepoints. To assess of the accuracy of the SQ the analysis included subjects who completed both questionnaires at both timepoints (n=139), allowing comparison across the timepoints and between the questionnaires. Of the SQ smoking behavior items, all 139 subjects responded to the first 4 items, while 136 subjects completed the 2 items related to cigarette brand and daily product consumption. Between the timepoints there was 97% agreement for 3 out of 6 items (preferred brand, 100 cigarettes lifetime, regular smoking). For questions on current smoking status and starting age, the agreement was 87% and 71%, respectively. The item on cigarette consumption per day was divided into 7 time periods ranging from "the last 3 months" to "more than 20 years ago". The agreement was between 55-75% for the different periods. Based on the study design, all subjects were current smokers, however 22 subjects provided incorrect responses related to the duration of quitting up to the time of assessment. Of the 29 subjects that reported quitting, 14 reported the same duration of quitting at both timepoints, while 15 provided discrepant durations. Agreement between the SQ and the BRFSS questionnaire was 89% for the questions on having ever smoked 100 cigarettes and on smoking status. More than 90% of the subjects reported that the SQ captures the smoking history and behavior correctly and completely. The majority of subjects (>97%) thought the SQ was self-explanatory and easy to use. The average SQ completion time was about 3.5 minutes.

1468

BIAS DUE TO "MISSING DATA" IN EPIDEMIOLOGIC RESEARCH USING ELECTRONIC HEALTH RECORDS Caroline Thompson* (San Diego State University)

Wider availability of electronic health records (EHR) has resulted in increased use of these secondary data resources for etiologic research, comparative effectiveness, and clinical epidemiology. EHR data can be very rich, are captured from broad community-based populations, and contain enormous volumes of data about the patient that may help us answer our targeted questions. EHR data, however, are entered for clinical, rather than for research, purposes. Unlike protocol-driven data, patients often appear when they feel they have a problem, clinicians may not always use the same definitions in how they characterize what they see or hear. Such "data generating mechanisms" reflect healthcare delivery system care pathways, which can be very complex, and researchers may be unaware of biases introduced via study designs that rely on data completeness for subject selection. Additionally, the concept of "missing data" takes on new meaning when patient interaction with the health care system dictates data availability, and common methods for handling unmeasured characteristics, such as multiple imputation, may be invalid. The improper treatment of "missing data" in EHR-based research could result in selection bias and/or misclassification, and researchers may be faced with a tradeoff decision between these two types of error. Using directed acyclic graphs for illustration and Monte-Carlo simulations for explanation, I will present three case studies of bias encountered in real-world examples of EHR-based research of breast cancer screening and treatment after implementation of missing data decision rules. These examples serve as reinforcement of the need for quantitative bias analysis in EHR research, where unmeasured aspects of healthcare delivery such as patient choice or physician recommendation often directly influence the probability of data availability."

1467

CLARIFYING THE CONCEPT OF COVARIATE BALANCE USING THE SUFFICIENT-CAUSE MODEL Etsuji Suzuki*, Toshihide Tsuda, Eiji Yamamoto (Okayama University)

The counterfactual approach to confounding has been widely accessible to epidemiologists, and the concept of confounding is now explained in the counterfactual framework. Although covariate balance is often addressed as a key feature to control confounding in epidemiology, there have been no studies that clarify the concept of covariate balance from the perspective of causal inference. In this presentation, we aim to clarify the concept of covariate balance using the sufficient-cause model and discuss its relationship with the concept of confounding. In so doing, we consider the link between the sufficient-cause model and the counterfactual model, emphasizing that the target population plays a key role when discussing these concepts. Furthermore, we incorporate sufficient causes within the directed acyclic graph framework. We propose to use each of the background factors in sufficient causes as representing a set of covariates of interest and discuss the presence of covariate balance by comparing joint distributions of the relevant background factors between the exposed and the unexposed groups. By considering the link between the two models, we illustrate that covariate balance is a sufficient, but not a necessary, condition for no confounding irrespective of the target population. Although our conceptualization of covariate imbalance is closely related to the recently proposed counterfactual-based definition of a confounder, the concepts of covariate balance and confounder should be clearly distinguished.

1469-S/P

EFFECT OF MILITARY SERVICE ON LUNG FUNCTION: COMPARISON OF METHODS FOR ESTIMATION IN OBSERVATIONAL DATA Anusha Vable*, Mathew Kiang, Kara Rudolph, Ichiro Kawachi, S.V. Subramanian, M. Maria Glymour (Harvard T.H. Chan School of Public Health)

Military service may have far-reaching health effects, but rigorous methods to identify these effects in observational data require careful control for selection. We examine the influence of military service on lung function comparing ordinary least squares (OLS), propensity score matching (PSM), and coarsened exact matching (CEM) for inference. Data were from US-born Korean War veteran (military service 1950-1954) and non-veteran males in the Health and Retirement Study, alive in 2010 and with peak expiratory flow (PEF) data in 2008 or 2010 (N=4,379). Analyses were stratified by low and high childhood socio-economic status (cSES); covariates were birth year, race, height, and childhood health. In PSM models, treated and control units with similar predicted probabilities of military service given covariates were matched using 1-to-1 nearest neighbor matching with replacement (caliper=0.05). In CEM models height was dichotomized to facilitate matching, and treated and control units were exactly matched on covariate values. Non-matches were removed from the PSM and CEM samples, but not OLS. Covariate imbalance was assessed with L1, which ranges from 0 (perfect covariate balance), to 1 (perfect imbalance). The OLS sample had 3,332 men (2,936 non-vets and 396 vets), L1=0.87. The PSM sample had 643 men (248 non-vets weighted to 395, and 395 vets), L1<10⁻¹⁴; the CEM sample had 585 men (284 non-vets and 301 vets), L1<10⁻¹⁴. PEF was higher among low cSES vets than non-vets (OLS B=22.4 L/min, 95% Confidence Interval [CI]:(0.4,44.4), p=0.05; PSM B=45.1, 95%CI:(1.4,88.8), p=0.04; CEM B=60.5, 95%CI:(28.0,93.0), p<0.0005). The low cSES PSM sample experienced worse childhood health and included more minorities than the CEM sample. There was no association in the high cSES subgroup (all p>0.6). In this application, PSM and CEM estimates varied, but are valid inferences for different analytic samples. OLS results come from poorly balanced data; extrapolation beyond the area of support may bias estimates.

1470

STATISTICAL METHODS FOR STUDYING DISEASE ETIOLOGIC HETEROGENEITY

Molin Wang*, Donna Spiegelman, Aya Kuchiba, Bernard Rosner, Shuji Ogino (Harvard School of Public Health)

Background: One of the major goals of epidemiologic research is to investigate the relationship between exposures and disease risk. Typically, cases of the disease are considered a single outcome and assumed to share a common etiology. However, evidence indicates that many human diseases arise and evolve through a range of heterogeneous molecular pathologic processes, influenced by diverse exposures and host factors. Pathogenic heterogeneity has been considered in various cancers as well as non-neoplastic diseases, including obesity, type II diabetes, cardiovascular disease, and neurological diseases. There is a critical unmet need for the development of statistical methods to address etiological heterogeneity. **Design and Results:** We proposed analytic methods for studying disease subtype heterogeneity for scenarios where disease subtypes are defined by a single or multiple marker(s), categorical and ordinal, and for cohort studies, matched and unmatched case-control studies, and case-case study designs. The methods can evaluate whether the association of a potential risk factor with disease varies by disease subtype. To deal with disease subtypes defined by multiple markers, we developed a meta-regression method. As a proof-of-principle molecular pathological epidemiology study, we applied the meta-regression methods to examine the associations between smoking status and incidence of colorectal cancer subtypes defined by three correlated tumor biomarkers (CpG island methylator phenotype, microsatellite instability, and BRAF mutation), in the Nurses' Health Study and the Health Professionals Follow-up Study. **Conclusion:** Our methods to address etiological heterogeneity can be widely useful as molecular diagnostics and genomic technologies become routine in clinical medicine and public health. User-friendly software to implement the methods is freely available.

1472

GENERALIZED METHODS-OF-MOMENTS ESTIMATION AND INFERENCE FOR THE ASSESSMENT OF MULTIPLE IMPERFECT MEASURES OF DIET AND PHYSICAL ACTIVITY IN VALIDATION STUDIES

Donna Spiegelman*, Samuela Pollack, Andrea Chomistek, Changzheng Yuan, Eric Rimm, Walter Willett (Harvard T.H. Chan School of Public Health)

Accurate and precise measurement of diet and physical activity (PA) in free-living populations is difficult, leading at least in part to controversy about key findings in nutritional epidemiology. To use the regression calibration method to correct for the bias, the de-attenuation factor needs to be estimated. In this talk, we develop semi-parametric generalized methods of moments estimators for the de-attenuation factor, the correlation of each surrogate measure with the unobserved truth, and the intra-class correlation coefficients. The method makes assumptions only about the first two moments of the multivariate distribution between the measures, and uses the robust variance for asymptotic inference. We consider a theoretically inefficient one-step method, as well as iterative fully efficient methods. For some variables, such as total PA, there may be unbiased gold standards (X) available. In addition, we consider other objective (W) and subjective measures (Z), such as self-reported PA, accelerometer and pulse, as means of estimating the de-attenuation factor and other parameters of interest. Measurements denoted W are assumed to have errors uncorrelated with all other measurements, and those denoted Z may have correlated errors. Harvard's Women's Lifestyle Validation Study (WLVS) assessed diet and physical activity over a 1 year period among 777 women. Total physical activity was assessed by doubly labeled water, often considered to be the gold standard for energy expenditure, accelerometer, resting pulse, physical activity questionnaire (PAQ), and ACT24, an on-line PA assessment tool. Using all 5 measures, the respective correlations of PAQ, ACT24, accelerometer and resting pulse with truth were 0.36 (0.30, 0.41), 0.32 (0.26, 0.38), 0.891 (0.887, 0.893) and -0.20 (-0.32, -0.71), respectively. Little gain in efficiency between the one-step and fully iterated estimators was evident in this example. User-friendly publicly available software is under development.

1471-S/P

MUTUAL IMPACT OF CIGARETTES AND MARIJUANA USE BEHAVIOR AMONG ADOLESCENTS AND EMERGING YOUNG ADULTS IN THE UNITED STATES: A PROBABILISTIC DISCRETE EVENT SYSTEM MODELLING ANALYSIS

Bin Yu*, Xinguang Chen, Yan Wang, Xindi Hu (University of Florida)

Background: Knowledge on mutual impacts of cigarette-marijuana use is of great significance while longitudinal data addressing this issue are limited due to disproportionately high attrition rates of substance users. In this study, we tested a novel method capable of extracting longitudinal transitions from cross-sectional data. **Method:** A five-stage 21-path model was proposed to quantify the mutual impacts of cigarette-marijuana, based on the probabilistic discrete event system theory. The five stages were "never-used cigarette/marijuana" (N), "cigarette only" (C), "marijuana only" (M) or "both" (CM), and "quit" (Q). The model was tested using the 2013 National Survey on Drug Use and Health data (N=26665, 12-21 years old). State probabilities were estimated using survey method and transitional probabilities (likelihood) were estimated using generalized inverse matrix method. **Result:** The lifetime prevalence rates for cigarette, marijuana and cigarette/marijuana use were 28.85%, 28.07% and 36.62% respectively. Modeling results indicated the likelihood for C->M was 43.88%, close to 47.68% for M->C. The likelihood was 25.68% for CM->C and 21.46% for CM->M; 30.26% for C->Q, 30.98% for M->Q, and 30.92% for CM->Q. The likelihood for relapse was 25.67% for Q->C, 17.55% for Q->M, and 19.21% for Q->CM. The transitions C->M and CM->M were greater than M->C and CM->C during ages 12-17 and this pattern was reversed after age 17 with a progressive reduction in C->M. **Conclusion:** This is the first study to successfully quantify the mutual impacts of marijuana-cigarette with cross-sectional data. Although, the mutual impacts overall are similar, the impact of cigarette on marijuana is greater during adolescence and the impact is reversed after adolescence. Study findings provide timely data deepening our understanding of cigarette-marijuana use and mutual impacts, and informing etiological and intervention research for substance use prevention and control.

1480-S/P

MAKING RESEARCH MATTER Hannah Crooke*, Linda Cotler, Catherine Striley (Department of Epidemiology, College of Public Health and Health Professions & College of Medicine, University of Florida)

Introduction: Despite strong interest, many community members, especially racial/ethnic minorities, are not likely to be enrolled in health research even after diverse samples are recruited for possible study participation. While the reasons for failure to enroll may be due to the research team, it is also possible that the available research studies aren't well matched with the needs of the community. **Methods:** At HealthStreet, a Community Health Worker based community engagement model, participants report their top 3 health concerns, and their personal health conditions after consenting to participate. **Results:** As of July 2015, the top 3 health concerns identified in HealthStreet Gainesville members (n=4,759) were hypertension (30.7%), diabetes (21.3%), and dental problems (14.2%). The top 3 health conditions reported were allergies (45.7%), back pain (42.9%), and digestive health (41.9%). Top categories of actively recruiting health studies available for HealthStreet member participation were (n=124) were Cancer (22.5%), Brain, Spinal Cord and Nervous System (5.6%), Pain (2.4%), Diabetes (2.4%), and Aging (2.4%). **Conclusion:** The health concerns and conditions of community members provide a wide range of public health relevant research topics and questions; however, faculty interest and the health needs of the community may be mismatched. Future research should focus on the ethical implications of this mismatch, and on ways to systematically include community members in the creation of research agendas and protocols.

1482

ETHICAL DILEMMA OF GLOBAL PUBLIC HEALTH NUTRITION INTERVENTIONS Adetoun Mustapha* (Department of Epidemiology and Biostatistics, MRC-HPA Centre for Environment and Health, Imperial College London, United Kingdom)

Food is vital to health. Epidemiologic data have supported the association between dietary patterns and health effects, such as the high intake of vegetables and fruits and the low risk of chronic disease. The importance of nutrition in building disease resistant body and mental capacity, starting from early life, has also been recognized. Researches that examined the five dimensions of "food access" (availability, accessibility, affordability, accommodation, acceptability) and neighborhood health have reported various health risks associated with neighborhood characteristics. In 1999, the UN Committee on Economic, Social and Cultural Rights, clarified the 'right to adequate food' to mean that every human being should have physical and economic access to food that is culturally and nutritionally acceptable. Efforts aimed at solving world hunger through mass production of cheap and readily available food have resulted in agricultural practices that harm the environment, workers and public health, as well as food systems that are changing cultural landscapes and lifestyles. Impact of global climate change on food supply has also been well researched. The effectiveness of global public health nutrition interventions to achieve the goal of 'the greatest good for the greatest number' remains a challenge. How can research help in resolving the tension between the ethical dilemma of addressing food shortages, personal dietary intake and nutritional status in the context of resource availability and food affordability, and the need to comply with ethics principles. Are there ethical issues in not adequately addressing factors that shape people's opportunities to healthy food – land, resources, markets and awareness? Why would strengthening local food systems be part of the solution? What are the roles of habits, taboos, age and gender in food consumption versus availability of healthy nutritious food? These and other questions will be addressed in the session.

1481-S/P

RESEARCH MISCONDUCT IN USFDA REGULATED CLINICAL TRIALS: AN ANALYSIS OF WARNING LETTERS AND DISQUALIFICATION PROCEEDINGS Craig A. Garmendia*, Neera Bhansali, Purnima Madhivanan (Florida International University; US Food and Drug)

The US Food and Drug Administration (USFDA) ensures Randomized Clinical Trials' meet regulatory and ethical standards through inspections of Clinical Investigators (CI). Significant deviations from the regulations have resulted in subjects dying and the prosecution of CIs. FDA studies that have significant regulatory and ethical violations result in regulatory actions, Warning Letter (WL) or Notice of Initiation of Disqualification Proceedings and Opportunity to Explain (NIDPOE). Comparison of WLs issued in US Government Fiscal Years (FY) 2013 and 2014 with previous literature and FY10-14 trend analysis performed through a cross-sectional study of publicly available documents was performed. Violations cited were categorized on regulatory action, date, USFDA Center, and regulation cited, which was categorized to violation themes previously reported. The standardization of themes based on regulatory citation was proposed and utilized. Comparison of WLs issued in FY13-14 (23) with previous literature found informed consent (IC) violations moved to not significantly different ($p = 0.07$) and "regulatory non-compliance" violations moved to significantly different ($p < 0.01$). Comparison of drug/biologic test article violations found a significant difference in subject safety and reporting of adverse events ($p = 0.01$). Medical device test article comparison saw "regulatory non-compliance" had a significant difference ($p < 0.01$). Novel analysis of FY10-14 inspections of WLs and NIDPOEs was performed. Significant violations increased from 2% to 5% ($p < 0.01$). NIDPOEs resulted in a significantly different ($p > 0.01$) issuance rate by Center. Between Centers, WLs had a significant difference in IC violation issuance ($p = 0.01$) and NIDPOEs had a significant difference in IRB violation issuance ($p = 0.02$). Significant difference in false information violation theme between WLs and NIDPOEs was observed ($p < 0.01$). The rise in regulatory actions between FY13 and FY14 was significant ($p < 0.01$). Analysis of regulatory actions enlightens all parties and may strengthen adherence to reported investigational plans, protect human subjects' rights, and assure regulatory compliance.

1490

IMPACT OF ORAL PROBLEMS ON THE QUALITY OF LIFE OF WOMEN SUBJECTED TO CHEMOTHERAPY FOR BREAST CANCER: A LONGITUDINAL STUDY Marcela Calmon*, Maria Helena Miotto, Maria Aparecida Musso, Maria Helena Amorim, Eliana Zandonade, Larissa Dell'Antonio (UFES)

Aim: This study assessed the impact of oral problems on the quality of life of women before and during chemotherapy for breast cancer. **Methods:** A longitudinal study was conducted on women with breast cancer at Santa Rita de Cássia Hospital, Espírito Santo, Brazil from January 2012 to January 2013. Assessment was performed at three time-points: before the onset of therapeutic intervention, after the first chemotherapy session, and after the second chemotherapy session. The volunteers were assessed using interviews that included the application of the subjective indicator Oral Health Impact Profile (OHIP-14). The data were subjected to descriptive analysis based on tables of absolute and percentage frequencies relative to the OHIP-14 dimensions. McNemar's test assessed the direction of discordance, and the Kappa test measured the levels of concordance among the three assessments. The significance level was established at 5%. **Results:** The percent frequency of the impact of oral problems on the quality of life increased from the first (27%) to the second (49%) time-point, and functional limitation ($p=0.001$), physical pain ($p=0.039$), and physical disability ($p=0.039$) were statistically significant. **Conclusion:** Oral problems exerted a substantial impact on the volunteers' quality of life before the onset of chemotherapy, and quality of life became poorer after the onset of treatment. Patients with breast cancer require specific oral care and should be monitored before, during, and after anticancer treatment to minimize the deleterious effects of chemotherapy and improve their quality of life.

1492-S/P

CONDITIONAL SURVIVAL AMONG FEMALE BREAST CANCER PATIENTS IN THE UNITED STATES Reshley Andrew Dalisay*, Ray M. Merrill, Natalie Dayton (Brigham Young University)

For years, female breast cancer has remained one of the most common types of cancer in the United States; it held an estimated prevalence of nearly three million cases in 2012. While the incidence of the cancer site continues to increase, death rates have been falling each year since the early-1990s. As the number of long-term survivors increase, there is a growing need for updated and subgroup-specific analyses on conditional survival. Conditional survival is the probability estimate that an individual will survive a health related condition after having already survived a certain time. Conditional survival is a major prognostic indicator along with age, tumor grade, and stage. Conditional survival probability estimation provides further useful prognostic information to cancer patients, tailored to the time already survived since diagnosis, which can be informative in terms of shared decision making and time to "cure." Analyses are based on females diagnosed with breast cancer during 2000 through 2008 collected from medical records at hospitals and other facilities by population-based cancer registries in the Surveillance, Epidemiology, and End Results Program of the National Cancer Institute. In this paper, we present conditional 5-year relative survival rates for patients diagnosed with breast cancer, followed through 2012 for vital status and cause of death. Emphasis is placed on conditional survival estimates by age, sex, and stage at diagnosis. Other subgroup-specific analyses for variables that could be potential confounders for conditional survival, including race and marital status, are also explored and presented. Key words: female breast cancer, conditional survival, population-based, prognosis, relative survival, SEER.

1491-S/P

ASSOCIATION BETWEEN URINARY BISPHENOL A CONCENTRATION, GENE EXPRESSION OF ESTROGEN RECEPTOR AND BREAST CANCER. Bo-kai Chen* (886-7-3121101-21410-19)

Introductions Breast cancer is the most common cancer in woman and the incidence rate has been growing steadily for over twenty years. Several studies have validated the role of estrogen receptor (ESR) in oncogenic mechanism, but relative fewer articles have discussed the effect of bisphenol A (BPA). The aim of this study is to explore the pathway of BPA on the risk of breast cancer in a case-control study, and find the differences of expression levels of estrogen receptor-related genes and urinary BPA concentrations in breast cancer patients and healthy controls. **Materials and Methods** Breast cancer patients were recruited from Kaohsiung Medical University Hospital and healthy controls from the communities in Kaohsiung. Cases were diagnosed by physicians with pathological lesion reports. Finally, we included 147 breast cancer patients and 54 healthy controls to measure urinary BPA concentrations and expression levels of estrogen receptor genes. **Results** The present study found that adjusted urinary BPA concentrations were significantly higher in the case group than in the control group. In analysis of urinary BPA concentrations as categorical variable with quartile distribution, we found that the risk of breast cancer increased along with higher BPA concentration by logistic regression model, and the odds ratios were 5.98 and 14.1 for the third (0.02179-0.0643 mg/g Cr.) and fourth (>0.0643 mg/g Cr.) quartile groups compared to the reference quartile group (<0.0072 mg/g Cr.) after adjusting for age, BMI, abortion experience and menarche age. Log-transform expression level of ESR2 was significantly positively associated with BPA concentration after adjusting for age and BMI by linear regression. **Conclusions** The present study finds that BPA exposure could positively associate with the risk of breast cancer, and regulate the expression level of ESR2 gene. Therefore, we speculate that exposure to BPA might increase the expression of ESR2 and further correlate to the risk of breast cancer.

1493-S/P

THE EFFECT OF A COMMUNITY HEALTH WORKER LED OUTREACH INTERVENTION ON HPV RELATED KNOWLEDGE AND SCREENING BEHAVIORS Ashley Moncrieff*, Tulay Koru-Sengal, Olveen Carrasquillo, Dinah Trevil, Martha Gonzalez, Sheila McCann, Anthony Amofah, Erin Kobetz (University of Miami)

Background: Within Miami-Dade, the burden of cervical cancer in ethnic enclaves and minority communities is especially pronounced. The purpose of this project was to evaluate the effect of a community health worker (CHW) led outreach intervention on HPV related knowledge and screening behaviors among women in three Miami metropolitan communities characterized by primarily low SES, immigrant populations: Little Haiti, Hialeah, and South Dade. **Methods:** Over 18 months, CHWs provided educational outreach at community venues including clinics, health fairs, schools, churches, and housing complexes in conjunction with community partners. Rapid assessment surveys assessing sociodemographic characteristics, Pap smear testing, and HPV related knowledge were administered to community members before and after outreach. Logistic regression models were implemented to evaluate outreach associated changes in HPV related knowledge and screening behaviors controlling for sociodemographic factors. Additional analyses were conducted to determine if effects varied by community. **Results:** A total of 579 women completed rapid assessment surveys, with 48% prior to the initiation of outreach activities and 52% following the intervention. The intervention had no effect on likelihood of ever having a Pap smear ($p=0.408$). Results of moderation analyses indicated intervention effects on HPV related knowledge varied by community. HPV knowledge increased significantly in Little Haiti ($p=0.014$), but decreased in Hialeah ($p=0.008$), and was unchanged in South Dade ($p=0.693$). **Conclusion:** Results of the present study indicate similar interventions may result in drastically different outcomes when applied in different settings. Future studies may benefit from detailed assessment prior to outreach initiation to establish appropriate goals and identify community specific needs and resources.

1494

THE ASSOCIATION BETWEEN METABOLIC HEALTH AND THE RISK OF BREAST CANCER DIFFERS BY MENOPAUSAL STATUS AT DIAGNOSIS Yong-Moon Park*, Alexandra White, Hazel Nichols, Dale Sandler (Epidemiology Branch, National Institute of Environmental Health Sciences)

Background: It is unknown whether breast cancer risk differs between metabolically healthy and unhealthy women in normal weight and overweight/obese populations. We aimed to investigate the association between metabolic health, obesity, and the risk of invasive breast cancer. **Methods:** Data came from 50,884 Sister Study cohort participants aged 35 to 74 years enrolled from 2003 through 2009. Cox proportional hazards models were used to estimate multivariable adjusted hazard ratios (HR) and 95% confidence intervals (CI) for breast cancer risk. Metabolic abnormalities included high waist circumference (≥ 88 cm); elevated blood pressure ($\geq 130/85$ mm Hg or antihypertensive medication); previously diagnosed diabetes or antidiabetic drug treatment; and cholesterol-lowering medication use. **Results:** During follow-up (mean, 6.4 years), 1,397 invasive breast cancers were diagnosed at least 1 year after enrollment. Women with BMI < 25 kg/m² with 1 metabolic abnormality (metabolically unhealthy normal weight phenotype) had increased risk of breast cancer (HR=1.26, 95% CI: 1.01-1.57), as did women with body mass index (BMI) ≥ 25 kg/m² with no metabolic abnormalities (metabolically healthy overweight/obese phenotype) (HR=1.26, 95% CI: 1.01-1.58) compared to women with BMI < 25 kg/m² with no metabolic abnormalities (metabolically healthy normal weight phenotype). Among women with BMI ≥ 25 kg/m² and 2 metabolic abnormalities (metabolically unhealthy overweight/obese phenotype) risk was greatest for estrogen receptor negative cancer (HR=1.73, 95% CI: 1.09-2.74). Metabolic phenotype was not associated with breast cancer in premenopausal women. **Conclusion:** Our findings suggest that postmenopausal women with metabolically unhealthy normal weight phenotype may be at high risk for breast cancer and represent an important target population for prevention strategies to reduce the risk of breast cancer.

1495-S/P

PSYCHOTROPIC AND NARCOTIC DRUG USE IN OLDER WOMEN DIAGNOSED WITH BREAST CANCER ACROSS THE CANCER CARE TRAJECTORY Ania Syrowatka*, Sue-Ling Chang, Nancy Mayo, Robyn Tamblyn, Ari N Meguerditchian (Clinical and Health Informatics Research Group; Department of Epidemiology, Biostatistics and Occupational Health - McGill University, Montreal QC, Canada)

Background: Earlier detection and more targeted therapies have dramatically improved breast cancer survival. Focus should now turn to managing patient-centered outcomes beyond tumor eradication, such as psychosocial distress. The purpose of this study was to characterize psychotropic (anxiolytic, antipsychotic, and antidepressant) and narcotic drug use as a surrogate marker for psychosocial distress experienced by older breast cancer patients, who represent the fastest growing component of this cancer population. **Methods:** This prospective cohort study included 19,353 women > 65 years treated for incident, non-metastatic breast cancer between 1998 and 2012. Health service data were obtained from provincial, universal health plan databases (Quebec, Canada). Descriptive statistics were calculated for patient demographics and breast cancer characteristics. Furthermore, drug use was characterized for the following three periods of the cancer care trajectory: pre-cancer baseline, active care, and first year survivorship. **Results:** Anxiolytics were used more than any other drug throughout the care trajectory (36.3%, 50.6%, and 44.4% at baseline, active care, and survivorship, respectively). In contrast, antipsychotic and narcotic drugs were sought primarily during active care (4.5- and 7-fold increases from baseline, respectively). Interestingly, antidepressant use peaked in active care and was sustained into survivorship (22.4% vs. 22.3%, respectively). **Conclusions:** The trend for drug use was a marked increase from baseline to active care, followed by a decrease into survivorship. The only exception occurred with antidepressant use, which raises questions around why this form of psychosocial distress may persist despite completion of active care. Further research can address whether these profiles of drug use represent effective treatment, or alternatively, highlight unmet patient needs.

1500-S/P

GEOSPATIAL FEATURES OF HEALTH WARNINGS IN ALCOHOL ADS IN KAMPALA

Lynette Ametewee*, Sarah Braunstein, Monica Swahn (Georgia State University)

Purpose: The alcohol industry in Uganda is self-regulating which has implications for policy compliance and public health. However, no systematic examination of the presence or health warnings on alcohol advertisements has been conducted in Kampala. This study conducted an environmental scan of health warnings on alcohol advertisements in four urban slums across Kampala (Uganda): Kamwokya, Nateete, Bwaise, and Nakulabye. **Methods:** Data was collected in five urban slums (geographical circles of 500 meter radius), using a Garmin GPS and a tablet for data entry. Each of the four scans was conducted in geographical circles, within a 500 meter radius of the drop-in Centers operated by the Uganda Youth Development Link, a community-based organization that provides services and assistance to vulnerable youth. Using a Garmin GPS with photo capabilities and a tablet for data entry, teams of at least two trained researchers walked the main roads within the target area and gathered information about each alcohol advertisement including its location, type, size, and placement and other characteristics. Data with the GPS coordinates, photos and descriptive details of the adverts were merged for analyses. **Results:** A total of 196 alcohol adverts were found in residential areas. 26% did not include a health warning. Chi square analyses were used to analyze advert locations, characteristics, alcohol brands and producers. **Conclusion:** High levels of alcohol marketing were targeted at children and young people. However, there are some strategies including health warning messages on harmful use of alcohol to prevent consumption by children and young people but more needs to be done to prevent high levels of underage drinking in these communities. Our approach can also be used to understand the geospatial components of other health concerns in vulnerable communities.

1502

EPIS3: A SEMANTICALLY INTEROPERABLE SOCIAL NETWORK FOR SYNDROMIC SURVEILLANCE AND DISEASE CONTROL

Luciana Cavallini*, Timothy Cook (Fluminense Federal University)

The effectiveness of epidemiological surveillance and disease control systems at a population level depend on valid, reliable and opportune healthcare information. Even more than clinical research and individual healthcare, in epidemiology it is required from the detecting systems to be able to collect, understand and analyze data coming from multiple data sources. For years, it was promised that the conventional Electronic Medical Records (EMRs) would be sufficient to provide the data required for epidemiological surveillance; however, this is not possible, since none of the EMRs currently deployed on a global scale are semantically interoperable, and the conventional healthcare information technology standards failed to provide them with this capability. This study presents the technical background and implementation of the Epidemiological Surveillance Support System (EpiS3), an application for syndromic surveillance and disease control developed for a semantically interoperable social network. EpiS3 is an ehealth social network based on the only healthcare specification compliant to the Semantic Web and the Internet of Things, the Multilevel Healthcare Information Modeling (MLHIM) model. : A set of 2 epidemiological profiles ("syndromic surveillance of acute hemorrhagic fever" and "post-exposure prophylaxis of rabies") and 3 healthcare provider profiles ("family physician", "paramedic" and "nurse") were developed. A simulated network of 30 providers profiles linked to j ($k = 1, 2, 3, \dots$) profiles from a population size of 130 patients was developed, each one of them with j ($j = 1, 2, 3, \dots$) data instances. The intra and inter-profile validation rate of the 5,543 data instances in the network was 100%. It was possible, using MLHIM technologies, to develop a bottom-up, patient and healthcare provider-controlled ehealth information system, which significant potentialities to epidemiological surveillance and disease control.

1501-S/P

GLOBAL LESSONS FROM THE WORK, EMPLOYMENT, AND EQUITY PROGRAM

Carolyn Bancroft*, Alejandra Vives, Pamela Bernaldes, Orielle Solar, Hoang Van Minh, Maria Jose Gonzales (Mailman School of Public Health, Columbia University)

Introduction: Employment and working conditions are recognized as social determinants of health; however, there are limited data on the relationship of informal work and employment conditions with health inequalities. **Methods:** As part of the Work, Employment, and Equity Program, we conducted a study to identify available data on informal work and access to health and social security in 22 countries in Asia, Latin America and Africa. We then measured the magnitude of informality, contextual factors related to informal work, and the characteristics of informal workers and their health. **Results:** The magnitude of informal work varied widely across and within regions. In addition, there was heterogeneity of income level, age groups and geographic location (rural vs. urban) of informal workers. In Latin America, informal work is higher among women than among men but this pattern was not present in Asian and African countries studied. Analyses showed that health status, access to services and financial protection was poorer among informal compared to formal workers. **Discussion:** Despite limited secondary data on informal work and health in some countries, our results suggest that informal workers are a large and diverse proportion of the working population globally. Employment and working conditions must be studied further to understand the unique risks and drivers of health inequalities in addition to informing effective policies and programs to promote the health of workers worldwide.

1503

A LATENT CLASS ANALYSIS OF ADVERSE LIFE EVENTS AND SUBSEQUENT PSYCHOLOGICAL OUTCOMES IN OLDER SOUTH AFRICANS

Sze Yan Liu*, Kathleen Kahn, Livia Montana, Julia Rohr, Lisa Berkman (Harvard Center for Population and Development Studies)

Apartheid, a form of constitutional racial segregation, and its associated political violence and state-sponsored oppression ended in South African in 1994, suggesting a large proportion of adults may have experienced associated adverse life events. The aim of this study is to identify meaningful clusters of individuals with similar experiences of adverse life events and to examine whether these latent classes are associated with post-traumatic stress disorder (PTSD) symptoms in a sample of older, rural South Africans. We used a sample from the newly established Health and Aging in Africa: Longitudinal Studies of INDEPTH communities (HAALSI) cohort study conducted by the Harvard Center for Population and Development Studies in partnership with the University of Witwatersrand. Adverse life events were obtained from in-person interviews for a preliminary sample of 1142 individuals aged 40–79 years in the INDEPTH study site of Agincourt, South Africa. PTSD symptoms were obtained using a standard scale. The survey is ongoing until spring 2016; we expect the final sample size to be approximately 3000. Over 80% of the sample reported at least one adverse life event, most commonly severe financial hardship. We identified four latent classes from 19 adverse life events: "Adverse health" (characterized by poor physical health), "Parental" (characterized by reports of parents arguing and drinking excessively), "Witness" (characterized by witnessing injuries/death of others from serious illnesses), and "Undefined" (characterized by no distinct profile). In preliminary analysis, we found individual adverse life events (e.g. witnessed injury/death in combat $OR=2.39$, 95% $CI=1.30, 4.42$) associated with increased odds of higher PTSD symptoms, but no difference in odds of higher PTSD symptoms between the different latent classes. The identification of subgroups characterized by adverse life events may help planning of interventions for older adults with risk of poor psychological health."

1504-S/P

MISSED OPPORTUNITIES IN FULL IMMUNIZATION COVERAGE: FINDINGS FROM LOW- AND MIDDLE-INCOME COUNTRIES Maria Clara Restrepo Mendez*, Aluísio JD Barros, Kerry L Wong, Hope L Johnson, George Pariyo, Fernando C Wehrmeister, Cesar G Victora (International Centre for Equity in Health - Federal University of Pelotas)

Background: An estimated 24 million infants are still not being reached by routine immunization services. We assessed how many children fail to be fully immunized even though they were in contact with health system to receive other interventions. **Methods:** 14 countries with DHS and MICS surveys carried out after 2000 and with coverage for DPT vaccine below 70% were selected. We defined full immunization coverage (FIC) as having received 1 dose of BCG, 1 dose of measles, 3 doses of polio, and 3 doses of DPT vaccines. We tabulated FIC against: antenatal care (ANC), skilled birth attendant (SBA), postnatal care for the mother (PNC), vitamin A supplementation (VitA) for the child in the six months previous to the survey and sleeping under an insecticide-treated bed-net (ITN) on the night before the survey. Missed opportunities were defined as the percentage of children who failed to be fully immunized in a particular group. Nonparametric k-sample tests on the equality of medians were performed. **Results:** Children who received other health interventions were also more likely to be fully immunized. In the 14 countries, the median difference in FIC was 37 percentage points (pp) between children whose mothers failed to attend ANC and those with 4+ visits ($p=0.001$). The corresponding median gaps were 18 pp for SBA ($p=0.06$), 18 pp for PNC ($p=0.06$) and 27 for VitA ($p=0.01$). The FIC gap according to whether or not the child slept under an ITN were much smaller: a median value of 13 pp ($p=0.3$). The percent of mothers/children who received one or more of the five health interventions as recommended but yet failed to have their children fully vaccinated was 50% or greater in 8 out of 14 countries. **Conclusion:** Our results suggest failures in promoting the need for full immunization among mothers and children who contacted health services for other interventions.

1506

A RETROSPECTIVE STUDY OF TERM AND PRETERM STILLBIRTH AT A TERTIARY TEACHING HOSPITAL IN LAGOS, NIGERIA Kelli Ryckman* Scott Oltman, Chinyere Ezeaka, Osayame Ekhuagere, Iretiola Fajolu, Christopher Esezobor, Christian Makwe, Bukola Odusanya, Rose Anorlu, Wasiu Adeyem, Edna Iroha, Mathias Egri-Okwaji, Prisca Adejumo, Olukemi Tongo, Lawal Oyeneyin, Moses Abiodun, Azeez Butali (University of Iowa)

Stillbirth, defined as an infant that shows no life immediately after birth, is a significant public health problem, particularly in low resource regions. In Nigeria there have been high stillbirth rates reported; however, the results have been inconsistent across studies. Monitoring of stillbirth rates is important for targeting interventions to regions where they would have the largest impact. Additionally, studies that differentiate between stillbirth occurring in preterm (28-36 weeks) compared to term (37 completed weeks) deliveries are needed. The objective of this study was to describe the burden of and characteristics related to stillbirth in term and preterm deliveries. This was a retrospective review of 4,959 deliveries at the Lagos University Teaching Hospital in Nigeria between 2011 and 2013. Stillbirth was defined as no signs of life (APGAR of 0) after delivery. Univariate analysis determined characteristics associated with stillbirth in all births, term births (37-41 weeks), and preterm births (28-36 weeks). The overall stillbirth rate was 66.5 per 1,000 deliveries. The stillbirth rate in preterm deliveries was 203.0 per 1,000 compared to the stillbirth rate of 35.4 per 1,000 in term deliveries. Even in late preterm deliveries (34-36 weeks gestation) the stillbirth rate was much higher at 121.7 per 1,000 than in term deliveries. Unsurprisingly, stillbirth was more common in women who did not receive prenatal care, a finding that was consistent with both term and preterm deliveries ($p<0.001$). Pre-existing or gestational hypertension was less common in women who had a stillbirth compared to those with a live birth in preterm ($p<0.05$) but not term pregnancies. Stillbirth remains prevalent in Nigeria, particularly in preterm deliveries. Innovative interventions, particularly those targeting a reduction in preterm birth, are needed to improve stillbirth rates in Nigeria.

1505

HEMOVIGILANCE OF REACTIONS ASSOCIATED WITH RED BLOOD CELL TRANSFUSION: COMPARISON ACROSS 17 COUNTRIES Mary Rogers*, Jeffrey Rohde, Neil Blumberg (University of Michigan)

The recent establishment of the National Healthcare Safety Network Hemovigilance Module in the United States afforded an opportunity to compare results with those of other national hemovigilance programs. Reactions associated with red blood cell (RBC) transfusion were assembled from 17 nations and rates (per 100,000 RBC units) were pooled using random effects Poisson regression. Febrile non-hemolytic and delayed serologic transfusion reactions were the most frequent, occurring in 26/100,000 units and 25/100,000 units administered, respectively. The rate of allergic reactions in the USA was greater (53.6; 95% CI: 49.6-57.9) than the pooled rate from other developed countries (9.7; 95% CI: 5.9-15.8). The rate of febrile non-hemolytic transfusion reaction in the USA was greater (106.3; 95% CI: 100.6-112.2) than the pooled rate of the other developed countries (22.8; 95% CI: 9.7-53.6). The rate of delayed hemolytic transfusion reactions in the USA was also elevated (6.9; 95% CI: 5.5-8.6) compared to the rate in other nations (1.6; 95% CI: 0.9-2.8). Results from the hemovigilance system in the USA (a passive surveillance system) were considerably lower than when obtained through active surveillance in the USA. Transfusion-associated circulatory overload occurred in 1 in every 271 units from active surveillance, compared to 1 in 10942 units from passive surveillance through the hemovigilance program. With prospective surveillance, febrile non-hemolytic transfusion reaction occurred in 1 in every 84 units; this compares with 1 case in 3885 RBC units from passive hemovigilance. The rates tended to be greater in children than adults; 1 in 20 children who received a transfusion developed febrile non-hemolytic transfusion reaction. In conclusion, several of the RBC transfusion reactions were elevated in the USA compared to other developed nations. The greatest difference, however, was between active versus passive surveillance of adverse events.

1507-S/P

THE DOUBLE BURDEN OF UNDERNUTRITION AND OVERNUTRITION AMONG ADOLESCENTS IN 70 LOW-INCOME AND MIDDLE-INCOME COUNTRIES: A META-ANALYSIS AND META-REGRESSION Christopher Tait*, Rishi Caleyachetty, Andre Kenge, Camila Corvalan (Dalla Lana School of Public Health, University of Toronto)

Background: As the burden of overweight and obesity around the globe continues to rise, several low- to middle-income countries, previously characterized by prevalent undernutrition, now face a double burden with overnutrition. The “double burden of malnutrition” has been well documented in adults but much less is known about this phenomenon in children. We estimated the magnitude and co-occurrences of nutritional indicators that characterize under- and overnutrition in adolescents aged 12-15 years for 70 low-income and middle-income countries between 2003-2013. **Methods:** We extracted Global School-Based Student Health Surveys (GSHS) datasets from the Centers for Disease Control and Prevention. Pooled prevalence estimates of stunting, thinness, overweight/obesity, and the co-occurrence of these nutritional indicators was calculated for WHO regions, stratified by sex, with random-effects meta-analysis. We explored potential sources of heterogeneity for each nutritional indicator through random-effects meta-regression analysis. **Results:** Between 2003 and 2013, of 68,859 adolescents, 13.3% (95% CI: 11.3-15.4) were stunted, 6.0% (95% CI: 4.8-7.3) were thin, 24.3% (95% CI: 21.6-27.1) were overweight/obese, 18.6% (95% CI: 16.2-21.2) suffered from undernutrition (stunting and/or thinness), and 3.6% (95% CI: 2.8-4.4) suffered from stunting and overweight/obesity simultaneously. Substantial heterogeneities within and across regions were in part explained by few covariates including gross domestic product, food inadequacy, and average protein supply. **Conclusions:** Malnutrition in every form presents significant threats to human health. In low- and middle-income countries, adolescents carry a substantial double burden of undernutrition and overnutrition. In light of these insights on nutritional challenges faced in some of the poorest areas of the world, prevention initiatives are a major global health priority.

“-S/P” indicates work done while a student/postdoc

1509-S/P

GARBAGE CODES TRENDS IN BRAZIL: IMPACT OF THE INVESTIGATION OF ILL DEFINED CAUSES OF DEATH

Elisabeth França*, Renato Teixeira, Lenice H. Ishitani, Maria de Fátima, Marinho de Souza, Mohsen Naghavi, Elisabeth B. França and Brazilian National Burden of Disease Team (Universidade Federal de Minas Gerais-UFGM, Brazil)

Background: Quality in cause of death reporting is dependent on the proportion of garbage codes (GC), i.e., codes from which deaths are assigned that cannot or should not be considered as the underlying cause of death (COD). In 2005, the Brazilian government implemented a project in order to decrease the GC from ill defined causes of death (IDCD) in the country, mainly in the poorest regions - North and Northeast. In this study we analyze recent trends in mortality rates by GC in Brazil and its regions. **Methods:** GCs recorded on the Mortality Information System from 2000 to 2013 were selected according to the list of the Global Burden of Disease Study 2015 (preliminary data). Estimates of age-standardized mortality rates were calculated for all GC and also in two groups: GC-IDCD (deaths from Chapter XVIII of ICD-10) and GC-unspecified (all deaths from nonspecific causes within ICD-10 chapters except Chapter XVIII); after correcting for underreporting of deaths. Time series for each region and country were analyzed by linear regression using the r-square for model fitting. **Results:** Mortality rates due to GC-total show a downward trend in Brazil and its regions from 2000 to 2013. The Northeast region had the largest decrease, slope equal to -16.3. The group GC-unspecified had higher rates compared to GC-IDCD, except in the North and Northeast in earlier years. The whole country and the Southeast, South and Midwest regions showed a decrease in both groups of GC, with a major reduction in GC-IDCD in the North and Northeast; but there also has been a slight growing trend of GC-unspecified in those regions. During the final years of the period the variability of rates between the regions was lower compared to earlier years. **Conclusion:** The decrease in GC rates in the country indicates a positive intervention in qualified COD information, especially in the poorest regions; and also that regional inequalities decreased during the period. Burden of Disease Research Project, UFGM.

1510-S/P

MODELLING THE IMPACT OF THE SURROUNDING VEGETATION OF AFRICAN VILLAGES ON THE INTENSITY OF MALARIA TRANSMISSION Lin Zhu*, John Beier (University of Miami Miller School of Medicine)

Background: *Anopheles gambiae* mosquitoes, the primary malaria vector in Africa, mainly rest in suitable habitats outside villages. To blood-feed and hence transmit malaria parasite, the mosquitoes have to sugar-feed for energy during their movements toward villages. Vegetation, especially flowering plants, are the main sugar sources and may have significant impact on the vector movement and malaria transmission. **Method:** A hypothetical village typical of those in sub-Saharan Africa, consisting of houses, humans, vegetation (sugar sources and resting habitats), and larval habitats was simulated in a spatial agent-based model. Three scenarios of vegetation distributed within the squares of 100x100 meter (small), 300x300 meter (medium), and 500x500 meter (large) from the center of village were simulated. The average numbers of mosquitoes that successfully moved into village and the intensities of malaria transmission, measured by entomological inoculation rates (EIR), were compared among the three vegetation distribution types. **Results:** For the small, medium, and large vegetation distribution types, an average of 6.7, 6.5, and 9.9 among the 1000 *An. gambiae* mosquitoes can successfully move into villages per day, respectively; the average annual EIRs were 6.65, 8.44, and 28.70, respectively. The average numbers of successful movements and the EIRs were significantly different among the three vegetation distribution types ($F=15.84$, $P<0.0001$; $F=584.54$, $P<0.0001$). Post hoc analysis showed significant differences in the numbers of successful movements between small and large ($P<0.0001$), and medium and large ($P<0.0001$) vegetation distribution types. Significant differences of EIRs were observed between small and medium ($P=0.0344$), small and large ($P<0.0001$), and medium and large ($P<0.0001$) vegetation distribution types. **Conclusion:** Gap of vegetation between village and resting habitats of *An. gambiae* mosquitoes can help prevent vector movements into villages and hence reduce malaria transmission.

1520-S/P

PREVALENCE AND SOCIOECONOMIC INEQUALITIES IN OVERWEIGHT AND OBESITY AMONG UNDER-5 CHILDREN FROM LOW AND MIDDLE-INCOME COUNTRIES

Inacio da Silva*, Giovanni França, Fernando Wehrmeister, Aluisio Barros, Cesar Victor (International Center for Equity in Health)

Background: Overweight/obesity prevalence in childhood is increasing in most low- and middle-income countries (LMICs). We provide a comprehensive analysis of socioeconomic inequalities in this outcome for XXX countries. **Methods:** We used the most recent Demographic Health Survey (DHS) or Multiple Indicators Cluster Survey (MICS) per country, since 2005. Body mass index (BMI) for age z-scores were calculated using the WHO Growth Standard, and children above 2 Z-scores were classified as overweight/obese. Asset indices were used to classify families in wealth quintiles. Absolute inequalities were assessed through the slope index of inequality (SII), that expresses the difference in percent points between the wealthiest and poorest extremes of the distribution. **Results:** Fifth-one DHS and 38 MICS were included, providing data from 89 countries. One-third of the LMICs presented overweight/obesity prevalence above 10%. Positive SIIs – indicating higher prevalence among the rich – were observed in 61 countries; in 25 of these, the 95% CI for the SII did not include zero. Negative SIIs were found in 28 countries of which five CIs did not include zero. In 58 of the 78 countries, SII was not statistically different from zero. Overweight prevalence and SII were positively associated with log gross domestic product per capita ($r=0.36$; $P<0.001$ and $r=0.31$; $P=0.005$, respectively). **Conclusions:** Compared to the marked social gradients observed for undernutrition in LMICs, socioeconomic inequalities in overweight/obesity were relatively small. When inequalities were present, children from wealthy families tended to have higher prevalence than those from poor families. Countries should consider socioeconomic patterns when designing strategies for overweight/obesity prevention and control.

1522

COMPLETENESS OF RACE/COLOR INFORMATION IN THE BRAZILIAN NATIONAL NOTIFIABLE DISEASES INFORMATION SYSTEM: TEMPORAL EVOLUTION FROM 2001 TO 2013

Giovanny Franca*, Maria Luiza Lawinsky Lodi, Paula Maria Raia Eliazar, Wanderson Kleber Oliveira (Brazilian Ministry of Health)

Background: The Brazilian National Notifiable Diseases Information System (Sinan) is the principal instrument in the country for collecting and analyzing national data on diseases, health issues, and public health events. It includes information on social determinants of health, such as race/color, potentially helpful for investigating equity within the Brazilian Unified Health System (SUS). **Objective:** To analyze the completeness of race/color information in the Sinan over a 13-year period. **Methods:** This is a nationwide study including all states and municipalities that have transferred data to the Ministry of Health, through the Sinan, from 2001 to 2013. Notifiable diseases were defined based on the Ministerial Ordinance N° 104, of January 25, 2011, which was in force until June 2014. Data on race/color was self-reported by the patients and registered by health professionals in the Sinan. In order to analyze the completeness of this variable in the database, we calculated the percentage of blank or “ignored” information for each year under study. We also estimated a trend line for the completeness of the race/color information over time, considering the best fit to the data distribution. Analyses were performed using the TabWin32 software and Stata version 13.1. **Results:** From 2001 to 2013, 17,466,122 records were included in the Sinan. There was a decrease in the total number of notifications from 2001 to 2006, followed by a substantial increase from 2007 onwards. We observed a significant reduction in the percentage of incompleteness of the race/color data over time, varying from 92.3% in 2001 to 27.1% in 2013. The best-fit curve of this trend was described by a logarithmic line. **Conclusions:** Our findings show a significant reduction in incompleteness of the self-reported race/color in the Sinan database, improving the potential of the system for evaluation of ethnic and racial disparities related to notifiable diseases and public health events within the SUS.

1521-S/P

WOMEN EMPOWERMENT IN LOW AND MIDDLE INCOME COUNTRIES - PRELIMINARY ANALYSIS ON ITS ASSOCIATION WITH REPRODUCTIVE HEALTH AND ANTENATAL CARE

Fernanda Ewerling*, Aluísio J D Barros, César Vitoria, Janaína C Costa (International Center for Equity in Health)

Introduction: Women empowerment (WE) is a complex concept described as the expanded freedom in a context in which it was previously denied. Having a specific SDG on this topic reinforces its importance and the need of having a good indicator to track to countries’ progress on these objectives. Thus, our main objective is to develop such indicator which will allow further research on WE in LMICs taking advantage of the large amount of readily available data for many countries. **Methods:** The WE Index (WEI) was developed using factor analysis and will be presented in quintiles of empowerment. Besides, we will proceed a convergent validation using coverage of health markers related to WE, such as modern contraceptive use (MCP), antenatal care (ANC) and skilled birth attendance (SBA). **Results:** Factor analysis yielded three dimensions of empowerment for Nigeria: attitude to violence, autonomy and decision-making. All three domains were highly related to MCP use, ANC and SBA. Women from the 5th quintile of WEI in the autonomy domain were 3.8 times more likely to have a SBA and 16.8 times more likely to use MCP compared to the least empowered, adjusting for wealth. For the decision-making domain these effects were of 2.2 and 118.6, respectively. Our results also shows that the more educated and richer the women, the more empowered they are. **Discussion:** The sustainable development goal (SDG) 5, specifically, rely on the achievement of gender equality and the empowerment of all women and girls, which reflects its relevance and the need for better opportunities for them worldwide. The index’s development will allow further research on WE in LMIC, as well as the monitoring of the countries progress over time. Our main results have shown that the increase of all domains of WE have several aftereffects in the health indicators, being the autonomy and the decision-making dimensions the ones with the higher influence.

1523

SOCIAL DETERMINANTS OF OBESITY AMONG AMERICAN WOMEN OF GENERATION Y, GENERATION X, THE BABY BOOMER GENERATION, AND THE SILENT GENERATION

Greta Kilmer Miller* (RTI International)

Objective: To identify social determinants of obesity relevant to women in the U.S. and determine if they differ by generation. **Methods:** Three domains of social determinants of health were analyzed, including family and employment, community and housing, and education and digital literacy. Generations were defined as Generation Y (or Millennials, born 1981 to 1997), Generation X (born 1965 to 1980), Baby Boomers (born 1946 to 1964), and the Silent Generation (born 1928 to 1945). The outcome variable, obesity, was defined as body mass index of 30 or greater calculated from height and weight self-reported by adults in the 2013 and 2014 Behavioral Risk Factor Surveillance System (BRFSS) public use data files. Logistic regression was used to analyze the odds of obesity for social determinant domains and interactions between social determinants and generation. **Results:** Each social determinant domain was significantly associated with obesity among women, and the effect of each domain differed by generation. Among Generation Y, family and employment were not associated with obesity. Generation X women who were employed and married with children had the highest odds of obesity, which transitioned to Baby Boomers who were employed and married with no children at home. Women living in rented homes often had higher odds of obesity than those living in owner-occupied homes, but this distinction was especially noticeable for Generation X women in inner cities and rural areas. Women with low digital literacy had higher odds of obesity, especially among Baby Boomers with high school or some college education. **Conclusions:** Social determinants of obesity must be addressed in order to achieve health equity. Understanding these factors in different generations of women can help researchers discover other factors that act independently from social determinants. Also, interventions can be designed to address the social aspects unique to each generation that place women at risk for obesity.

1524-S/P

SPATIAL ANALYSIS OF THE SOCIAL DETERMINANTS OF YEARS OF POTENTIAL LIFE LOST IN A CITY OF NORTH-WEST OF BRAZIL

Matheus Mata*, Priscila Lima, Glenda Barros, Janiny Silva, Iris Costa (Universidade Federal do Rio Grande do Norte)

Introduction: Debates about health equity and social determinants were driven since Declaration of Alma-Ata, in spite of this, social inequities growing in the world. Initiatives converge to a recognition or diagnosis of inequities in living conditions and social vulnerabilities in order to identify distribution patterns in the territories, with a clear concern to support the health managers' planning of the actions. **Objective:** To analyze the spatial distribution of Years of Potential Life Lost (YPLL) in a city of Northwest of Brazil. **Methodology:** This is a study of ecological design. Secondary data from the Brazilian Institute of Geography and Statistics (IBGE), relating to the conditions of households and mortality data. They were made the means of YPLL due to administrative areas of the city of Natal-RN, calculated the correlations between socioeconomic status and YPLL. **Results:** The northern and western areas of the city had the worst socioeconomic conditions, while presented the highest levels of mortality, with means of YPLL 14,5 and 11,6, respectively. **Conclusions:** The data showed correlation between social determinants and mortality from YPLL, is also noted that this distribution follows inequality between the administrative areas of the city of Natal-RN.

1526-S/P

QUALITY OF HOUSING IMPACTS CHIKUNGUNYA AND DENGUE ENTOMOLOGICAL FACTORS

Diana Naranjo*, John Beier, Eduardo Gomez, Isabel Grijalva, Alejandra Garcia, Whitney Qualls (University of Miami)

Background: *Aedes aegypti* is the most competent vector of chikungunya (CHIK) and dengue fever (DF). Climate, urbanization, and social factors add to the spread of the vector and result in increased risk disparities. Matching mosquito and built environment parameters necessitates joint entomological and epidemiological approaches. We aim to characterize sector quality scores (SQS) and entomological parameters of CHIK and DF through the normalized vegetation index (NDVI) in Durán, Ecuador. **Methods:** Geographical systems supported a random selection of 20 sites representing high to low vegetation NDVIs. Sites were matched, geocoded, and defined by house blocks in 17 different sectors. Construction material, infrastructure, and socio-demographics data was collected through a census and validated surveys. To ascertain SQS, we assigned values from 0 to 2 to different types of infrastructure and obtained a mean score. High SQS represented better housing qualities such as cement vs. wood rooftops or daily water access vs. none. Vector population densities were measured for 21 days through adult and oviposition traps estimating such counts per site. Evaluations included obtaining mean scores, correlations, and regression analyses estimates. **Results:** Mean SQS was 1.65 (95%CI: 1.37–1.93). SQS were not significantly associated with high NDVI ($r = -0.23$ 95%CI -0.70-0.44) in comparison to lower NDVI. SQS and *Aedes* adult catches at day 7 outdoors, day 14 indoors, and day 21 outdoors, were significantly associated at values of r^2 of 0.25 ($p < 0.001$), 0.26 ($p < 0.001$); and 0.11 ($p < 0.001$). There were correlations of SQS and egg counts with r^2 of 0.01 ($p = 0.44$), 0.02 ($p = 0.10$), and 0.03 ($p = 0.04$) for days 7, 14, and 21. **Conclusion:** There are few studies that explore housing quality and abundance of *Aedes aegypti* mosquitoes. This study promotes the identification of urban and entomological risk factors in order to advocate for healthier environments in vulnerable settings.

1525-S/P

CULTURAL COMPETENCE TRAINING FOR PEDIATRIC HEALTH CARE PROVIDERS: A SYSTEMATIC REVIEW AND QUANTITATIVE EVIDENCE SYNTHESIS

Laurens Holmes Jr.*, Lavisha McClarin, Laurens Holmes Jr., Emily Romano, Kirk Dabney, Diane Fitzgerald, Lynn Bayne, Arie Nettles (University of Maryland-College Park School of Public Health)

Background: Cultural competence training (CCT) of health care providers has been identified as a way to improve patient-provider communication and promote health equity. There is limited data about CCT in the pediatric environment. **Objectives:** We sought to identify and synthesize the findings of studies evaluating CCT programs for pediatric health care providers. Specifically, we aimed to determine the extent to which CCT is available for pediatric providers, describe the pediatric CCT programs evaluated in the literature, and determine if CCT improves providers' ability to practice culturally competent care. **Methods:** We performed a systematic literature review and quantitative evidence synthesis (QES). **Qualitative synthesis:** We qualitatively synthesized eligible studies in order to determine CCT availability and compare and contrast various CCT programs. **QES:** We extracted data from eligible studies in three predetermined outcome categories: cultural awareness, cultural knowledge, and cultural skills. We performed heterogeneity testing in order to choose between fixed and random effect methods of calculating summary pooled estimates. These estimates were presented using forest plots. **Results:** Of the 932 studies identified through searching, 11 were eligible for inclusion in the qualitative review. Of those 11 studies, 4 were eligible for inclusion in the QES. Providers' knowledge of cultural aspects of health and health care had increased substantially following training (ES (fixed effect) = 9.6% [95% CI 4.8%-14.4%]). CCT also substantially increased providers' skills in providing culturally competent care (ES (fixed effect) = 18%, [95% CI 9.6% - 26.2%]). **Conclusions:** Despite variability in the studies, this review found that CCT is effective at increasing pediatric health care providers' overall ability to provide culturally competent care. These findings suggest the importance of encouraging CCT in health care systems to improve patient-provider interactions and advance health equity.

1527

THE EFFECTIVENESS OF INDIVIDUAL, POPULATION AND PROPORTIONAL UNIVERSALISM INTERVENTION APPROACHES AT REDUCING POPULATION AND SOCIOECONOMIC INEQUALITIES IN TYPE 2 DIABETES IN CANADA, 2011-2021: A MODELLING STUDY

Brendan Smith*, Laura Rosella, Vivek Goel (Public Health Ontario/University of Toronto)

Diabetes prevention is a major public health priority. Uncertainty remains regarding which intervention options will optimally reduce population and socioeconomic inequalities in diabetes. The objective was to model the effectiveness of individual, population and proportional universalism interventions on reducing population and social inequalities in diabetes over 10-years in Canada. Using the validated Diabetes Population Risk Tool, ten-year diabetes incidence was calculated for respondents to the nationally representative 2011-12 Canadian Community Health Survey ($n = 74,444$) who were over 28 years of age and diabetes free. The number of diabetes cases prevented or delayed was assessed across income adequacy quintile was estimated according to three intervention scenarios: 1) best practice lifestyle counseling (RR=0.51 from meta-analyses) targeted to high-risk individuals (derived 10-year DPoRT risk 16.5 threshold); 2) hypothetical population intervention applied to uniformly reduce body weight by 5%; 3) a proportional universalism approach assigning the high-risk individual intervention to the lowest two income quintiles and the 5% hypothetical intervention to the rest of the population. In total, 1,742,067 new diabetes cases were predicted for 2021. Comparing lowest to highest income quintile, an increased 10-year diabetes risk was observed in the no intervention scenario (W:10.3% vs. 6.5%, risk difference (RD)=3.8%; M:11.7% vs. 9.5%, RD=2.2%). All interventions modeled resulted in decreased socioeconomic inequalities in diabetes, with the largest reduction in the proportional universalism approach (W:RD=3.1%; M:RD=1.3%) compared to implementing approaches individually (high-risk: W:RD=4.3% M:RD=3.2%; population: W:RD=3.6%, M:RD=2.0%). In summary, the present study found that proportional universalism intervention approach to be more effective than high-risk individual and population approaches in reducing the overall burden and socioeconomic inequalities in diabetes in Canada.

“-S/P” indicates work done while a student/postdoc

1528-S/P

CONSIDERATIONS OF RACE AND GENDER WHEN ASSESSING THE RELATIONSHIP OF SEXUAL MINORITY STRESS WITH THE RISK FOR CARDIOVASCULAR DISEASE.

Lezhou Wu*, Seth Welles (Drexel University Dornsife School of Public Health)

BACKGROUND: Little is known about the impact of sexual minority stress (SMS) on cardiovascular disease (CVD) among lesbian, gay and bisexual (LGB) individuals. As well as having sexual minority identity, individuals have identities defined by sex and race/ethnicity, each of which may affect stress and CVD risk. **OBJECTIVE:** We assessed whether SMS levels are associated with increased CVD risk and if gender and race/ethnicity modify this association. **METHOD:** We evaluated NESARC Wave II participants reporting either LGB identity, or any same-sex attraction or behaviors. Latent class analysis (LCA) produced three levels of unmeasured SMS based on 14 survey items concerning experiences with sexual minority discrimination. Logistic regression estimated associations of SMS with CVD (angina, tachycardia, myocardial infarction, stroke, and other heart diseases) in the entire sample, as well as stratified by gender and race/ethnicity. **RESULT:** By LCA, 2.4%, 11.3%, and 86.3% of 2594 sexual minority participants were scored as having high, moderate, and low SMS, respectively. After adjustment for confounders, those with high [adjusted odds ratio (AOR): 3.6, 95% CI: (2.6, 5.2)] and moderate [AOR: 1.4 (1.1, 1.8)] levels of SMS had increased CVD risk versus those with low SMS. Increased CVD risk among those with high SMS varied by gender, being higher among men [AOR: 4.8 (3.2, 7.3)] and lower among women [AOR: 1.9 (0.9, 3.9)]. Additionally, the effect of high SMS differed by race/ethnicity, with strong associations of SMS with CVD among Hispanics [AOR: 8.5 (6.1, 11.8)] and Whites [AOR: 3.5 (1.8, 6.7)], but a 60% reduction of CVD risk among Blacks [AOR: 0.4 (0.3, 0.4)]. CVD risk associated with moderate SMS was not modified by gender and race/ethnicity. **CONCLUSION:** High SMS was strongly associated with CVD among sexual minority individuals. This risk varied substantially by gender and race/ethnicity with highest risk seen among men and Hispanics, but a reduction of risk among Blacks.

1530

A MULTI-COUNTRY, CROSS-SECTIONAL OBSERVATIONAL STUDY OF RETINOPATHY OF PREMATURITY IN LATIN AMERICA AND THE CARIBBEAN Lauren Arnesen*, Pablo Durán, Juan Carlos Silva, Luisa Brumana (UNICEF (Oficina Regional para América Latina y el Caribe))

Objectives. Recent research concluded that 185 000 preterm babies developed Retinopathy of Prematurity (ROP) in 2010 globally. Two-thirds of known cases of blindness caused by ROP worldwide occurred in Latin American and the Caribbean (LAC), where ROP remains a significant problem. **Methods.** In 2015, we conducted a multi-country quantitative and qualitative survey online of medical and public health experts working on ROP to determine incidence, and the existence of specific programs, guidelines and financing for prevention, detection and treatment of ROP. **Results.** 11 experts from 10 LAC countries responded in full to our survey. Six countries have a national policy that includes prevention, detection and treatment of ROP, with screening and treatment covered by national/federal funds. Eight countries have national guidelines for ROP. Four countries have legislation mandating eye examination of preterm infants. Most countries have level 3 and 4 neonatal intensive care units in healthcare facilities in the public sector have ROP programs. Half of the countries represented have a data-collection or monitoring system to track the number of newborn babies screened within hospital settings. On average, countries with 3 or 4 of the ROP elements above screened 95% of eligible newborns in 2014, while those with only 1 or 2 screened 35% of eligible newborns. **Conclusions.** National government buy-in and involvement in ROP screening and treatment legislation is related to a higher proportion of eligible premature newborns being screened and treated for ROP. Further research should include more countries, and assess national level engagement with ROP, including for screening and treatment. **Acknowledgements.** We would like to thank Professor Clare Gilbert for her expertise and support in developing the questionnaire used for this study.

1532

ASSOCIATIONS BETWEEN PALLIATIVE CARE AND END-OF-LIFE CARE VARIABLES IN A DECEDENT CANCER COHORT FROM SUDBURY-MANITOULIN DISTRICT OF NORTHEASTERN ONTARIO, CANADA Michael Conlon*, Mark Hartman, Barbara Ballantyne, Andrew Knight (Northeast Cancer Centre, Health Sciences North)

Timely and comprehensive palliative care offers many direct benefits to patients and their families, and possibly indirect benefits to the health system through cost savings associated with reduced use of intensive end-of-life care such as emergency department visits or death in an acute care hospital. Reported indicators of end-of-life care in residents of the Sudbury-Manitoulin district of Northeastern Ontario, Canada are poor. All residents in Ontario have universal public health insurance, the Ontario Health Insurance Plan (OHIP), and all medically necessary services are captured in large linked administrative datasets. We used this data, made available under the Ontario Cancer Data Linkage Project ('cd-Link'), to define a population-based decedent cancer cohort during 2005-2010. We defined individual timelines from cancer diagnoses through to death, and calculated the proportion and 95% Confidence Intervals (95% CIs) that ever had Palliative Care (PC), an Emergency Department visit (ED), Home Care (HC), or death in hospital. We defined Odds Ratios (OR)s and 95% CIs for the association between PC and ED, HC, or death in hospital, and calculated Hazard Ratios (HRs) and 95% CIs to define overall cancer mortality. Of the 5936 residents who died from cancer, less than half (n=2743, 46%) ever had PC. Having PC was significantly associated with ever having HC, with an OR of 2.19 (95% CI 1.97-2.43), and protective for an ED visit and death in an acute care hospital, with ORs and 95% CIs of 0.55 (95% CI 0.50-0.61) and 0.78 (95% CI 0.70-0.87). Having PC was also associated with longer survival, with an HR of 0.93 (95% CI 0.88-0.97). Within the limitations of administrative data, our study suggests that people who received PC were significantly more likely to have received home care and less likely to have an ED visit or die in hospital, and adds to the developing research suggesting that PC may result in reduced use of aggressive end-of-life care.

"S/P" indicates work done while a student/postdoc

1531

DIFFICULTIES IN IMPLEMENTING THE GUIDELINES OF THE CONTROL PROGRAM OF VISCERAL LEISHMANIASIS IN LARGE BRAZILIAN CITIES Andrea Paula Bruno von Zuben*, Maria Rita Donalisio (Department Health Surveillance of Campinas, São Paulo, Brazil)

The expansion of the transmission areas of visceral leishmaniasis (VL) raises questions about the control strategies employed in Brazil. The guidelines of the Brazilian Program of Surveillance and Control of Visceral Leishmaniasis (PSDCLV) have their bases in control of the reservoir by canine elimination, vector control and in health education. This article aims to evaluate the difficulties in implementing the measures proposed by PSDCLV in large Brazilian municipalities with VL canine and/or human transmission. (Campinas e Bauru-SP, Goiânia - GO, Campo Grande - MT, Fortaleza - CE e Belo Horizonte - MG). For this, semi-structured interviews were conducted with coordinators of local Programs. The main problems identified were: discontinuity of control activities; high percentage of refusal of dog owners about the elimination of their animals (greater than 50%); low coverage of vector chemical control and poor health education activities. The main difficulties in conducting health education were: lack of teaching materials and / or material with inadequate approach and lack of professionals with specific training in the area of education. Despite the coordinators have reported limited autonomy, there are still discrepancies between recommended by PSDCLV and what is actually done in the city due to difficulties in the implementation of field work and complexity of disease control. The findings in this study show that in Brazil the interventions have not produced positive results in municipal level. There is a clear need for reassessment of Brazilian policy for the control and prevention of LV to ensure effectiveness of actions.

1533

INPATIENT PROFILE OF CLINICAL PATIENTS IN A COMMUNITY HOSPITAL IN BRAZIL Luciano Diogo*, Laura Bahlis (Hospital de Clínicas de Porto Alegre)

Background: Prospectively collected patient clinical data regarding hospital admissions and outcomes are very rare in Brazil. Most managerial and regulatory decisions are made based on North American or European databases. Seventy percent of hospital care in Brazil is offered at community hospitals, but local available data usually comes from retrospective analyses of patient charts from large urban hospitals. **Methods:** Hospital Montenegro is a 120-bed non-teaching community hospital. We prospectively collected patient data on all clinical admissions between June 2013 and May 2015. Our goal is to build a large patient database to better understand patient clinical characteristics and related outcomes in our secondary community hospital. **Results:** We had 3147 admissions. Patient mean age was 62 ± 19 years. 53% were men and 95,3% Caucasian. 82% percent came to the hospital straight from home, 4,7% from other hospitals and 3,1% from geriatric homes. 2,9% required to be transferred to a tertiary care center at any time during hospitalization. Mean Charlson Comorbidity Index was 2.63. 6% had multi-drug resistant bacteria infections and 71.1% were prescribed antibiotics. 17% spent at least one day at the ICU and 7,5% had surgical procedures. Our hospital medicine patients had a mean length of stay (LOS) of $7,23 \pm 8,6$. Main causes of hospitalization where: respiratory diseases 27,7%, complicated urinary tract infections 7,2%, heart failure 7,2%; cancer related issues 6,1% and cerebrovascular disease 5,7%. Overall mortality rate was 7.9% and 30-day readmission rate was 7.3%. **Conclusion:** To understand and be able to study our own patient population has offered us many insights on how to improve our care and our institution. The large database currently being built allows us to develop many hospital-wide quality improvement initiatives and is also considered a benchmark for community hospitals in our country.

1534-S/P

FREQUENCY AND DISTRIBUTION OF AEDES AEGYPTI (DIPTERA: CULICIDAE) IN NON-RESIDENTIAL PREMISES OF AN ENDEMIC MUNICIPALITY OF BRAZIL Gerusa Gibson*, Aline Nobre, Célio Pinel, Raul Henrique, Rafael Carlos Franklin, Jordão Paulo Sabroza, Luciano Toledo, Nildimar Honório (Laboratório de Transmissores de Hematozoários, Instituto Oswaldo Cruz, Fundação Oswaldo Cruz (LATHEMA/FIOCRUZ))

The role of non-residential premises for maintenance and proliferation of *Aedes aegypti* in urban areas where dengue transmission exists has been fully discussed. Currently, entomological surveys for the presence of *Ae. aegypti* often focus on residential premises. However, non-residential premises are considered potential key-sites for monitoring populations of *Ae. aegypti*. These sites exhibit a high density of people and favorable conditions that allow existence of mosquitoes at these sites. The present study aimed to describe the frequency of adult mosquitoes collected in non-residential premises in order to discuss the relevance of these sites for the maintenance and proliferation of *Ae. aegypti*, and subsequent transmission of dengue and chikungunya virus. A descriptive study was conducted weekly in the period from April to October 2014 in the urban area of the municipality of Guapimirim, Rio de Janeiro State. The identification and mapping of non-residential premises has been undertaken, as well as an entomological survey to collect adult mosquitoes in these sites by using battery-powered aspirators. In the laboratory, the specimens were sorted according to sex and species. A total of 46 non-residential premises were identified, mapped and inspected. The most common non-residential premises were mechanical workshops (9), scrap metal (6), and tire repair services (5). A total of 2,928 adult mosquitoes were collected by aspiration, of which 2,619 (89.4%) were identified as *Cx. quinquefasciatus*, 159 (5.4%) as *Ae. aegypti* and 150 (5.1%) as *Ae. albopictus*. Our findings underscore the importance of non-residential premises for the maintenance and proliferation of females and males of *Ae. aegypti* and *Ae. albopictus*, vectors of several globally important arboviruses. Continuous monitoring can pinpoint non-residential premises that need more detailed intervention and thus reinforce epidemiological and entomological surveillance in local areas.

1536

EFFECTIVENESS OF SURVEILLANCE ON REDUCING INFECTIONS IN INTENSIVE CARE UNITS IN EGYPT Sara Kotb*, Jehan El-Kholy, Samia Abdou, Soad Hafez, Maha Talaat (U.S. Naval Medical Research Unit No. 3)

Background: Healthcare-associated infections are major public health problems with high patient morbidity and mortality. A surveillance program for device-associated infections (DAIs) was implemented in intensive care units (ICUs) in Egypt since 2011. This study aims to describe the impact of surveillance on the pattern of the DAI rates over time and estimate the numbers of avoided infections. **Methods:** An active prospective surveillance of DAIs was implemented using CDC NHSN case definitions for 2013. Data was extracted from 91 ICUs in 22 hospitals that provided surveillance data for at least 36 months from May 2012 until April 2015. Data from the first 12 months of surveillance were compared with data from the second and third years. Pooled infection rates were calculated for each year and relative risks (RR) with 95% confidence intervals (CI) were used to compare the infection rates over time. The number of avoided infections was calculated as the number of expected DAIs in Nth year minus observed DAIs in Nth year. **Results:** In the first year of surveillance, the 91 ICUs had pooled VAP rate of 4.8/1000 ventilator-days, CLABSI rate of 4.5/1000 central line-days and CAUTI rate of 3.4/1000 catheter-days. The overall rates of DAIs were significantly reduced in the second and third years compared to the first year. By comparing the rates of the third year with the first year, the RR for VAP was 0.54 (95% CI, 0.44–0.67), the RR for CLABSI was 0.62 (95% CI 0.53–0.73), and the RR for CAUTI was 0.63 (95% CI 0.53–0.75). In addition, 192 cases of VAP, 279 CLABSI and 225 CAUTIs expected on the basis of the data from the first year, were avoided during the second and third years of the surveillance. **Conclusion:** Implementing surveillance for DAIs was associated with significant reduction in infection rates in ICUs without focused prevention efforts. The feedback provided to clinicians stimulated them to enhance infection control measures and subsequently reduce infection rates.

1535

DO CHRONIC CONDITIONS DETERMINE WHO USES PRIMARY CARE VS. A CLINIC? A STUDY ACROSS THE SOCIO-ECONOMIC SPECTRUM. Ariel Angel-Vincent*, Vicki Johnson-Lawrence (University of Michigan-Flint)

Introduction: Patient preferences for seeking care in clinics compared to primary care offices are varied, and may depend on the health problems for which they need care, particularly communities of low socioeconomic status. The type of service sought, whether continuous or spontaneous, may be impacted by the presence and treatment need of underlying chronic conditions. **Methods:** Using data from the National Health and Nutrition Examination Surveys 1999-2012, this study examines the association between socioeconomic status based on poverty-to-income ratio tertiles, having non-cardiovascular chronic conditions, and use of clinics/health centers compared to doctor's office/HMO for routine health care location among adults aged 20-70 (n=23,766). Ten common self-reported chronic conditions were classified as non-cardiovascular (asthma, arthritis, emphysema, bronchitis, cancer, and kidney problems) or cardiovascular (coronary heart disease, hypertension, diabetes, and stroke). **Results:** Comparable proportion of doctor's office/HMO (10.6%) and clinic/center (9.9%) users had non-cardiovascular conditions. Having more non-cardiovascular conditions was marginally associated with greater odds of receiving routine care doctor's office/HMO (OR=1.07, 95% CI =1.00-1.14), and particularly for the most impoverished respondents (OR=1.17, 95% CI =1.04-1.32) based on poverty-stratified models. **Discussion:** Disruptive non-cardiovascular chronic conditions that limit daily function may motivate respondents across the socioeconomic spectrum to seek care with a doctor or HMO, and perhaps to a greater degree among those with the fewest socioeconomic resources. Additional research is required to investigate the extent to which chronic disease severity determines this association, and the degree to which seeking care with a doctor/HMO compared to a clinic results in improved overall well-being.

1537-S/P

EHEALTH LITERACY GENERATIONAL DIFFERENCES Daryl Nault*, Siobhan C. Maty, Douglas A. Hanes (National College of Natural Medicine)

BACKGROUND: Health interventions increasingly use electronic modalities, which require electronic health literacy (eHL) for comprehension and effectiveness. Our objective was to identify various indicators of core eHL skills (CeHL's), and describe how the distribution of these indicators differ across generations. **METHODS:** Principal Components Analysis (PCA) was used to identify clusters of variables indicative of CeHL skills in a cross sectional sample of 32,911 adults from the 2012 National Health Interview Survey. Distribution of these variables then was compared across generations. **RESULTS:** PCA concluded three components explained 44.3% of variance. Variables clustered on the same components suggest underlying structure, one cluster contained 10 variables indicative of CeHL. Distributions revealed gaps in CeHL's between the Silent generation and others. In contrast to the remaining population, Millennials had the highest proportions of web users (82.8% vs. 68.9%) and educational program engagement (43.8% vs. 18.9%). **CONCLUSION:** Variables chosen to represent eHealth literacy measure a similar construct representing CeHL's. There is an observed difference in generational CeHL, which may warrant further independent study of these groups. With this data we can begin to understand how to accommodate the needs of different populations when creating eHealth interventions.

1538

COMPARISON OF PREMATURE MORTALITY AMONG MEDICAID CLIENTS WITH AND WITHOUT SERIOUS MENTAL ILLNESS Mia Papas*, Mary Joan McDuffie, Noel Mazade, Ryan Pohlig, Stephen Groff, Gerard Gallucci (University of Delaware)

Background: Higher premature mortality rates are evident among persons with mental illness. Contributing factors are not well understood. This investigation seeks to elucidate risk factors for premature mortality among Delaware Medicaid enrollees with and without mental illness. **Methods:** A retrospective cohort study of Delaware Medicaid enrollees as of January 1, 2011. Data linkages among the Departments of Substance Abuse and Mental Health, Medicaid and Medical Assistance, and Vital Statistics allowed for ascertainment of mental illness as well as date of death from 2011 through 2013. Gender and age-adjusted standardized mortality ratios (SMRs) and 95% confidence intervals (CIs) were estimated. Predictors of premature mortality were evaluated by fitting mental illness specific logistic regression models to estimate odds ratios (OR) and 95% CIs. **Results:** 301,973 Medicaid enrollees made up the dataset. The average age of death was 49 years for those with and 67 years for those without mental illness compared to the Delaware average age of death of 78 years. Significantly increased SMRs were observed for females (SMR=2.5, 95% CI:1.8, 3.5) and males (SMR=3.0, 95% CI:2.1, 4.1). Having a comorbid disability increased likelihood of dying for those with (OR=1.6; 95% CI:1.2, 2.1) and without mental illness (OR=3.2; 95% CI:2.9, 3.3). Higher healthcare utilization (number of emergency room visits, medical and hospitalization claims and total Medicaid billed amount) increased odds of premature mortality for those with and without mental illness (all p-values < 0.05). **Conclusions:** Medicaid recipients with a mental illness had a 30-year reduction in lifespan whereas those without a mental illness had a 10-year reduction. Comorbid disability status and health care utilization metrics were important predictors of premature mortality. Subsequent research should develop and test specific lifestyle and behavioral interventions to improve health outcomes among Medicaid clients.

1539-S/P

DETERMINANTS OF DELAYED DISCHARGE AMONG A POPULATION-WIDE COHORT OF ACUTE CARE SURVIVORS OF HYPOXIC-ISCHEMIC BRAIN INJURY: AN APPLICATION OF ZERO-INFLATED COUNT REGRESSION David Stock*, Angela Colantonio, Nora Cullen, Vincy Chan (University of Toronto)

Background: Hypoxic-ischemic brain injury (HIBI) results from sustained oxygen deprivation. Previous research has demonstrated that this population shares multiple characteristics predictive of delayed discharge, captured as alternate-level-of-care (ALC) days in Canadian administrative data. This study explored use of zero-inflated count regression models to evaluate predictors of ALC days among HIBI acute care survivors. **Methods:** A population-based cohort of HIBI acute care survivors from 2002/2003 through 2011/2012 fiscal years was identified from Ontario, Canada administrative data using International Classification of Diseases diagnostic codes. While other count regression models were explored, multivariable zero-inflated negative binomial (ZINB) regression was selected to estimate independent effects of predictors on the relative incidence of ALC days. ZINB models allow separate parameterization of count (i.e., number of ALC days) and binary (i.e., zero vs non-zero ALC days) processes. **Results:** Younger age (Age 20-35 vs 60-79: Rate Ratio (RR) 1.44; 95% C.I. 1.05-1.97) and no special care unit hours (0 hours vs 400 hours: RR 1.49; 95% C.I. 1.15-1.92) were predictive of increased ALC days relative to length of stay. Compared to those waiting for long-term or palliative care, discharge disposition to home (Odds Ratio (OR) 7.21; 95% C.I. 4.32-12.0) or other destination such as other acute care settings (OR 24.3; 95% C.I. 12.8-46.2), and psychiatric co-morbidity (OR 0.59; 95% C.I. 0.38-0.92) were predictive of having any ALC days. **Conclusion:** These findings demonstrate zero-inflated count regression models to be useful tools in evaluating predictors of health services outcomes with distributions containing a high proportion of zero values. Predictors of increased ALC days were unique for the HIBI population relative to other acquired brain injuries. Further study of care deficits specific to this unique acute care population is warranted.

1540-S/P

SENSITIVITY OF AN ELECTRONIC IMMUNIZATION REGISTRY IN CAPTURING CHILDREN BORN TO WOMEN LIVING IN A MIDDLE-SIZED CITY, BRAZIL Marcia Tauil *, Eliseu Waldman, Ana Paula Sato, Vinicius Ferreira, Angela Costa, Marta Inenami (School of Public Health, University of Sao Paulo)

Background: Araraquara is a middle-sized city, where an Electronic Immunization Registry (EIR) has been used since 1987. All Araraquara's primary health care units that develop vaccination activities have access to this registry. The private services send vaccination information to a unit that manages the registry. **Objective:** This study aim to estimate the sensitivity of the Araraquara EIR in capturing children born to women living in this city. **Methods:** Probabilistic method was employed to link the cohort of live births residents in Araraquara born between January 1st and December 31st 2012 recorded in the Brazilian Live Birth Information System (SINASC) and the cohort recorded in the EIR. OpenRecLink software was used. The variables mother's name and child's birth date were selected to link both files. The variables child sex, child's name, residence address, and type of pregnancy were checked to confirm the pairs. Three linkage processes were carried out: standardization, blocking and pairing records. After that, a manual searching was used to increase the chance of matching. We calculated the proportion of children recorded in the EIR based on the SINASC, which is considered the gold standard. **Results:** In 2012, 2,740 children were recorded in the SINASC and none duplicate record was found. Of these, 2,731 children were recorded in the EIR and three (0.1%) were duplicate. Twelve children were not found in the EIR. Among these unreported children, two had been adopted and had their names changed. Looking for these children with their current names we identified both in the EIR. Regarding the other cases (n = 10), none was found. The sensitivity of the Araraquara EIR in capturing children born to women living in Araraquara was 99.6% (2,730 / 2,740). **Conclusion:** This study highlights that Araraquara EIR is an interesting tool for monitoring vaccination actions in children resident in this city, since its sensitivity is very high. Supported by FAPESP grant #2014/11714-7 and CAPES

1550-S/P

BURDEN OF DISEASE STUDY: IMPACT OF THE CO-INFECTION TUBERCULOSIS AND HUMAN IMMUNODEFICIENCY VIRUS IN BRAZIL, IN THE YEAR OF 2011 Mábía Bastos*, Wildo Navegantes, Walter Ramalho (Universidade de Brasília)

Tuberculosis (TB) it is an important disease for public health, because, despite of advances and being a preventable disease with a good prognosis if treated correctly, it still have high incidence and mortality that must be considered. TB was the first cause of death among people living with HIV, in 2013, in Brazil and in the world, representing one of the main challenges for the Brazilian National Health System. Considering this scenario, the research aimed to estimate the burden of disease for TB-HIV in Brazil, in 2011. It was conducted a descriptive exploratory study and for measure the burden of disease, it was used the indicator of Disability Adjusted Life Years (DALY), which considers the premature death and the years lived with disability for a non-fatal event. The total of DALY for Tuberculosis in Brazil in 2011 was 99.871,45 years. For TB-HIV, the total was 18.350,79 years. The findings in this study show a higher burden of disease for TB associated with men, with rates of 75,21 DALY/100.000 habitants and 13,38/100.000 habitants, respectively. Higher rates of DALY for TB were found in the 45 and 59 age range and for TB-HIV in 30 and 44 age range. The results found in this study reinforce the magnitude and importance of tuberculosis and co-infection with HIV in Brazil. This research is an important tool for analysis of the health situation and a first effort to estimate the burden of disease for TB-HIV in the country.

1552-S/P

EPIDEMIOLOGICAL PROFILE OF MALARIA CASES IN A GOLD MINING IN ITAITUBA CITY THE STATE OF PARÁ, BRAZIL. Carlos Frederico Campelo de A. e Melo*, Carlos Alice Cristina Medeiros Melo (Postgraduate programs in Public Health. University of Brasília. Brasília, DF, Brazil.)

Background: Malaria is a disease caused and perpetuating poverty and is associated with poor socioeconomic conditions. The city of Itaituba in Para state is the municipality with the highest number of malaria cases from gold mining in Brazil, keeping up in recent years, among the 10 municipalities with the highest number of cases. This study aimed to describe the epidemiology of malaria cases coming from the mining activity in the city of Itaituba, state of Pará, Brazil, in 2013. **Methods:** Descriptive study was conducted with data from the Epidemiological Surveillance Information System and Malaria Cases Notification (SIVEP-Malaria) in 2013. Using the cases testing positive for malaria, not classified as a specific microscopic examination (LVC) and site of infection in the city of Itaituba/Pará, we estimated the number of malaria cases among Brazilian gold miners and not gold miners, according parasitic species in the period 2003-2013. **Results:** 24,390 positive cases for malaria in the state, and the city of Itaituba/Pará accounted for 42.6% of cases in the state. Of the total municipal malaria cases, 6,257 (60.3%) were related to gold miners. It is noteworthy that in the mines the proportion of cases is higher among men (90%), with 15 to 59 years old (96%) and less than 8 years of education (78.6%). The average treatment time in gold miners was 43 days, approximately 4 times more than the average time in not gold miners. In the year 2013, the IPA Itaituba/Pará was 64, considered high risk, excluding matters relating to mining API reduces to 42, in other words, medium risk. **Conclusion:** Malaria is a disease with strong social determinants and mining conditions strengthen the maintenance of these determining factors and perpetuate the disease. The study concludes that it is necessary to malaria target strategies in areas of mining, noting the particular characteristics of the target population.

1551

LATE PRESENTATION TO CARE HEALTH AMONG HIV/AIDS COHORT AT TWO REFERRAL SERVICES FOR AIDS CARE IN THE NORTHEAST OF BRAZIL: FROM 2009 TO 2013 Ana Brito*, José Gilmar Souza Jr., Artur Santos, Naide Teodósio Santos, Rita Soares, Tiago Lapa, Daniela Chaba (Centro de Pesquisas Oswaldo Cruz, Fundação Oswaldo Cruz)

Late presentation of HIV is common and is associated with several adverse outcomes. Despite Brazil has a policy of universal access to free therapy, there are strong indicators that the beginning of therapy is delayed for a significant number of patients. With the aim of estimating the population size and factors associated with late presentation by people living with HIV/AIDS in the city of Recife, in the Northeast of Brazil, we performed a retrospective cohort study in referral services through the use of medical chart review between 2009 and 2013. We considered late presentation "patients who access the health care system for the care of HIV/AIDS who, at the time of their first serological test, presented TCD4 cell count ≤ 350 cells/mm³ and/or have one or more AIDS defining condition". For the assessment of risk factors we considered a set of variables based on an extensive literature review. Results: More than half of the patients with HIV (50.4%) have a late presentation to the health care service. The non-adjusted analysis has shown age, sex, residence location, use of illicit drugs, previous history of STDs as a variable with a significant association to a late presentation to the health care system ($p < 0.05$). Although late presentation was higher patients with lower literacy and having performed the HIV test due to being sick, the findings were not statistically significant. In the final model the variables age, residence location, and previous history of STDs remained statistically significant for late presentation. Conclusion: The high prevalence of late presentation to the health care system the people with HIV/AIDS in the state of Pernambuco (50.4%) is a major health care concern. This finding reinforce the necessity for testing and assistance in early stages of the disease, especially among those under biological and vulnerable situations, as well as the need for scaling up of referral services in the country side of the state.

1553

EPIDEMIOLOGY AND RISK FACTORS FOR COLONIZATION AND CO-COLONIZATION OF MULTI-DRUG RESISTANT ORGANISMS: COMPARISON BETWEEN AN ACUTE HOSPITAL AND ITS AFFILIATED INTERMEDIATE- AND LONG-TERM CARE FACILITIES Angela Chow*, Kelvin Phua, Kala Kanagasabai, Hanley Ho, Pei-Yun Hon, Jia-Wei Lim, David Lye, Kalisvar Marimuthu, Prabha Krishnan, Ian Leong, Brenda Ang (Institute of Infectious Diseases and Epidemiology, Tan Tock Seng Hospital Singapore)

Background Colonization and co-colonization by methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant *Enterococcus* (VRE), and carbapenem-resistant *Enterobacteriaceae* (CRE) can result in higher morbidity and mortality, but risk factors are not well understood. We compared the epidemiology and factors associated with colonization and co-colonization of MRSA, VRE, and CRE among patients of an acute hospital (AH) and its affiliated intermediate (IC) and long-term care (LTC) facilities in Singapore. **Methods** Annual MRSA, VRE, and CRE screening was conducted in June-July in 2014-2015. Epidemiologic data was obtained from electronic medical records. Factors associated with colonization and co-colonization was compared. To control for confounding, multivariable ordinal logistic regression models were constructed. **Results** A total of 3469 patients (56.1% AH, 23.4% IC, 20.5% LTC) were screened. Prevalence of MRSA (20.4%) was the highest, followed by VRE (11.4%) and CRE (1.5%). MRSA, VRE, and CRE colonization differed across healthcare settings ($P < 0.005$). ICs had the highest prevalence of colonized (single- and co-colonized) patients (42.1%), whilst the AH had the highest prevalence of co-colonized patients (5.1%). After controlling for healthcare setting, age > 65 years (OR 1.23, 95% CI 1.05-1.45), male gender (OR 1.58, 95% CI 1.35-1.84), and length of stay (LOS) > 7 days (OR 3.16, 95% CI 2.57-3.89), were positively associated with colonization and co-colonization. Compared to patients of LTCs, patients of the AH and ICs were twice (OR 2.22, 95% CI 1.79-2.77) and thrice (OR 3.13, 95% CI 2.49-3.94) as likely to be colonized and co-colonized with MRSA, VRE, and CRE. **Conclusion** Older (age > 65 years), male, and long-staying (LOS > 7 days) patients were more likely to be colonized and co-colonized with MRSA, VRE, and CRE. Active surveillance of such patients in acute hospitals and intermediate-care facilities should be instituted to prevent nosocomial transmission.

1554-S/P

EPIDEMIOLOGICAL PROFILE OF LEPROSY AMONG CASES REPORTED IN A MUNICIPALITY IN NORTHEASTERN BRAZIL

Carolinne Damasceno*, Ana Raquel Carvalho, Beatriz Frota, Eliana Lago, Juliana Magalhães, Adelia Oliveira, Isabela Souza, Cristina Sousa, Davi Said, Kalinne Said, Samara Vieira (Centro Universitário UNINOVAFAP)

Introduction: Leprosy is a chronic contagious infectious disease caused by *Mycobacterium leprae* bacillus. It is an obligate intracellular parasite with affinity for skin cells and peripheral nerves. Currently, Brazil is the second country in the world in absolute numbers of leprosy cases. **Objective:** To analyze the epidemiological situation of leprosy among the cases reported in a town in northeastern Brazil, in the period 2010 to 2013. **Methodology:** This is a descriptive research, retrospective, bibliographic and quantitative approach developed in a city of northeast Brazil. Participated patients of both sexes, diagnosed with leprosy in this period. Data were collected from November 2014 through SINAN. They were tabulated and analyzed in TABWIN version 3.5 program and presented in tables and graphs. **Results:** We reported 101 new cases of leprosy. There was a higher prevalence in 2013, with 33 cases (32.6%). Regarding the profile of patients, stood out males (57.5%), aged 30-40 (23.8%), illiterate (37.6%) and diagnosed as paucibacillary (56.5%). **Conclusion:** The results show that the leprosy profile in this municipality consists of males aged 30-40 years with low levels of education and that still have multibacillary, responsible for the transmission and growth of cases. **Descriptors:** Leprosy. Health profile. Epidemiology.

1556

PREVALENCE OF IMMUNE RESPONSE TO VISCERAL LEISHMANIASIS IN DOGS AFTER THE USE OF COLLARS IMPREGNATED DELTAMETHRIN AT 4% IN A SPOT IN CAMPINAS, STATE OF SÃO PAULO, BRAZIL

Maria Rita Donalísio*, Andrea VonZuben, André Freitas, Ricardo Rodrigues, Claudio Castanha, José Tolezano, Roberto Hiramoto (Faculty of Medical Sciences/State University of Campinas, São Paulo, Brazil)

American Visceral Leishmaniasis (AVL) is a zoonosis caused by *Leishmania* (L.) infantum protozoa and transmitted by the *Lutzomyia longipalpis* phlebotomus as the main vector. In urban environment, dogs act as a reservoir and source of infection for vectors. The guidelines of the Brazilian Program of Surveillance and Disease Control have one of their bases in eliminating infected dogs as a control measure. This strategy has not been able to prevent the geographical expansion of AVL and additional measures must be considered. Deltamethrin-impregnated dog collars are effective repellants against the visceral leishmaniasis vector. This article discusses the use of this method of intervention on scale in a large municipality (Campinas, São Paulo, Brazil) with a population with low acceptance of canine euthanasia. The outbreak of canine AVL occurred in an environmental protection area in the east region in Campinas, in 2009. In 2011, with the observation of increased canine prevalence, collars were purchased on all dogs of the focus area. The exchanges of collars occurred every four months. Serological inquiries were undertaken in the years of study and compared the periods before placement of collars (2009 and 2010) and after (2011, 2012, 2013), calculating confidence intervals (CI) of 95% and using the chi square test with Yates correction ($p < 0.05$). The mean prevalence of reagent tests in previous years the use of the collar was 4.4% and after was 0.8%, statistically different ($p < 0.00$). Dogs off collars had 5.4 times more chance of getting sick compared to dogs who wore collar, considering the confidence interval of 95% (CMLE Rate Ratio- 5.441, CI: 2.08 - 14.6). This study showed that the decrease in the coefficient of prevalence of LVC checked in Campinas (4.4% to 0.8%) two years after the start of using collars as well as the absence of human cases in the city five years after the early detection of canine cases, can be signs of promising results regarding the effectiveness of this measure.

1555-S/P

SURVIVAL OF PATIENTS WITH AIDS AND CO-INFECTION WITH THE TUBERCULOSIS IN THE SOUTH AND SOUTHEAST OF BRAZIL

Ricardo Cordeiro*, Márcio Cristiano de Melo, Maria Rita Donalísio, Ricardo Cordeiro (Faculty of Medical Sciences/State University of Campinas, São Paulo, Brazil)

The survival study of people with AIDS evaluates the status of the epidemic, particularly the impact of interventions. The use of HAART since 1996 has been associated with increased survival of patients. Tuberculosis is a major disease associated with HIV infection, but survival in patients with co-infection AIDS/Tuberculosis is not well established in Brazil. The objective of this study was to analyze the patient survival time with co-infection AIDS/Tuberculosis according to socio-demographic, epidemiological, clinical, and utilization of health services in the South and Southeast of Brazil. This is a retrospective cohort study of sample of medical records of individuals older than 13 years diagnosed with AIDS, reported in the Information System for Notifiable Diseases in 1998 and 1999 with follow-up of 10 years. Were 2091 cases of AIDS, 517 (24.7%) had diagnosis for tuberculosis, and 379 (73.3%) were male. The risk ratio among co-infected/non co-infected was 1.31 (95% CI 1.11-1.54). The variables positively associated with longer survival were: female (HR = 0.81 CI95%: 0.68-0.95), higher education (HR = 0.54 CI95%: 0.37-0.78), CD4 diagnostic criteria (HR = 0.55 CI95%: 0.45-0.66) and no presence of cancer (HR = 0.71 CI95%: 0.52-0.98). Variables associated negatively with survival were: age 60 years (HR = 3.20 CI95%: 2.01-5.09), blood exposure (HR = 1.41 CI95%: 1.18-1.70), irregular use of ARV (HR = 7.31 CI95%: 5.87-9.10), no investigation to hepatitis B (HR = 1.79 CI95%: 1.33-2.40), co-infection AIDS-tuberculosis (HR 1.31 CI95%: 1.11-1.53) and two or more opportunistic infections (HR = 2.05 95% CI: 1.65-2.54). Despite the progress, some challenges remain, including overcoming inequalities, early diagnosis, and ensuring the availability and adherence to treatment with drug combination with lower toxicity and ease intake. AIDS and tuberculosis are two chronic diseases can be analyzed as markers difficulties to overcome still present limitations in life expectancy in Brazil.

1557

BEHAVIORAL RESPONSES TO MIDDLE EAST RESPIRATORY SYNDROME CORONAVIRUS (MERS-COV) OUTBREAK IN KOREA

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Objectives The outbreak of Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in Korea has had a substantial socioeconomic impact since the first case was confirmed on May 20, 2015. The objective of this study was to examine behavioral responses of the general public during the outbreak of MERS-CoV in Korea. **Methods** Two cross-sectional telephone surveys were carried out by Gallup Korea using Random Digit Dialing (RDD). The first survey was conducted between June 2 and 4 ($n=1,005$) and the second survey was conducted between June 23 and 25 ($n=1,004$). The response rate was 15.5% and 17.7%, respectively. Main outcome variables were preventive measures (i.e., increase in handwashing and wearing face masks, survey 1) and avoidance measures (e.g., avoiding public gathering places, avoiding public transport and avoiding health facilities, survey 2). **Results** Among 1,005 respondents in survey 1, 60.3% of the respondents reported increasing handwashing and 15.5% reported wearing face masks at least once. Among 1,004 respondents in survey 2, 69.5% carried out any avoidance measures during the last week. Respondents reported avoiding health facilities (58.2%), avoiding public gathering places (47.6%), and avoiding public transport (41.9%). After adjusting for age, education, occupation, perceived economic status, area, presidential job approval ratings, respondents with a high level of concern and women were more likely to adopt preventive and avoidance measures. **Conclusions** During MERS-CoV outbreak in Korea, participants adopt not only preventive measures but also avoidance measures. It is necessary to take reasonable precautions during the outbreak of infection. However, overreacting to the disease is not desirable. More effective risk communication is needed to avoid unnecessary panic.

1558

COMPARISON OF INDIVIDUAL AND AREA LEVEL FACTORS BETWEEN HIV-INFECTED CISGENDER AND TRANSGENDER INDIVIDUALS IN FLORIDA (2006–2014) Kristopher Fennie*, Mary Jo Trepka, Lorene Maddox Khaleeq Lutfi, Spencer Lie (Department of Epidemiology, Robert Stempel College of Public Health and Social Work, Florida International University)

This descriptive study compares individual- and area-level factors among HIV-infected transgender and cisgender individuals in Florida, using data from the Florida Department of Health HIV/AIDS surveillance system (2006–2014). Of 48,576 individuals diagnosed with HIV, 143 (0.3%) identified as transgender female and 7 (0.01%) as transgender male. Low number of transgender males in the database precluded meaningful analysis of transgender males. Transgender females resided in 25 of 60 Florida counties, including rural and urban areas. There was a high proportion of non-Hispanic blacks among cisgender females (68%) and transgender females (58%). Among transgender females, there was a higher proportion of Hispanics (24%) than among cisgender females (14%). Similar to cisgender females, over 80% of transgender females were racial or ethnic minorities. Transgender females tended to live in areas where the median percent unemployment, poverty, and graduation from high school was in between that of areas in which cisgender females and cisgender males resided. Transgender females were more likely than cisgender females to be diagnosed with AIDS within three months of their HIV diagnosis (aOR 1.65 95% CI 1.10, 2.46). Incomplete reporting and non-disclosure may have led to some transgender females being misclassified as cisgender females. Results suggest that HIV screening and outreach efforts should be enhanced for transgender women. Health workers must address transgender individuals' needs, while providing safe spaces, and increasing trust. Future research is needed to explore the role area-level social determinants play in HIV-related outcomes among HIV-infected transgender females; in addition it is important to determine how these influence health in general in the context of syndemic theory. As data become increasingly available worldwide, we can begin to understand more about this vulnerable population and better address their needs.

1560-S/P

IMPROVING ESTIMATION OF THE EFFECT OF GENDER ON LINKAGE TO HIV CARE USING TARGETED LEARNING

Kipruto Kirwa*, Brandon Marshall, Mark Lurie, Paula Braitsstein, Becky Gengberg, Joseph Hogan (Brown University School of Public Health, Department of Epidemiology)

Background: Linking infected individuals to care is a critical prerequisite to successful HIV control. New methods to improve validity of effect estimates of gender on linkage are important because gender influences care-seeking in profound ways. **Methods:** After a home-based HIV testing program in western Kenya, we calculated the targeted minimum loss estimate (TMLE) of the causal effect of gender on subsequent linkage to care among those who tested positive. Targeted learning focuses causal estimation on a single parameter of interest and may reduce bias in assessment of causal effects. We compared the TMLE estimate to those obtained from inverse probability weighting (IPW) and a Super Learner (SL) algorithm. The SL is an ensemble of models that aggregates cross-validated predictions from constituent models and produces a final estimate optimized by minimizing a mean square error. **Findings:** Women comprised 64% (2,211) of the whole sample (N=3,482) and 67% of 1,966 who linked to care. Compared to men, women were younger (35 versus 38 years), less educated (42% versus 27% with no schooling), less likely to be married (47% versus 74%), less likely to be employed (47% versus 68% worked for wages in previous week), more likely to report longer travel time to clinic (<1 hour for 65% versus 73%), and less likely to be newly diagnosed with HIV (36% versus 45%). Estimates for the causal risk difference (RD) varied widely, from a 12% higher chance of male linkage (unstable IPW) to a 15% greater probability of female linkage (SL). Per TMLE, male gender was causally associated with a lower linkage rate (causal RD -4%, 95% confidence interval -6%, -2%). **Interpretation:** IPW estimators can be unstable and non-targeted estimators can be biased, especially in the context of potential model misspecification and limited sample sizes. TMLE addresses these weaknesses and provides more valid effect estimates. More accurate estimates inform better care models and intervention strategies.

1559-S/P

EXPOSURE TO COMPUTED TOMOGRAPHY CONTRAST MEDIA AS A SUFFICIENT CAUSE FOR SEPSIS MORTALITY

S. Reza Jafarzadeh*, Benjamin S. Thomas, Jeff Gill, David K. Warren, Victoria J. Fraser (Washington University School of Medicine)

The effects of exposure to computed tomography (CT) intravenous contrast media on in-hospital mortality are uncertain, especially in patients with sepsis. We examined 233,538 hospitalizations in 130,252 patients (> 18 years old), admitted to a tertiary-care center from 2008–2012, using marginal structural models, estimated by the inverse probability weighting estimator, to estimate the effects of sepsis and CT contrast exposure, and relative excess risk due to their interaction (RERI) on in-hospital mortality. Confirmed sepsis and CT contrast exposure were recorded during 7,658 (3.3%) and 26,024 (11.1%) hospitalizations among 6,604 (5.1%) and 22,241 (17.1%) patients, respectively. In-hospital mortality occurred in 1,586 (24%) patients with prior hospitalizations with sepsis and 2,225 (10.0%) patients with CT contrast exposure, compared to 4,727 (3.8%) patients without a prior instance of sepsis and 4,088 (3.8%) patients without CT contrast exposure. The causal odds of in-hospital mortality was 7.7 (95% confidence interval [CI]: 7.0, 8.4) fold higher in patients with sepsis and 2.5 (95% CI: 2.3, 2.7) fold higher in patients exposed to CT contrast, compared to patients without sepsis or CT contrast exposure. The RERI was estimated to be 1.9 (95% CI: 0.3, 3.6), suggesting a sufficient cause interaction, suggesting the effects of exposure to CT contrast on in-hospital mortality are substantially increased in patients with sepsis.

1561

ASSOCIATION OF INJECTION DRUG USE WITH INCIDENCE OF HIV-ASSOCIATED NON-AIDS RELATED MORBIDITY BY AGE, 1995–2014

Catherine Lesko*, Bryan Lau, Weiqun Tong, Richard Moore (Johns Hopkins Bloomberg School of Public Health)

Background: HIV-infected persons have a high incidence of HIV-associated non-AIDS-related (HANA) comorbidities. One key risk factor that may increase the risk of HANA comorbidity is injection drug use (IDU). Previous studies of HANA comorbidity have not properly accounted for death as a competing risk. **Methods:** We followed HIV-infected persons enrolled in the Johns Hopkins HIV Clinical Cohort between 1995 and 2014 from enrollment to a validated HANA diagnosis, death, loss-to-clinic (1 year without CD4 count or viral load measurement) or administrative censoring. We compared cumulative incidence functions for end-stage renal disease (ESRD), end-stage liver disease (ESLD), myocardial infarction (MI), stroke, and non-AIDS-defining cancer between age 25 and 59 years, among persons who did and did not report IDU as an HIV transmission risk factor. We accounted for death as a competing risk using Aalen-Johansen estimators. We adjusted for potentially differential loss-to-clinic and confounding by baseline covariates using inverse probability weights. We estimated the standard error for 95% confidence intervals (CI) from the standard deviation of estimates from 200 nonparametric bootstrap resamples of the data. **Results:** Of 5,490 persons included in the study, the majority were male (66%), black (76%) and heterosexual (51%); median age at enrollment was 40 years (IQR: 34, 46). Thirty-seven percent reported history of IDU. By age 55 years, persons with baseline IDU had higher cumulative incidence of ESRD (risk difference (RD)=6.8, 95% CI: -1.9, 15.5) and ESRD (RD=11.1, 95% CI: 1.2, 21.0) than did persons with no IDU history. The cumulative incidence of MI and stroke were similar according to IDU. The cumulative incidence of non-AIDS-defining cancer was lower among persons with history of IDU than among non-IDU (RD at 55 years: -4.9, 95% CI: -11.2, 1.3). **Conclusions:** The increased risk of ESRD and ESLD among persons with history of IDU should be recognized and monitored.

1562

PREVALENCE OF SEXUALLY TRANSMITTED DISEASES IN A RURAL AFRICAN-DESCENDANT COMMUNITY IN OURO PRETO, IN MINAS GERAIS STATE, BRAZIL, 2015

George Luiz Lins Machado Coelho*, Keila Furbino Barbosa Aline, Priscila Batista, Maria Beatriz, Pena e Silva Leite Nacife Valeska, Natiely Vianna Isabela Dornelas Teixeira, Ana Paula Lopes Paiva, Luana Clarice das Neves, Wandair Wagner de Oliveira, Cássio Zumerle Masioli, Rosane Maria Lima Guerra, Walfran Moraes Oliveira Peito, Carolina Coimbra Marinho (Universidade Federal de Ouro Preto)

INTRODUCTION: Sexually transmitted diseases (STDs) are a major cause of morbidity and mortality in Brazil. Epidemiological surveillance in rural areas is poor despite the high prevalence of these diseases. **OBJECTIVE:** To evaluate the occurrence and spatial distribution of hepatitis B and C, syphilis and HIV in the rural district of Lavras Novas in Ouro Preto. **MATERIALS AND METHODS:** The community comprises 915 people, predominantly African-descendants. Due to its natural beauty the locality is often visited by tourists. A prevalence sample survey was conducted in the adult population (N=727, 331 men; n= 300, 104 men) using immunochromatography tests. The spatial distribution pattern of the dwellings was determined by geoprocessing. The study was approved by the local ethics board. **RESULTS:** Valuated, Ages ranged from 18-90, 104 (31.4 %) were men. 14 (%) participants tested positive for syphilis; of these, 10 were women and 10 were over 60. For hepatitis B and HIV tests the results were all negative, 3 (%) participants tested positive for hepatitis C; of these 2 were women and ages ranged from 30-50. The prevalence of syphilis is 1.33% for men and 3.33% among women. The prevalence of hepatitis C is 1%. **Conclusion:** The prevalence of syphilis was 4.6% and the prevalence of hepatitis C was 1%. These numbers reflect the national statistics for these diseases.

1564

HUMAN PAPILLOMAVIRUS (HPV) INFECTION AMONG NON-HISPANIC ASIAN ADULTS IN THE UNITED STATES: THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES), 2011-2014

Geraldine McQuillan*, DeannaKruszon-Moran, Laurie Markowitz, Elizabeth Unger, Ryne Paulose (Centers for Disease Control and Prevention)

HPV is estimated to be one of the most common sexually transmitted infections in the United States (U.S.) and certain subtypes have been associated with both cervical and oral cancers. To estimate the prevalence of this virus, vaginal swab HPV data was collected on females age 18-59 and oral rinse HPV data was collected on both males and females age 18-69 in NHANES. NHANES is a representative sample of the U.S. civilian population with data released every two years. Starting in 2011-2012, estimates for non-Hispanic Asians (Asians) were available for the first time. Data in this abstract are for 2011-2012 but 2013-2014 data will be available and included in the final analysis. The prevalence of any vaginal HPV types was 39.6% and lower among Asians (22.8%) than non-Hispanic whites NHW (34.6%), non-Hispanic blacks (NHB) (57.6%), and Hispanics (46.5%) ($p<0.01$). Among Asians, prevalence was lower among those non U.S. born (19.2%) than U.S. born (38.7%) ($p<0.05$). Prevalence of any high risk vaginal HPV type was 20.4% and lower among Asians (11.8%) than NHB (30.2%) and Hispanics (26.4%) ($p<0.01$) and lower among non U.S. born Asians (8.7%) than U.S. born Asians (25.6%) ($p<0.05$). Prevalence of oral HPV among both sexes aged 18-69 was 7.5% and lower among Asians (2.9%) than NHW (7.2%), NHB (9.7%) and Hispanic (8.2%) subgroups ($p<0.001$). These are the first national estimates of oral and vaginal HPV prevalence among Asian adults residing in the U.S. Prevalence among Asians was lower than the other race/ethnic groups for all outcomes examined.

1563-S/P

PREVENTION AND DIAGNOSIS OF TUBERCULOSIS IN PEOPLE LIVING WITH AIDS: ANALYSIS OF THE HEALTH ACTIONS AND SERVICES SUPPLY

Gabriela Magnabosco*, Lívia Lopes, Rubia Laine Andrade, Maria Eugênia Brunello, Nathalia Orfao, Tiemi, Arakawa Aline, Monroe Tereza Cristina Villa) University of Sao Paulo)

Background: Tuberculosis (TB) and Acquired Immunodeficiency Syndrome (AIDS) are major threats to public health. The AIDS and TB epidemics are synergistic, TB is the leading cause of death among people living with AIDS (PLWA). Thus, prevention of TB by HIV/AIDS Specialized Assistance Services (SAS) is a prerogative. **Objective:** The study aimed to analyze the supply of health actions and services for TB control among PLWA in treatment at the SAS in Ribeirao Preto/SP, Brazil. **Methods:** This is an exploratory study, survey type, quantitative approach. A total of 253 PLWA that was following at the municipal SAS participated in the study. The inclusion criteria were: patients with or over 18 years old, living in the study site and outside the prison system. Data collection was performed from January/2012 to May/2013, through interviews with a specific instrument. Data (Likert scale) were analyzed by indicators: classified as unsatisfactory (1.0 to 2.5), regular (>2.6 and <3.5) and satisfactory (3.6 to 5.0). **Results:** The supply of blood tests, CD4 (M=4.9) and viral load (M=4.9) were classified as satisfactory; X-ray request (M=3.1) and tuberculin skin test performing (M=3.2) as regular; sputum smear microscopy request as unsatisfactory (M=2.1). The questioning of signs and symptoms of TB in users was classified as regular (M=3.8) and unsatisfactory in users' contacts (M=2.3). The question of living conditions, food incentives and social benefits was rated as unsatisfactory (M=2.2). **Conclusions:** The availability of services for TB control in PLWA in all SASs was rated as regular, bringing great challenges for the clinical management of patients by health services. Reinforcing the need for better planning focused on comprehensive care, coordination of professionals inside their teams, as well as between different teams and services, thinking beyond vocational professional training and continuing education in order to suspect TB and perform opportune diagnosis in PLWA.

1566

TAKING CARE WITH COMPOST. RISK FACTORS FOR LEGIONELLA LONGBEACHAE LEGIONNAIRES' DISEASE: A CASE CONTROL STUDY.

Patricia Priest*, Emma Kenagy, Debbie Smith, Claire Cameron, Pippa Scott, Vicki Cho, David Murdoch (University of Otago, New Zealand)

The New Zealand incidence of legionnaires' disease (LD), a serious community-acquired pneumonia, is the highest reported in the world. The epidemiology of LD in New Zealand differs from most other countries, with a high prevalence of sporadic cases caused by *L. longbeachae*. While it is known that this species is found in soil and compost-derived products, there is little research to assess risky exposures. We carried out a case control study in Canterbury, New Zealand, where rigorous specimen testing procedures ensure high case ascertainment. The study was carried out over two summers (Oct-Mar 2012/13 and 2013/14), the high-incidence time for longbeachae LD. Cases were people hospitalised with *L. Longbeachae* pneumonia and controls were a random sample, frequency matched by age to the expected age distribution of cases, from the electoral roll for the area served by the participating hospital. The questionnaire asked about exposure to soil, compost and potting mix in the three weeks prior to onset of symptoms or interview. Multilevel mixed-effects logistic regression was undertaken to estimate the effect of health and gardening-related risk factors. 31 cases and 172 controls answered the questionnaire. COPD (OR 4.2; 95%CI 1.2, 14.7) and having smoked for at least 10 years (2.8; 1.2, 6.3) were important risk factors. A high proportion of cases (26/31) had been exposed to compost or potting mix compared with controls (84/172) (OR 6.2; 2.2, 17.3). Particular behaviours associated with LD included getting hands near the face after exposure without having first washed them (4.8; 2.1, 11.1), and tipping or trowelling compost or potting mix (8.3; 3.2, 21.5). Mask or glove use were not protective among people exposed to compost derived products in this study. This study suggests that general precautions against inhaling compost and attention to hand hygiene may be the most effective actions to prevent LD. Long term smokers and those with COPD should be particularly careful.

1567

RISK FACTORS FOR SEROPOSITIVITY TO PANDEMIC INFLUENZA A/H1N1 VIRUS IN THE UNITED STATES FOLLOWING THE 2009 PANDEMIC Carrie Reed*, Vic Vegailla, Amanda Balish, Jackie Katz, Alicia Fry (Influenza Division, Centers for Disease Control and Prevention)

Influenza A/H1N1pdm09 (pH1N1) caused a global pandemic in 2009 with widespread illness. Using two cross-sectional serologic surveys in the United States, we sought to estimate the incidence of infection based on increases in seropositivity and characterize factors associated with risk of pH1N1 infection. We obtained probability-based samples of banked serologic specimens from participants in the National Health and Nutrition Examination Survey (NHANES) during each of two enrollment periods: the years 2007-08 (N=1,142) prior to the pandemic, and the year 2010 (N=3,334) following pandemic activity in the U.S. Each serum specimen was tested using the hemagglutination inhibition (HI) assay against A/California/7/2009; a specimen was considered seropositive if the HI titer was ≥ 40 . The increase in seroprevalence was calculated as the difference in the proportion of participants seropositive for pH1N1 between two surveys. Titer results were linked to data collected for each participant, including demographic and social factors, medical history, access to health care, and a routine physical exam. The absolute increase in seroprevalence was 26% (95% CI: 21–30%) following the pandemic, with the highest increase in children aged 6–19 years (RD=53%, 95% CI: 44–62%). Increases in seroprevalence were significantly higher among females than males (RD=29% vs 22%), and persons living in crowded households (RD=35% vs 25%), but did not differ by other demographics, health status, smoking, or household poverty level. Approximately one-fourth of the US population, including half of children, developed seropositivity to pH1N1 by the time activity waned. There were few subgroups with greater risk of infection; those identified, such as crowding and gender, may be associated with greater contact with children. Understanding better how an influenza pandemic affects the population and which subpopulations are at greater risk informs future planning and prevention policies.

1569-S/P

NON-TRAVEL ASSOCIATED CASES OF ENTEROPATHOGENIC OR ENTEROTOXIGENIC ESCHERICHIA COLI. Rachel Sippy*, Rachel Klos (University of Wisconsin-Madison)

Diarrheagenic *Escherichia coli* are categorized into different groups based on pathogenesis and virulence factors. Until recently, enterohemorrhagic (EHEC) was the only group of diarrheagenic *E. coli* routinely diagnosed in clinical laboratories; however, multiple clinical laboratories in Wisconsin have begun testing for enteropathogenic (EPEC) and enterotoxigenic (ETEC) *E. coli* infections by polymerase chain reaction (PCR). EPEC and ETEC infections are reportable illnesses in Wisconsin and result in public health follow-up which provides a unique opportunity to describe these illnesses and patient exposures. EPEC and ETEC are common in developing countries; historically, cases in the United States have been reported in association with international travel or during rare foodborne outbreaks. The epidemiology of non-outbreak, domestically-acquired cases is limited; previous reports have low case numbers. To determine symptoms and risk factors associated with domestically-acquired EPEC and ETEC infections, we examined all EPEC/ETEC case reports to the Wisconsin Department of Health Services during March 2015-May 2016 with no reported international travel. Preliminary data are from March-October 2015. There were 75 EPEC and 17 ETEC cases reported among people with no history of international travel (81.1% of all cases). Among EPEC and ETEC patients, average age was 36.8 years and 40.3 years respectively. Cases of EPEC and ETEC had median illness duration of 10 and 8 days, and diarrhea was the most common symptom; the second-most common symptom was abdominal cramps among EPEC (64.9%), and fatigue among ETEC cases (91.7%). Seventy-one percent of EPEC cases and 60.0% of ETEC cases report dog ownership; EPEC case dog ownership is significantly higher than nationwide. Neither group reports cat ownership significantly different than nationwide. Additional analyses will help determine the characteristics of these case groups.

1568-S/P

TB IN THE METROPOLITAN AREAS OF BRAZIL: AN ANALYTICAL STUDY Carolina Sales*, Rita de Cássia Lima, Paula Adelmo, Mauro Ethel, Maciel Anne Caroline Cerqueira (Public Health of Program; Espírito Santo Federal University)

Objective: To evaluate the determinants of cure tuberculosis in metropolitan areas with more than 1 million population in Brazil in 2011. **Methodology:** Analytical study of secondary data analysis. Data were from the Ministry of Health, the binary outcome was cure and no cure and the independent variables were: age, sex, race / color, educational level, region of residence, forms of diagnosis, clinical presentation, co-infection HIV / TB and other health problems. It was conducted tables with absolute and relative frequency of all the variables and categories and p-value. To examine the comparison of proportions, calculate the Pearson's chi-square. The variables with $p < 0.05$ associated with the outcome (cure / no cure) were included in the logistic regression model. The results are presented as odds ratios (OR) and 95%. Analyses were performed using the statistical program STATA 11.0. This study was approved by the Ethics Committee in Research of UFES under number 242 826. **Results:** The determinants of TB patients, with significant results ($p < 0.05$) were: they had 1-07 years of education (OR 1.6, 95% CI 1.23 2.09), who had not alcoholism injury (OR 165.27 95% CI 121.91 - 2240.70) and no other diseases such as injury (except AIDS, diabetes and mental illness) (OR 2451, 95% CI 1881.165 3193.598), be between 15 and 34 years of age (OR 0.69, 95% IC 0.49 0.97) and type of re-entry entry after abandonment (OR 0.21, 0.12 0.37 95% CI). **Conclusion:** The identification of determinants - sociodemographic and clinical characteristics - of TB patients are very important for the disease and the possibility of prevention or reduction of TB taking into account determinants.

1570-S/P

COMPARISON OF INTERFERON- RELEASE ASSAY TO TWO CUT-OFF POINTS OF TUBERCULIN SKIN TEST TO DETECT LATENT MYCOBACTERIUM TUBERCULOSIS INFECTION IN PRIMARY HEALTH CARE WORKERS Fernanda Souza*, Thiago Prado, Jair Pinheiro, Renata Nóbrega, Thamy Lacerda, Rafaela Loureiro, José Américo Carvalho, Geisa Fregona, Elias Dias, Lorrayne Cosme, Rodrigo, Rodrigues Lee, Riley Ethel Maciel (Antonio Carlos de Souza Marly Mattos de Souza)

Background: An interferon- release assay, QuantiFERON-TB (QFT) test, has been introduced an alternative test for the diagnosis of latent *Mycobacterium tuberculosis* infection (LTBI). Here, we compared the performance of QFT with tuberculin skin test (TST) measured at two different cut-off points among primary health care work (HCW) in Brazil. **Methods:** A cross-sectional study was carried out among HCWs in four Brazilian cities with a known history of high incidence of TB. Results of the QFT were compared to TST results based on both 5mm and 10 mm as cut-off points. **Results:** We enrolled 632 HCWs. When the cut-off value of 10 mm was used, agreement between QFT and TST was 69% ($k=0.31$), and when the cut-off of 5 mm was chosen, the agreement was 57% ($k=0.22$). We investigated possible factors of discordance of TST vs QFT. Compared to the TST-/QFT- group, risk factors for discordance in the TST+/QFT- group with TST cut-off of 5 mm included age between 41-45 years [OR=2.70; CI 95%: 1.32-5.51] and 46-64 years [OR=2.04; CI 95%: 1.05-3.93], BCG scar [OR=2.72; CI 95%: 1.40-5.25], and having worked only in primary health care [OR=2.30; CI 95%: 1.09-4.86]. On the other hand, for the cut-off of 10 mm, BCG scar [OR=2.26; CI 95%: 1.03-4.91], being a household contact of a TB patient [OR=1.72; CI 95%: 1.01-2.92] and having had a previous TST [OR=1.66; CI 95%: 1.05-2.62], were significantly associated with the TST+/QFT- group. No statistically significant associations were found among the TST-/QFT+ discordant group with either TST cut-off value. **Conclusions:** Although we identified BCG vaccination to contribute to the discordance at both TST cut-off measures, the current Brazilian recommendation for the initiation of LTBI treatment, based on information gathered from medical history, TST, chest radiograph and physical examination, should not be changed.

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ECONOMIC AND TREND ANALYSIS OF CHLAMYDIA INCIDENCE AMONG PERSONS AGED 15 TO 19 YEARS, ILLINOIS 2000-2013. Kenneth Soyemi*, Oyinade Akinyede, Soornella Sharwani (John H Stroger Hospital of Cook County)

BACKGROUND: Chlamydia is a common sexually transmitted bacterial infection in Illinois, and is associated with potentially serious reproductive outcomes in Women. **METHODS:** Illinois Chlamydia incidence data for persons aged 15-19 years of age by sex, race and ethnicity was obtained from the Centers for Disease Control and Prevention website. The sexes were considered separately as incidence rates are known to differ significantly between males and females. Regression analysis and chi-square linear trend was performed to establish whether there was a relationship between incidence rates and time. Economic analysis was done using previous treatment cost studies and the consumer price index (CPI) calculator. **RESULTS:** During the study period, there was there was an annual increase in chlamydia incidence rates for all racial and ethnic groups with a statistically significant linear trend test was ($P < 0.001$). Incidence rates for this age group surpassed national rates with African American (AA) females having the highest rates ranging from the 8,000/100,000 population in 2003 (95% Confidence Interval [CI], 7,807- 8,205) to peak of 12,441/100,000 (95% CI, 12,204-12,882) in 2011. The estimated annual percentage change (APC) ranged from 2% to 4 % for females (with Hispanic females recording the highest APC) and 6% to 12% for males (with Hispanic males recording the highest APC of 12%). Using the estimated total cost per episode of \$142 (male, \$157; female, \$141) for those who were treated (as reported in a previous study) and the CPI inflation calculator, cost of treating this age group in 2015 will exceed 2 million dollars. **CONCLUSIONS:** Providing ongoing testing, treatment, and prevention strategies for chlamydia in this age group remains important because persons aged 15 to 19 years of age continue to carry a disproportionate burden of Chlamydia. The cost of treatment adjusted for inflation continues to increase demonstrating the need for targeted prevention strategies.

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EL NIÑO-SOUTHERN OSCILLATION AS A THREAT TO REGIONS PROGRESSING TOWARDS MALARIA ELIMINATION IN PERU Kristine Wagner*, Aneela Mousam, Josiah Kephart, Valentina, Aquila Viviana Maggioni, Antonio Quispe (Johns Hopkins Bloomberg School of Public Health)

Peru has come close to malaria elimination on two occasions in the 20th century, and regions on the North coast such as Tumbes and Piura have not recently reported any autochthonous cases. The El Niño-Southern Oscillation (ENSO) cycle has likely contributed to the progress towards malaria elimination but may threaten such progress. In this study we tested the hypothesis that the ENSO cycle has contributed to the increase in malaria incidence in Peru since 2011. The Southern Oscillation Index (SOI) and climate data, such as precipitation, temperature, humidity, and surface pressure simulated by the NASA MERRA model during a 12-year time series (2003-2014) are used to verify this hypothesis. We use a multilevel mixed-effects poisson regression model at the regional level (first level) with time as the second level. We link monthly malaria incidence data from health centers in Peru to the climate conditions at a regional level during the past 12 years to analyze the association with the El Niño and La Niña events and predict future incidence. There were 532,625 vivax and 122,364 falciparum cases from 2003-2014, with a mean monthly incidence of 0.26 cases per 1000 inhabitants (range: 0, 10.27). Weather data analyses show large deviations from the 10-year mean (i.e., climatological anomalies) in humidity, surface pressure, and temperature during 2010 up to four times larger than previous and subsequent years. An increase of 8% in precipitation yearly averages is observed in 2010, which also corresponds to an increase in malaria cases starting in 2011. However, the overall effect of the SOI on the variability of the monthly malaria incidence across regions in Peru over the 2003-2014 period seems to be insignificant. The association between the regional monthly malaria incidences and time shift from negative (IRR, 0.99; 95% CI, 0.98-0.99) to positive (IRR, 1.01; 95% CI, 1.00-1.02) after 2011. Further analysis is needed to characterize regions more susceptible to the impact of El Niño and La Niña.

1572-S/P

PERFIL EPIDEMIOLÓGICO DOS ÓBITOS POR TUBERCULOSE NO BRASIL Carolina Sales*, Anne Caroline Vieira, Adelfo Bertoldi, Catarina Motta, Ethel Maciel (Universidade Federal do Espírito Santo)

Objetivo: Descrever o perfil epidemiológico dos óbitos por Tuberculose (TB) no Brasil no período de 2001 a 2011. **Metodologia:** Estudo descritivo de análise de dados secundários provenientes do Sistema de Informação de Mortalidade (SIM). População composta pelos registros de óbitos ocorridos de 2001 a 2011, que apresentaram na Declaração de Óbito (DO) a TB registrada como causa básica (CB) de morte (CID-10) TB pulmonar; TB respiratória extrapulmonar; TB extrapulmonar; TB de outros órgãos; TB miliar. Realizada análise descritiva segundo variáveis sociodemográficas e operacionais. Análises realizadas com o programa estatístico STATA13.0. Este trabalho foi aprovado Comitê de Ética em Pesquisa da Escola de Enfermagem Anna Nery – EEAN/UFRJ. **Resultados:** Foram registrados 53.747 óbitos por TB. Destes, 47.486 (88,35%) registros por TB pulmonar; 1.532 (2,85%) TB respiratória extrapulmonar; 896 (1,67%) TB extra-pulmonar; 1.111 (2,07%) TB de outros órgãos e 2.722 (5,06%) TB miliar. O maior percentual referiu-se ao sexo masculino (39.597; 73,67%), raça/cor parda (21.697; 40,37%), estado civil solteiro (23.518; 43,76%), escolaridade (10.958; 20,39%) ensino fundamental II (de 5ª a 8ª série). Considerando os indicadores operacionais, observou-se que a maior proporção dos óbitos ocorreu no hospital (43.028; 80,06%), 19.712 casos (36,67%) receberam assistência médica antes do óbito. Quanto ao responsável pelos registros, a maior parcela foi realizada pelo médico que preencheu a DO (18.824; 35,02%). Verificou-se que o maior percentual dos óbitos (29.336; 54,58%) não foram submetidos à necropsia para confirmação do diagnóstico e 16.925 (31,49%) tinham essa informação preenchida como ignorada ou em branco. **Conclusão:** O perfil epidemiológico é importante para conhecermos as características da população e traçar medidas de controle, principalmente, para as populações mais acometidas pela doença, que permanece sendo homens, de baixa escolaridade e renda baixa.

1574

PATHOGENIC BACTERIA ISOLATED FROM PATIENTS WITH COMPLICATED URINARY TRACT INFECTION (CUTI) AND THEIR DRUG RESISTANCE PATTERN—A MULTICENTER STUDY IN SOUTHERN CHINA Jia Wei*, Jiemin Wang, Xiaoyan Li, Zehui Wen, Yunqin Chen, Jiemin Wang (R & D information China, Astra-Zeneca)

Background: The aim of this multicenter study was to identify the causative pathogens of complicated urinary tract infection (UTI) in Southern China, and to determine their susceptibility to antimicrobial agents. **Methods:** A retrospective study was performed using data from the electronic medical records (EMR) of patients who were hospitalized at one of the four centers affiliated to the Guangdong Provincial Hospital of Chinese Medicine between January, 2008 and December, 2013. A total of 4,284 hospitalizations (3,829 patients) with the diagnosis of complicated UTI were identified, of whom 1070 (25.0%) had urine and 148 (3.5%) had blood samples collected and cultured. Minimal inhibitory concentrations (MICs) were measured using broth microdilution according to the Clinical and Laboratory Standards Institute guidelines. **Results:** Among all included patients, 61.4% were women. The average age was 61 (± 20) years. The leading comorbidities were kidney stone (23.3%) and diabetes (20.2%). *E. coli* was most commonly detected (461, 48.4%), followed by *K. pneumoniae* (90, 9.5%), *P. aeruginosa* (49, 5.2%) and *P. mirabilis* (47, 4.9%). Both *E. coli* and *K. pneumoniae* demonstrated high resistance rates (50% to 100%) to wide-spectrum penicillins (ampicillin and piperacillin), third-generation cephalosporins (ceftriaxone, ceftazidime), a fourth-generation cephalosporin (cefepime), aztreonam, and ciprofloxacin. Resistances to beta-lactamase inhibitor/beta-lactam antibiotic combination (piperacillin/tazobactam and cefoperazone/subactam), imipenem, or amikacin were relatively low (0%-20%) among most isolates. Overall, Imipenem and piperacillin/tazobactam had the greatest activity against *E. coli*. **Conclusion:** The leading pathogen in hospitalized cUTI patients was *E. coli*. Imipenem and piperacillin/tazobactam showed a good antimicrobial activity against cUTI pathogens. They may represent good options for the empiric treatment of patients with cUTI.

“-S/P” indicates work done while a student/postdoc

1580

FACTORS CAUSING DEATHS DUE TO INJURY AMONG CHILDREN IN BANGLADESH

Tahera Ahmed (Centre for Injury Prevention and Research, Bangladesh)

Background: Child injury has become a public health concern in both developing and developed world. In recent times, injury has been identified as a leading cause for both morbidity and mortality among children. This study has concentrated on a holistic statistical inquest into injuries and deaths among children in Bangladesh. **Methods:** A population-based cross-sectional survey was conducted between January and December 2003 in Bangladesh. Nationally representative data were collected from 171,366 rural and urban households, with a total sample size of 819,429. A simple association test and the binary logistic regression was designed to identify the factors causing child death due to injury. **Results:** Drowning found the leading cause of death of children in Bangladesh. Approximately 26% children died from drowning each year. Almost 50% of children died in a year from just because they did not get proper care after getting injured. Mother's education has a significant influence on child injury and death. The percentage of child death due to injury was the highest from a mother's lack of awareness and education (54%). The odds of dying due to injury among children of secondary and graduate level educated mothers are respectively 1.4 and 1.6 times more than the odds in the chances of death of an illiterate mother's child. This may be due to the fact that educated mothers have less time to supervise their children because of their daily activities. It was also found that almost 63% of the children who died from injury were from rural areas. **Conclusion:** Child injury is an emerging cause of mortality and morbidity in both urban and rural areas of Bangladesh. Children from rural area were the more vulnerable group for different types of injuries compared to urban population. The home is the most common place for injury occurrence. **Keywords:** Child Injury, Child Death, Survey, Logistic, Regression.

1582

OIL AND GAS WELL ACTIVITY AND COMMERCIAL MOTOR VEHICLE-RELATED CRASH FATALITY RATES IN TEXAS, 2012-2013

Emily Hall*, Natalie Archer, Nina Leung, Heidi Bojes (Texas Department of State Health Services)

Texas is one of the top oil and gas producers in the United States. In the last decade, the industry has grown rapidly with expanded use of hydraulic fracturing methods. The number of oil and gas workers employed in Texas has almost doubled since 2005. Growth in the oil and gas industry is expected to lead to increases in commercial motor vehicle (CMV) traffic and subsequent increases in crash-related injuries and deaths among workers and residents. However, few state-specific analyses have examined the relationship between oil/gas activity and crash fatalities. This study analyzed associations between active oil/gas well frequency and rates of CMV-related crash fatalities per 100,000 population in Texas counties. Traffic collision data from the Texas Department of Transportation were linked with Texas Department of State Health Services EMS & Trauma Registries injury surveillance data. All CMV-related crash fatalities occurring in 2012-2013 were included. Oil/gas well data were provided by the Texas Railroad Commission. Texas counties were categorized as having either low (< 337), medium (338-1378) or high (>1378) active well counts. Negative binomial regression models were used to compare rates of CMV-related crashes between well count groups. The final model adjusted for well count group, sex, urbanization and border adjacency. In 2012-2013, 892 CMV-related crash fatalities were reported in Texas. The adjusted rates of CMV-related crash fatalities were statistically significantly higher among high (RR=1.46, p=0.005) and medium (RR=1.43, p=0.023) well count counties compared to low well count counties. Results indicate that oil/gas well counts are positively associated with CMV-related fatal motor vehicle crash rates in Texas. Prevention initiatives such as occupational safety training and infrastructure improvements may be needed to ensure public and occupational safety. Additional research into contributing factors and preventive strategies is warranted.

1581

THE BRAZILIAN DRINKING AND DRIVING LAW IS NOT REDUCING TRAFFIC-RELATED MORTALITY SO FAR: A TIME SERIES ANALYSES IN THREE MAJOR CITIES

Roberto M Ladeira*, Rosely Fantoni, Fernando M Volpe, Roberto M Ladeira (Minas Gerais Road Department, Brazil)

A zero tolerance alcohol restriction law was adopted and enforced in Brazil since 2008. In order to assess the effectiveness of this intervention, the present study compares specific mortality in two time series: 1980-2007 and 2008-2012. **Methods:** data on mortality and population was gathered from official Brazilian Ministry of Health information systems. Segmented regression analyses were carried out separately for 3 major Brazilian capitals: Belo Horizonte, Rio de Janeiro and São Paulo. **Results:** In two cities (Belo Horizonte and Rio de Janeiro) there were no significant changes in mortality rate trends in two periods, 1980 to 2007 and 2008 to 2012, where the observed rates did not differ significantly from predicted rates. In São Paulo, a decreasing trend until 2007 unexpectedly assumed higher levels after the implementation of the law. **Conclusion:** There is no evidence of reduced traffic-related mortality in the three major Brazilian capitals 4.5 years after the zero tolerance drinking and driving law was adopted.

1583-S/P

ADOLESCENT HANDGUN CARRYING IN THE US – WHAT HAVE CHANGED SINCE 2002?

Julian Santaella*, Magdalena Cerdá, Silvia Martins, Katherine Keyes (Department of Epidemiology, Columbia University)

Background: In the last decade around 30,000 adolescents died due to gun injuries in the US. In this context, the evolution of gun carrying and its contribution to deaths in adolescents is not well understood. In this study we examined trends in adolescent handgun carrying, and tested if carrying was associated with adolescent gun-death rates. **Methods:** We use data from the National Survey on Drug Use and Health (2002-2013) to estimate the prevalence of adolescents (ages 12-17) who self-reported carrying a handgun in the past year. Handgun carrying trends across race/ethnic groups were estimated using logistic models adjusted by sex, income and area of residence (metro/micropolitan). We also used linear regression models to estimate the association between the prevalence of carrying and gun-homicide/suicides rates (ages 12-17). Gun-deaths data were from the Web-based Injury Statistics Query and Reporting System. **Results:** In the entire sample, the prevalence of handgun carrying was stable over time (3.38% in 2002 to 3.50% in 2013, p>0.05); however, it increased in Whites (2.96 to 4.11%; p=0.03), and decreased in Blacks (3.82 to 2.57%; p<0.05) and Hispanics (4.22 to 2.70%; p=0.06). Among Whites, the handgun carrying increased mainly after 2009, with higher odds of carrying for those living in less populated areas (AOR=1.85; 95%CI=1.49-2.29). Also in Whites, having an income of less than \$20,000 (vs. \$75,000) was associated with carrying (AOR=1.57; 95%CI=1.34-1.83) in years before 2009, but not after 2009 (AOR=1.08; 95%CI=0.89-1.32). Among Whites, a 1 unit increment in the prevalence of carrying was associated with a 30% increment (p=0.02) in gun-suicide rates, and a 24% reduction (p=0.01) in gun-homicide rates. **Conclusions:** Handgun carrying increased in White adolescents, with odds of carrying (in recent years) similar across income groups. At the population level, the prevalence of carrying in White adolescents is associated with increases in gun-suicide rates.

1590-S/P

ASSOCIATION OF ADVERSE CHILDHOOD EXPERIENCES WITH FUNCTIONAL LIMITATIONS AMONG JAPANESE OLDER PEOPLE

Takeo Fujiwara*, Airi Amemiya (Department of Social Medicine, National Research Institute for Child Health and Development, Setagaya-ku, Tokyo, Japan)

Background: Despite numerous studies revealed the impact of adverse childhood experiences (ACEs) on mortality and morbidity among middle-aged adults, few studies investigated its impact among older people. The objective of this study is to examine the impact of ACEs and functional limitations among older people. **Methods:** Data are from the Japan Gerontological Evaluation Study 2013, a population-based cohort of people aged 65 years across Japan (n=20,083). Participants were categorized by age group, as the age when they experienced WWII (i.e. 1941-1945) differs. ACEs before the age of 18 years were assessed by seven adversities: parental death, divorce, or mental illness, witness of violence against mother, physical or psychological abuse, and neglect. The associations between the cumulative number of adversities and higher-level functional capacity (instrumental self-manners, intellectual activities, and social role) were investigated by poisson regression adjusted for age, sex, childhood economic adversity, adult socioeconomic status, marital status, living status, health behaviors, and disease status. **Results:** Over one third (37%) of the older people reported at least one ACEs, and 57.4% reported higher-level functional limitation. Older people who had experienced two or more ACEs were 1.23 times (95% CI: 1.18-1.27) more likely to show functional limitation than those who did not experienced ACEs, and the association was stronger among 75-79 years old age cohort, who experienced the end of the WWII when they were 5-9 years old. **Conclusions:** ACEs showed robust impact on higher-level functional limitation in older people, across all age group. Specifically, those who experienced WWII during the beginning of adolescent showed a stronger impact of ACEs on functional limitations. Current findings may help to understand the latent effect of ACEs on functional limitations among older people.

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HOW INCREASING BIRTH WEIGHT CHANGES BLOOD PRESSURE

Arnaud Chioleri*, Gilles Paradis, Jay S. Kaufman (Lausanne University Hospital, Switzerland & Department of Epidemiology, Biostatistics, and Occupational Health, McGill University, Montreal, Canada)

BACKGROUND Numerous studies have shown a negative association between birth weight and blood pressure later in life. Assuming a causal relationship, an increase in birth weight should lead to a decrease in blood pressure. Hence, an intervention which increases birth weight should lead to a reduction in blood pressure. However, this negative association between birth weight and blood pressure is a population average reflecting the potential compound effect of birth weight on blood pressure. Evidence suggests indeed that different interventions having a similar effect on birth weight may have a radically different effect on blood pressure. **METHOD AND FINDINGS** Using a set of directed acyclic graphs (DAG) showing the hypothetical causal relation between birth weight and blood pressure, we explain how different interventions increasing birth weight can have different, and possibly opposite, effects on blood pressure. For instance, maternal smoking cessation during pregnancy is associated with an increase in offspring's birthweight and a decrease in blood pressure later in life. However, while large maternal weight gain during pregnancy is also associated with an increase in offspring's birthweight, it is associated with an increase in blood pressure later in life. These observations are compatible with different direct and indirect effects of each of these interventions on blood pressure, mediated or not through birth weight. They are also compatible with an absence of any causal effect of birth weight on blood pressure. **CONCLUSION** Increasing birth weight will not systematically lead to a decrease in blood pressure later in life. The specific effect on blood pressure of interventions increasing birth weight should be considered to correctly anticipate their impact on cardiovascular health over the life course.

1591

LIFECOURSE SOCIOECONOMIC CONDITION, SOCIAL TRAJECTORY AND 10-YEAR RISK OF CARDIOVASCULAR DISEASE. ELSA-BRASIL, 2008-2010

Sandhi MariaBarreto*, Sandhi Dayse, Rodrigues de Sousa, Andrade Luana Giatti, Lidiane, Camelo Antonio Luiz Pinho, Ribeiro Dora Chor, Itamar Santos (Universidade Federal de Ouro Preto)

Objective: To investigate whether the accumulation of exposure to social (SE) adversities across the life course and changes in socioeconomic trajectories (inter- and intrageneration) are associated with 10-years risk of CVD. **Methods:** Participants of ELSA-Brasil cohort without CVD at the baseline (2008-2010) were eligible (N=13544). The Framingham risk score (FRS) generated the 10-year risk of CVD (0-100%). Cumulative exposure to SE adversity ranged from 0 (best) to 12 (worse), based on maternal education, occupational social class at youth and current education. Intrageneration SE trajectory was obtained by comparing the first and present social class, and the intergeneration SE trajectory by comparing the head of the family heads' social class with the participants' current social class. Generalized linear models with gamma distribution and logarithmic function were performed adjusting for alcohol consumption, physical activity, and use of hypolipemiant drugs. **Results:** In the final models, FRS increased as the cumulative exposure to adversities increased, being the Arithmetic Mean Ratio (AMR) equals to 1.69 (95%CI: 1.58-1.81) for those in the highest SE exposure (score: 10-12) compared to those in the lower SE group (score:0-3), with a dose-response gradient. Compared to high-stable trajectory, the AMR were 1.24 (95%CI:1.18-1.30), 1.34 (95%CI: 1.22-1.47), and 1.68 (95%CI:1.58-1.78) for ascending, descending and low-stable intrageneration trajectories. But, for intergeneration trajectory, only descending (AMR=1.16; 95%CI: 1.09-1.23) and low-stable (AMR=1.48; 95%CI:1.40-1.57) were associated with increased FRS. **Conclusions:** Exposure to SE disadvantages across the lifecourse is associated with increased FRS, being the situation worse among those who were always exposed. Upward intergeneration trajectory was not associated with FRS, suggesting that the CVD risk associated with exposure to early life SE adversities can be reversed by improvement of SE position in adulthood.

1593-S/P

SEX-STRATIFIED BMI TRAJECTORIES FROM INFANCY THROUGH MID-ADULTHOOD IN A GUATEMALAN COHORT: RESULTS FROM A LATENT CLASS GROWTH ANALYSIS

Nicole Ford*, Manuel Ramirez-Zea, Reynaldo Martorell, Aryeh Stein (Nutrition and Health Sciences, Laney Graduate School, Emory University)

Objective: Heterogeneity in the timing and rate of body mass index (BMI) gain might have important implications for health. We explored BMI trajectories from infancy to mid-adulthood in a Guatemalan cohort using latent class growth analysis. **Methods:** Study participants (749 males, 711 females) were born in El Progreso, Guatemala from 1962-77 and have been followed prospectively. Height and weight were assessed up to 22 times: 5 from 1-12 months; 3 from 13-23 months; 5 from 24-50 months; 3 from 51-84 months; 2 from 10-20y; and 4 from 21-42y. Participants were included if they had 2 childhood measurements and 1 non-pregnant adolescent/adult measurements. Models were developed in MPlus using all available data, free estimation of slope factor loadings, and robust maximum likelihood estimation. We used information criterion indices, Lo-Mendell-Rubin test (LMRT), Bootstrap Likelihood Ratio test (BLRT), entropy, and posterior probabilities to assess model fit and quality of classification. **Results:** We identified 3 latent classes (low (39%), medium (46%), and high (14%)) in men and 2 classes (low (57%) and high (43%)) in women. Additional classes did not significantly improve LMRT and BLRT. The selected models had the highest entropy (0.76 and 0.78 for men and women) and highest posterior probabilities (~0.91 and ~0.93), suggesting high class separation. Median age at onset of overweight (BMI 25 kg/m²) among women was 23y and 29y for the high and low classes, respectively and among men was 29y for the medium and high classes and 34y for the low class. At 42y, the difference between in predicted mean BMI between the high and low BMI latent classes was 5.2 kg/m² for women and 6.0 kg/m² for men. **Conclusion:** We identified 3 BMI latent classes for men and 2 for women. Trajectory differences were large, established in early infancy, and maintained throughout the lifecourse, suggesting that early life or pre-conceptual factors may influence BMI trajectory.

1594-S/P

EXAMINING PREVALENCE, PATTERNS AND PROGRESSION OF MULTIMORBIDITY AMONG PRIMARY HEALTH CARE PATIENTS USING A PAN-CANADIAN ELECTRONIC MEDICAL RECORD DATABASE

Kathryn Nicholson*, Amanda Terry, Martin Fortin, Tyler Williamson, Amardeep Thind (Western University)

Context: Multimorbidity, the coexistence of multiple chronic diseases, is a significant burden for patients and primary health care (PHC) providers alike. Enhanced understanding of the characteristics and natural history of multimorbidity is needed. **Objectives:** 1) To determine prevalence and characteristics of adult PHC patients with multimorbidity; 2) To examine patterns of multimorbidity; and 3) To delineate progression of multimorbidity over time. **Design:** A historic cohort study was conducted with clinical data. **Patients:** Patients with > 1 in-office encounter recorded in their EMR and who were > 18 years at first encounter date were included (N=389,267). **Setting:** Data were derived from the Canadian Primary Care Sentinel Surveillance Network (CPCSSN) electronic medical record (EMR) database, which collects longitudinal, de-identified data from PHC practices across Canada. **Methods:** Chronic disease diagnoses were identified using the International Classification of Diseases, 9th Revision (ICD-9) and a list of 20 chronic disease categories was used to identify patients with multimorbidity. Statistical analyses were conducted using Stata 13.1 software. **Results:** Overall, 40.3% of adult PHC patients were living with ≥ 2 chronic diseases. These patients had an average age of 55.5 years (SD: 16.9) and majority were female (59.1%). A decrease in time elapsing between subsequent chronic diseases was observed (average of 698.7 days between first and second diagnoses to average of 381.2 days between fourth and fifth diagnoses). **Conclusions:** This research explores the prevalence and clinical profiles of PHC patients with multimorbidity in Canada, which can be used strategically to inform more effective health care policy and delivery.

1600-S/P

VITAMIN D AND ARTHRITIS SUBTYPE ANALYSES: EVIDENCE FROM THE 2007-2010 NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES) Adam M. Kravietz*, Joseph H. Huntley, Samuel R. Huntley (Department of Public Health Sciences, University of Miami, Miller School of Medicine)

Background: The role of vitamin D and its metabolites in the pathogenesis of arthritis have been thoroughly studied. However, the vast majority of these studies have focused solely on the relationship between vitamin D and rheumatoid arthritis (RA), leaving a paucity of evidence characterizing the role of vitamin D in other types of inflammatory joint disorders such as osteoarthritis (OA). In the present analysis, we use nationally representative data to examine the association between serum vitamin D levels and a past arthritis diagnosis stratified by type of arthritis. **Methods:** Pooled data from the 2007-2010 National Health and Nutrition Examination Survey (NHANES) were used to estimate the proportion of respondents with a past arthritis diagnosis. Serum vitamin D levels (total, D2, and D3) were estimated for the arthritis population as a whole and by type of arthritis (i.e., RA, OA, and other) and for the non-arthritis population. **Results:** Among NHANES respondents with a past arthritis diagnosis, the mean total vitamin D levels were (mean \pm S.E.) 59.23 nmol/L \pm 1.45 nmol/L, the mean vitamin D2 levels were 4.93 \pm 0.22, and the mean vitamin D3 levels were 60.27 \pm 0.49. There were significant differences in the mean serum vitamin D levels between the arthritis and non-arthritis populations (total: $p < 0.0000$, D2: $p < 0.0000$, D3: $p < 0.0002$). Compared to the non-arthritis population, there were significant differences in total serum vitamin D levels for respondents with OA ($p < 0.0000$) but no significant differences for respondents with RA or other arthritis types. There were significant differences in serum D2 levels for each arthritis subtype compared to the non-arthritis population (RA: $p = 0.0240$, OA: $p < 0.0000$, other: $p = 0.0421$). **Conclusions:** Further evidence is needed to characterize the relationship between serum vitamin D levels and OA. The interplay between total serum vitamin D levels, D2, and D3 needs to be further characterized in the etiology of arthritis subtypes.

1602-S/P

FUNCTIONAL DISABILITY OF THE KNEE AND ASSOCIATED FACTORS AT THE ELSA-BRASIL MUSCULOSKELETAL STUDY (ELSA-BRASIL MSK) Sandhi M. Barreto*, Poliane T Silva, Rosa W, Telles Luciana A, Machado, Aline B P Costa, Rita, C Miguel Luciana C Silva (Faculty of Medicine - Universidade Federal de Minas Gerais - ELSA-Brasil MSK)

Introduction: Painful musculoskeletal syndromes are often accompanied by a decline in function, which is an important predictor of morbidity and mortality. The function subscale of the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC-f) is one of the main tools used to assess functional disability of the knee. **Objective:** To characterize the participants of the ELSA-Brasil Musculoskeletal study in terms of functional disability of knee and to identify associated factors. **Methods:** Active or retired Brazilian civil servants were interviewed and examined between 2012-14. Scores on WOMAC-f were described according to sociodemographic, clinical and psychological characteristics. Nonparametric tests investigated the association between WOMAC-f and explanatory variables. **Results:** We included 1735 participants with mean (SD) age of 56.0 (8.9) years, 53.4% were women. The sample presented a median (DIQ) of 5 (0-36) points in the WOMAC-f. The level of knee disability was higher among women, older, less educated, obese and retired participants, and those with a lower social class, history of knee trauma/surgery, medical history of rheumatic disease, musculoskeletal symptoms, low physical performance and depressed mood. The p values were < 0.001 for all analyses and a dose-response association was observed for all variables with more than two categories. **Conclusions:** Factors associated with markers of functional disability of the knee were not only clinical features directly related to this joint, but also sociodemographic and psychosocial factors. Although the WOMAC-f was originally developed for use in patients with osteoarthritis of the lower limbs, it seems a promising tool for functional assessment in epidemiological studies of the general population. Funding: Brazilian Ministry of Health (Science and Technology Department) and the Brazilian Ministry of Science and Technology (FINEP, CNPq), and Brazilian Ministry of Education (CAPES).

“-S/P” indicates work done while a student/postdoc

1601

MULTIJOINT SYMPTOMS AND SYSTEMIC INFLAMMATION IN OSTEOARTHRITIS – AN INVESTIGATION OF SEX-SPECIFIC ASSOCIATIONS Anthony Perruccio*, Jennifer Denise Power, Elizabeth Badley, Rajiv Gandhi (Dalla Lana School of Public Health, University of Toronto; Health Care and Outcomes Research, Toronto Western Research Institute)

Purpose: Among those with osteoarthritis (OA), women experience more pain than men. Pain is associated with inflammation. We investigated whether the association between inflammation (as measured by C-reactive protein (CRP)) and overall painful joint count was modified by sex in a hip/knee OA sample. **Methods:** Serum CRP and COMP (an indicator of OA severity) concentrations were determined (ELISA) in 115 women and 88 men with late-stage hip/knee OA. A painful joint count was obtained from a homunculus showing joints that were painful on most days for a month. Age, sex, body mass index (BMI) and comorbidities were recorded. The association between joint count and CRP, adjusting for age, sex, BMI, comorbidity and COMP, was investigated using negative-binomial regression, with risk as a count ratio (CR). A sex*CRP interaction was tested. In sensitivity analysis, individuals with metabolic syndrome-associated comorbidities (e.g. heart disease, diabetes) were excluded. **Results:** Mean age: 64 years for men, 66 for women ($> 96\%$ were 50 (i.e. post-menopausal)). Women had higher mean painful joint count (4.6 vs. 2.5, $p < 0.001$; 4+ joints reported by 42% of women, 28% of men). More women were obese: 56% compared to 36% of men. Median CRP concentration was higher in women than men, 18.7 vs. 9.3 $\mu\text{g/ml}$ ($p < 0.01$). From adjusted analyses, the effect of CRP was modified by sex. The effect of increasing concentration of CRP on greater painful joint count was greater among women (CR for interaction term: 1.3; 95% CI (1.1, 1.6); main effect: CR=0.9; 95% CI (0.8, 1.1)). Results from the sensitivity analysis were similar (CR for interaction: 1.5; 95% CI (1.1, 1.9)). **Conclusion:** There appears to be a sex-dependent dose-response association between number of painful joints and systemic inflammation in OA. As systemic inflammation is a risk factor for metabolic syndrome-associated conditions, women with a higher number of painful joints may be a subgroup in OA at greater risk of these conditions.

1603-S/P

WHAT IS THE BURDEN OF OSTEOARTHRITIS AT SMALL GEOGRAPHIES IN ENGLAND? A SPATIAL MICROSIMULATION Kate Timmins*, Kimberley Edwards (University of Nottingham)

A third of people in the UK over the age of 45 are estimated to have sought treatment for osteoarthritis (OA). However, data on OA are not routinely collected at small geographies. This makes it challenging to establish if there are ‘pockets’ of high or low prevalence. This study attempts to refine the current level of detail on OA prevalence in England, using spatial microsimulation. Spatial microsimulation is a modelling technique whereby data from a survey is weighted to replicate area-level population characteristics. Two data sources are necessary: individual-level survey data and area-level population data. This study used the English Longitudinal Study of Ageing (ELSA) to provide individual-level data on self-reported OA diagnosis and other sociodemographic variables. The second data source was the Census for England and Wales, 2011, which provided small-area level totals for sociodemographic variables. A deterministic reweighting algorithm was used to create a synthetic data set representing the population over 50 years old in England. The model was constrained by age, sex, employment status, tenure and self-assessed general health at the ward level (a key UK geographic boundary; mean population 5500 people). The resulting simulated data showed ward-level prevalence rates ranged from 6.5% (Tower) to 43.2% (Shirebrook North West) (mean 26.9%). Simulated region-level prevalence ranged from 24.9% (S. East) to 30.4% (N. East). ELSA prevalence ranged from 22.8% (London) to 33.8% (N. East). Internal validation was robust. This study shows spatial variation in OA prevalence across England. These important data do not otherwise exist due to limitations with confidentiality of medical data at the small area level. Further work is needed to externally validate the data. Future aims include spatial analysis and ‘what if’ modelling to assess the impact of policies and tailored healthcare provision.

1610

EVALUATION OF OXIDATIVE STRESS AND OTHER BIOMARKERS AS PREDICTORS OF FUNCTIONAL STATUS IN A LARGE ALS COHORT

Pam Factor-Litvak*, Regina Santella, Serge Cremers, Clement Furlong, Jonathon Hupf, Irina Gurvich, Hiroshi Mitsumoto (ALS COSMOS Study Group Mailman School of Public Health, Columbia University)

Amyotrophic Lateral Sclerosis (ALS) is a devastating motor neuron disease with an average survival time from diagnosis of approximately 3 years; however the survival time is highly variable. The purpose of this study is to identify reliable biomarkers which can be used to predict ALS function and progression over time. We use data from the COSMOS Study, a large, multicenter, prospective study of 355 ALS patients recruited within 18 months of symptom onset, to evaluate associations between biomarkers of oxidative stress (isoprostane, a product of lipid peroxidation, and 8-oxo-deoxyguanosine (8-oxo-dG), a product of DNA oxidation), plasma creatinine, an extensive lipid profile, phosphorylated neurofilament heavy (pNFH) antibody, and paraoxonase 1 (PON1) on functional status at baseline. Functional status was assessed using the ALS Functional Rating Scale – Revised (ALSFERS-R) and % forced vital capacity (%FVC). Mean (+ standard deviation (SD)) values of urinary isoprostane and 8-oxo-dG, both adjusted for specific gravity were 1.60 (0.98) and 17.1 (13.8), respectively. Mean plasma creatinine was 0.80 (0.20). After control for duration of symptoms, age, sex, race, ethnicity, and BMI, each .1 unit increase in serum creatinine was associated with a 0.91 unit increase in ALSFRS-R ($p < .0001$) and with a 2.38% increase in %FVC ($p = .0006$). Each unit increase in 8-oxodG was associated with a .10 point decrease in ALSFRS-R ($p = .008$) and with a 0.25% decrease in %FVC ($p = .08$). Isoprostane showed a trend in the direction similar to 8-oxodG. In this population, we found associations between plasma creatinine and ALSFRS-R and respiratory function such that higher serum creatinine was associated with better function. These results are similar to others reported in the literature. We also found associations between two biomarkers of oxidative stress and decreases in ALS-FRS and %FVC. During the follow up period, these biomarkers will be evaluated for disease progression and survival.

1612-S/P

CAFFEINE INTAKE AND PARKINSON'S DISEASE RISK IN THREE COHORTS

Iris Kim*, Eilis O'Reilly, Xiang Gao, Michael Schwarzschild, Alberto Ascherio, Marjorie McCullough (Harvard T.H. Chan School of Public Health)

Introduction: Caffeine intake has been associated with a decreased risk of Parkinson's disease (PD). This association is robust in men, but inconsistent in women due to a possible interaction with post-menopausal hormone (PMH) use. We sought to further elucidate this association in three large, prospective cohorts. **Methods:** We examined associations between caffeine intake and incident PD risk in the Nurses' Health study (NHS) (N= 121,700 women; 32 years of follow-up), the Health Professionals Follow-up Study (HPFS) (N= 51,529 men; 24 years of follow-up), and the Cancer Prevention Study II Nutrition Cohort (CPS-IIIN) (N= 184,190 men and women; 12 years of follow-up). We excluded participants with onset of PD at or before the study baseline and participants who lacked data on caffeine intake. Dietary data on coffee and caffeine from other sources was collected every four years using a validated food frequency questionnaire. Information on lifestyle and incident PD diagnosis (540 cases for HPFS, 527 for NHS), was updated biennially and PD diagnoses were confirmed by medical record review. We estimated hazard ratios (HRs) and 95% confidence intervals (CIs) using Cox proportional hazards models, adjusting for age, smoking, BMI, physical activity, and alcohol consumption. **Results:** The HRs comparing drinking 5+ cups of coffee/day to never or <1 cup/month was 0.36 (95% CI: 0.11, 1.15; P trend <0.0001) in HPFS, and 0.85 (95% CI: 0.64, 1.12; P trend =0.24) in NHS. Among women, the protective association was marginally significant for never-users of PMH (HR: 0.40, CI: 0.14, 1.13; P trend = 0.08), while there was no association for ever-users of PMH (HR: 2.84, CI: 1.13, 7.12; P trend = 0.12). Consumption of decaffeinated beverages was not associated with PD risk. Results from the CPS-IIIN are forthcoming and will be presented. **Conclusions:** Our results support previous findings that increased caffeine intake may reduce the PD risk in men and women who have never used PMH.

"-S/P" indicates work done while a student/postdoc

1611

EPIDEMIOLOGY OF HEARING IMPAIRMENT IN CHILDREN AGED 0-17 YEARS: THE CHILD HEARING SUPPLEMENT TO THE 2014 U.S. NATIONAL HEALTH INTERVIEW SURVEY (NHIS)

Howard J. Hoffman*, Christa L. Themann, Katalin G. Losonsczy, Chuan-Ming Li (Epidemiology and Statistics Program, National Institute on Deafness and Other Communication Disorders (NIDCD), NIH)

Objective: To describe hearing impairment (HI) prevalence and associated risk factors for U.S. children. **Methods:** The 2014 NHIS sample children (n=13,380) are nationally-representative. Parents/caregivers were interviewed by Census Bureau staff and reported HI as "a little trouble", "moderate trouble", "a lot of trouble" or "deaf". Information was collected on: hearing screening at birth, in schools, and referrals to specialists; child communication difficulties; 3+ ear infections past 12 months; ear tubes ever inserted; exposure to impulsive (e.g., firearms, fireworks) or continuous very loud noise; use of hearing protection and hearing aids. Logistic regression models were statistically-adjusted for covariates using national sampling weights. **Results:** HI was reported for 1.4 million (1.94%) U.S. children; males, 2.12%, females, 1.75%. Prevalence was lowest, 1.16%, age 0–5; increased to 2.48%, age 6–11; and declined to 2.14%, age 12–17 years. Children with HI were very likely to have been referred to hearing specialists within the past 5 years: 83.26%, 65.30%, and 78.66% for ages 0–5, 6–11, and 12–17, respectively. The main HI causes reported were: ear infections, 31.53%; other infections, 0.64%; genetic, 14.01%; medications, injury or surgery, 5.68%; noise, 5.46%; preterm birth, 4.37%; sudden loss, 2.51%; other cause, 22.39%; and "unknown", 11.46%. Adjusting for maternal education and child's sex, age, race/ethnicity, and general health status, HI was associated with 3+ ear infections during past 12 months, odds ratio [OR]=6.0 (95% confidence interval [CI]: 3.1–11.5); ever ear tubes, OR=4.8 (CI: 2.9–7.8); and impulsive noise, OR=1.6 (CI: 1.03–2.6). In sex-specific models, males had higher ORs associated with ear infections and noise exposure. **Conclusion:** Some childhood HI results from genetic and unknown causes (<30%) that may not be preventable, but the majority is due to ear infections and medical or environmental causes (noise) that are potentially preventable.

1613-S/P

MENDELIAN RANDOMIZATION PROVIDES EVIDENCE FOR A CAUSAL EFFECT OF LOW VITAMIN D ON MULTIPLE SCLEROSIS RISK IN TWO INDEPENDENT POPULATIONS

Brooke Rhead*, Maria Bäärnhielm, Milena Gianfrancesco, Amanda Mok, Xiaorong Shao, Hong Quach, Ling Shen, Allan Bernstein, Catherine Schaefer, Tomas Olsson, Ingrid Kockum, Anna Hedström, Lars Alfredsson, Lisa Barcellos (Genetic Epidemiology and Genomics Laboratory, UC Berkeley, Berkeley, CA)

Low serum levels of 25-hydroxyvitamin D (25(OH)D) are associated with a higher risk of multiple sclerosis (MS) and with greater MS activity and disease progression. However, a causal relationship between 25(OH)D and MS has not been firmly established. We conducted Mendelian randomization analyses using three single nucleotide polymorphisms found to be associated with serum 25(OH)D level in a genome-wide association study (Ahn et al., 2010) to estimate the causal effect of low 25(OH)D on MS susceptibility. We constructed the instrumental variable (IV) by computing a weighted genetic score for variants associated with increasing 25(OH)D levels in serum, using the estimated effect of each risk variant: rs2282679-C, in an intron of GC; rs2060793-G, upstream of CYP2R1; and rs3829251-A, in an intron of NADSYN1. We analyzed the effect of the IV on MS susceptibility in two separate populations using logistic regression models that controlled for sex, year of birth, smoking, education, ancestry, self-reported body mass index at age 18–20, a weighted genetic risk score for 110 known MS-associated variants, and the presence of one or more HLA-DRB1*15:01 alleles, the strongest genetic risk factor for MS. Findings showed that the genetic score for increasing levels of 25(OH)D is associated with a decreased risk of MS in both populations. In White, non-Hispanic members of Kaiser Permanente Northern California (1,000 MS cases, 9,000 controls), the causal odds ratio (OR) was 0.79 ($p=0.04$, 95% CI: 0.64–0.99). In members of a Swedish population from the EIMS and GEMS MS case-control studies (6,000 cases, 6,000 controls), the causal OR was 0.86 ($p=0.03$, 95% CI: 0.76–0.98). A meta-analysis of the two populations gave a combined causal OR of 0.85 ($p=0.003$, 95% CI: 0.76–0.94). These ORs provide evidence that low serum 25(OH)D concentrations are a cause, rather than a result, of MS, independent of established risk factors.

1620

HOW ARE DIETARY PATTERNS IN CHINESE AMERICANS RELATED TO CARDIOVASCULAR RISK FACTORS? Jeannette Beasley*, Stella Yi, Camille Gonzalez, Judith Wylie-Rosett (Albert Einstein College of Medicine)

Background: Food consumption varies by cultural orientation and is also influenced by food access and socioeconomic status. Understanding dietary patterns interrelationships can provide insights for addressing cardiovascular risk among Chinese immigrants as they move to another location. The purpose of this study was to identify dietary patterns among Chinese American immigrants and describe associations with demographic and cardiovascular risk factors. **Methods:** A Food Frequency Questionnaire assessed dietary intake in 2,071 Chinese American immigrants living in NYC as part of the Chinese American Cardiovascular Health Study in 2011-2012. Principal Components Analysis with varimax rotation retaining five factors with eigenvalues >1 identified dietary patterns. Multivariable linear regression models tested associations between cardiovascular disease risk factors and dietary pattern scores controlling for demographic factors. **Results:** Factors were significantly ($P<0.05$) associated with age, years lived in the United States, gender, employment status, education, marital status, and physical activity. In multivariable analyses, each unit increase in the fried pastas and potatoes, soda, and meat factor was associated with a “ 0.17 ± 0.09 and 0.30 ± 0.10 ” increase in the BMI (kg/m^2) and waist circumference (inches), respectively. Each unit increase in the vegetables, tofu, and fruit factor was associated with a “ -1.38 ± 0.45 ” and “ -0.79 ± 0.28 ” decrease in systolic and diastolic blood pressure (mmHg). **Conclusions:** Dietary patterns are significantly associated with cardiovascular risk factors among Chinese American immigrants in New York City. Future work will inform how dietary patterns relate to level of acculturation in order to guide the development of dietary interventions to reduce cardiovascular risk for this population.

1622

INFLUENCE OF PSYCHOSOCIAL STRESSORS IN THE NUTRITIONAL PROFILE WORKERS OF THE COURT OF JUSTICE OF MINAS GERAIS STATE, BRAZIL Bruna Costa*, Maira Silva, Renata Rebutti, Eduardo Lima, Ada Assunção (Núcleo de Estudos Saúde e Trabalho/Universidade Federal de Minas Gerais)

Social pressure, work overload, high level of productivity requirement and lack of recognition and autonomy are factors that affect the nutritional status of workers. This study aims to estimate the nutritional profile and assess its association with psychosocial factors in a sample of workers of the Court of Justice of Minas Gerais State, Brazil. A cross-sectional study with a probabilistic sample of workers (pregnant individuals and those on vacation or away for other reasons for excluded), is being conducted through telephone interview (data collection finishes at January 2016), in order to provide socioeconomic, health and psychosocial data. Self-reported information on weight and height will be used to estimate worker's body mass index and allow nutritional status classification. The translated, adopted and validated in Portuguese version of the Swedish Demand-Control-Support Questionnaire will be used to address the psychosocial factors. Estimates of nutritional status will be presented by sex, age and education. Linear regression models will be used to evaluate the association between nutritional status and psychosocial factors. This survey results will provide an unprecedented assessment of nutritional status of the judiciary workers of Brazil as well as it work related associated factors.

1621

DIETARY PATTERNS AMONG CHILDREN 15 TO 35 MONTHS OF AGE AND ASSOCIATION WITH MATERNAL CHARACTERISTICS IN A CITY IN NORTHEAST OF BRAZIL Eduarda Boguea*, Antonio Silva, Soraia Arruda, Luana Padilha Wyllyane, Carvalho Suely Conceição (Universidade Federal do Maranhão)

Knowledge of dietary patterns in children, as well as the understanding of the various factors that influence them, can provide a greater understanding of the complex relationship between diet and health in childhood. We studied 986 children 15-32 months of age, participants following the BRISA cohort in São Luís, Maranhão, which began in 2010. Food consumption was investigated using the Food Recall 24h. Dietary patterns were identified by factor analysis of principal components, followed by varimax orthogonal rotation and the adequacy of the data to factor analysis was confirmed by the Kaiser-Meyer-Olkin coefficient. Poisson regression with robust variance estimation was used to estimate the prevalence ratios of variables related to maternal characteristics. Three dietary patterns were identified: traditional, healthy, milk/porridge. The variance explained by these factors was 25.0% and the traditional pattern was the largest contributor. Stands out the standard milk/porridge in the breast milk showed a negative factor loading. Children of mothers aged 35 or older had lower adherence to the traditional pattern (RP 0.50, 95% CI 0.28 to 0.90), whereas mothers who did not receive the family allowance (95% CI 1.01 to 1.82) or whose mothers had low education (RP 2.11; 95% CI 1.05 to 4.27) showed greater adherence to this standard. For the healthy standard, we found a greater adherence between the children of unmarried mothers (PR 1.46; 95% CI 1.02 to 2.10). None of the maternal characteristics investigated were associated with the dairy standard / porridge. This study identified three different patterns of food consumption in the population of children: traditional, healthy, milk / porridge. The standard milk/porridge is found in all socioeconomic levels. Unmarried mothers tend to adhere to a healthier pattern while the less educated mothers or receiving family allowance follow more traditional pattern. Older mothers were less adherence to the traditional pattern.

1623

ASSOCIATION BETWEEN SELF-PERCEPTION OF HEALTH STATUS WITH OVERWEIGHT AMONG BRAZILIAN AND DANISH ADOLESCENTS Paulo Rodrigues*, Laurits Skov, Ana Paula Muraro, Marcia Ferreira, Regina Gonçalves-Silva, Luana, Monteiro Thais Vasconcelos, Vania Marins, Rosangela Pereira (Federal University of Mato Grosso - Brazil)

Background: Self-perceived health status is considered a strong predictor of morbidity and mortality and may be a simplified measure applied in the identification of groups under risk of diseases. The aim of this study was to evaluate the association between self-perceived health status with overweight among Brazilian and Danish adolescents. **Methods:** Brazilian data comes from school-based cross-sectional study involving a random sample of students (14 to 19 years old) from public and private schools, Cuiabá, Mato Grosso, Brazil. The Danish data were obtained in cross-sectional study that evaluated sample of adolescents (13-19 years old) selected by “snowballing” using social media. Both questionnaires were self-administered. Self-perceived health status was assessed by the question: “Compared with people of your age, you consider your health status as ...” with the following options to answer: “Very Good”, “Good”, “Regular” or “Bad”. The body mass index (BMI) was estimated to classify the adolescent weight status using the BMI Z scores and classified as normal weight (BMI / age Z-score $+1$) and overweight (BMI / age $> +1$ Z-score). **Results:** Self-perceived health status as “bad” was observed in 25% of adolescents and 26% of Danish adolescents. Overweight was observed in 17% of Brazilian adolescents and 13% of Danish adolescents. A higher proportion of overweight was observed for adolescents reporting “Bad” health status compared to those reporting to have “Very good”, “Good” or “Regular” health among Brazilian (24 vs 14 %, $p<0.01$) and Danish (17 vs 2%, $p<0.01$) adolescents. **Conclusion:** Self-perceived “Bad” health status seems to be an important predictor of unfavorable weight status for adolescents from different cultural contexts.”

1624

EFFECTS ON METABOLITES OF REDUCED DIETARY SODIUM AND DIETARY PATTERNS: THE DIETARY APPROACHES TO STOP HYPERTENSION-SODIUM (DASH) FEEDING STUDY Rachael Stolzenberg-Solomon*, Andriy Derkach, Joshua Sampson (DCEG/NCI)

Many nutritional exposures are poorly measured by questionnaires used in epidemiologic studies. Sodium intake is extremely difficult exposure to quantify and is known to affect blood pressure but its relation to other health outcomes is equivocal. The DASH diet is high in fruits, vegetables, and low fat dairy products and corresponds to a “Healthy” dietary pattern. The primary aim of this study was to identify metabolites that characterize high and low sodium intake within the Dietary Approaches to Stop Hypertension Trial (DASH). The DASH study randomized individuals to either the DASH or control diet for 12 weeks. Within each diet arm, participants received in random order a low (1,150 mg), medium (2300 mg), or high (3,500 mg) sodium version of their diet for 30 days (cross-over design). Fasting blood was collected after each at the end of sodium level intervention. We measured metabolites in EDTA plasma from 119 participants who consumed a high and either low or medium sodium diet depending on sample availability. Metabolon Inc. measured metabolites using the Q Exactive MS platform. For each of 681 metabolites, we used a weighted, paired t-tests to evaluate the average effects of sodium intake on metabolites. The top known metabolites that on average significantly differed among those consuming lower compared to higher sodium intakes were as follows % change: 4-ethylphenylsulfate 18.19%, methionine sulfone 4.62%, indolebutyrate 6.46%, N6-carbamoyltheonyladenosine 4.77%, 4-hydroxyphenylpyruvate -6.89%, 4-allylphenolsulfate 7.27%, urate 2.07%, indoleacetate 4.68, 5-alpha androstan 3-beta 17-beta 2.77%, 4-androsten 3-beta 17-beta D1 2.50% were higher while gamma glutamylvaline -14.84%, gamma glutamylisoleucine -14.87% were lower after low sodium intake (p-value <0.001). 4-ethylphenylsulfate was the only metabolite that reached Bonferroni correction significance (p-value < 10-5). Metabolomics profiles might be useful for assessment of sodium intake.

1626

DIETARY DIVERSITY SCORE IS ASSOCIATED WITH OBESITY AMONG RURAL ADULTS IN CHINA Qiang Zhang*, Xinguang Chen, Zhitao Liu (Department of Epidemiology, University of Florida)

Background With rapid urbanization, diet quality in rural China has been greatly improved. However, diverse but imbalanced diet may increase the risk of obesity. This study aims to explore the association between dietary diversity score (DDS) and obesity among adults in rural China. **Methods** Data from the 2011-12 China National Nutrition Survey in Yunnan Province (Southwest China) were analyzed (n=1105, aged 20-80 years). Dietary data were collected using 24-h dietary recalls over three consecutive days. DDS was calculated according to the scoring of nine food groups (Grains, Vegetables, Fruits, Meat, Eggs, Fish, Dairy, Beans and Oil) in Dietary Guidelines for Chinese. Nutrient adequacy ratio (NAR) of 16 individual nutrients was calculated. NAR is the ratio of a subject's nutrient intake to the Reference Nutrients Intake (RNI). Body mass index (BMI) 24.0 and 28.0 were defined as overweight and obesity respectively and waist circumference was used to diagnose abdominal obesity (85 cm for male and 80 cm for female). **Results** Mean±SD of DDS was 5.2±1.1 (range 0-9). Female gender, younger age, more education and higher income were positive associated with DDS. As DDS increased, consumption was increased in most food groups except grains and vegetables. When analyzed by low (DDS 4, n=279), medium (DDS =5, n=421) and high (DDS 6, n=405) DDS group, NAR of energy intake were 1.0, 1.1 and 1.2 in the three groups respectively. However, NAR of Ca and Vitamin A were less than 0.4 in all DDS groups. With multiple confounders adjusted, people in the medium and high group were at higher risk of overweight, obesity and abdominal obesity than low DDS group (OR=1.7-2.8, P<0.01). **Conclusion** Our data indicates that dietary diversity is positively associated with excess energy intake and obesity in rural China. Although diversity is an important principal for good diet, balance should also be emphasized in the context of urbanization.

1625-S/P

ASSOCIATION OF MILK AND DAIRY PRODUCT CONSUMPTION WITH ADOLESCENT TESTOSTERONE: EVIDENCE FROM HONG KONG'S 'CHILDREN OF 1997' BIRTH COHORT Qian Yang*, Man Ki Kwok, Gabriel M Leung, Tai Hing Lam, Catherine Mary Schooling (School of Public Health, Li Ka Shing Faculty of Medicine, The University of Hong Kong)

Background: Cardiovascular disease (CVD) is more common in westerners than Chinese. Meta-analyses of randomized controlled trials suggest testosterone administration increased CVD risks. Coincidentally, higher serum testosterone was found among young men in the U.S than in China, which may attribute to differences in diet. Specially, milk and dairy consumption is much higher in the West than in China. This is the first study to consider the role of milk and dairy consumption on serum testosterone in Chinese adolescents. **Methods:** Our study covered 498 participants (55.4% boys) in the Hong Kong's 'Children of 1997' birth cohort follow-up in 2012. Multivariable linear regression was used to examine the adjusted association of milk or other dairy product consumption frequency within one week prior to the follow-up with serum testosterone level at 15 year-old. **Results:** Neither milk nor other dairy products was associated with testosterone, adjusted for sex (Model 1) or additionally adjusted for birth order, parental education and parental birthplace (Model 2). The associations did not vary by sex (p 0.50). **Conclusions:** The null finding of milk and dairy product consumption with testosterone in this follow-up suggests further search of other factors that may contribute to CVD risk via increasing testosterone is warranted.

1630-S/P

WEIGHT STATUS AND TYPE-2 DIABETES MELLITUS AMONG INPATIENT YOUTH OF FLORIDA

Majid Al-Maqbali*, Tulay Koru-Sengul, Nadia Fleurantin, Alisha Monnette, WayWay Hlaing (University of Miami)

Introduction: Diabetes Mellitus (DM) during childhood is routinely assumed to be type 1. However, type 2 diabetes has been reported among U.S. children and adolescents with increasing frequency in the last two decades. The true prevalence of type 2 DM is difficult to quantify in the U.S. youth and such data are scarce among children and adolescents of Florida. We evaluate the prevalence of type 2 DM and its association with weight status among children and adolescents admitted to Florida hospitals in 2013. **Methods:** A cross sectional study was restricted to youth aged 10-20 years who were admitted to hospitals across Florida during 2013. We utilized the 2013 Agency for Health Care Administration (ACHA) database. Weight status and type 2 DM were defined according to the International Classifications of Diseases, Ninth revision (ICD-9) diagnosis codes. The ICD-9 codes used were 278.02 (overweight), 278.00 (obese), and 278.01 (morbidly obese). Records without any of the above 3 ICD-9 codes were considered neither overweight nor obese. The ICD-9 codes used for type-2 DM were 250.X0 and 250.X2 where X=0 through 9. Statistical Analysis System (SAS) was used for analysis. **Results:** Of 104,343 records of 10-20 years old, sex distribution was 62.89% female and 37.11% male. The median age was 17 years. Majority (96.11%) of youth were neither overweight nor obese with 0.4% (overweight), 2.45% (obese) and 1.05% (morbidly obese). Overall prevalence of type 2 DM was 0.89%. Prevalence of type 2 DM differed significantly by the weight status: 0.63% (neither overweight nor obese), 1.93% (overweight), 5.56% (obese) and 11.6% (morbidly obese) ($P < 0.0001$). **Conclusion:** Prevalence of type 2 DM increased as weight status increased in a dose-response fashion among youth inpatients of Florida. Longitudinal studies to assess the relationship between weight statuses and type 2 DM among children and adolescents are warranted.

1632-S/P

OBESITY IN THE LIFECOURSE AND BODY COMPOSITION

Gabriela Callo*, Bernardo Horta, Denise Gigante, Fernando Barros (Federal University of Pelotas)

This study was aimed to assess the relationship between overweight/obesity at different moments of the life course and body composition among young adults. These analyses were based on data from subjects who have been followed since birth in Pelotas, southern Brazil. At 30 years of age, 3701 subjects were interviewed and body composition was assessed using the Bod Pod, 2219 cohort members had at least one measure of weight and height in the three periods (childhood, adolescence and adulthood), 24% were never considered as overweight and 68.6% were never obese. Higher body mass index (BMI) and fat mass % (FM) at 30 years were observed among those who were overweight in the 3 periods or in adolescence and adulthood, whereas those with overweight/obesity only in childhood or adolescence had similar BMI and FM % mean to those who never were overweight/obese. Lower values of free fat mass % were observed on those who were always overweight or during adolescence and adulthood than those who never were overweight. The results indicate the benefit of early cessation of tracking of overweight/obesity.

1631-S/P

ASSOCIATION BETWEEN INCOME AND NUTRITIONAL STATUS IN CHILEAN CHILDREN: A SECONDARY ANALYSIS OF CHILEAN NATIONAL SOCIOECONOMIC CHARACTERIZATION SURVEY, 2011.

Adriana Angarita Fonseca*, Carlos Felipe Henriquez Roldan, Claudia Navarro Villarroel, Gloria Esperanza Prada (University of Saskatchewan; Universidad de Santander (UDES))

Background: Childhood nutritional status has become a major public health concern worldwide. Chile has the highest childhood obesity prevalence in Latin America. Some studies in Chile have shown a relationship between income and nutritional status as a dichotomy variable, but not as an ordinal variable. **Objective:** To establish the relationship between household income and nutritional status in children under age 7 in Chile. **Methods:** Secondary analysis of the Chilean National Socioeconomic Characterization (CASEN) Survey of 2011 was conducted (19869 children). Three categories of nutritional status (stunting or risk of stunting; normal weight; and overweight or obesity) were analyzed on the bases of their relationship with income quintiles, variables related with the children (sex, age, educational level, disability, and receiving food from the Chilean National Supplemental Nutrition Program –CNSNP-); variables related with the head of household (sex, age, occupational status, and educational level), and variables related with the housing (quality of the housing, overcrowding rate, sanitary conditions, number of children under age 7, region of Chile, and rural/urban classification). Crude and adjusted ordered logistic regressions under complex sampling were performed. **Results:** The prevalence of stunting or risk of stunting was 3.67% (95% CI 3.19-4.22) and the prevalence of overweight or obesity was 14.06% (95% CI 12.83-15.39). Income was associated with nutritional status [Q5: Reference group, Q4: OR= 1.43 (95% CI 1.12-1.84), Q3: OR= 1.26 (95% CI 1.04-1.51), Q2: OR = 1.56 (95% CI 1.17-2.10), Q1: OR=1.44 (95% CI 1.14-1.82)] adjusted by head of household's education level, children's educational level, receiving food of the CNSNP and quality of the housing. Linktest: 0.767. Wald test of parallel lines: 0.4178. **Conclusion:** Lower income has a profound impact on nutritional status in the Chilean context. Programs targeted at reducing health inequalities should continue being a priority.

1633-S/P

THE EFFECT OF PERCEIVED SAFETY, AND NEIGHBOURHOOD PHYSICAL CHARACTERISTICS ON LEVELS OF PHYSICAL ACTIVITY IN THREE PERI-URBAN AREAS IN CAPE TOWN, SOUTH AFRICA

Tali Cassidy* (Boston University/ University of Cape Town)

Background: As developing countries become increasingly urbanised, non-communicable diseases are a growing concern because of changing lifestyles, including poor diet and low physical activity. Our large household survey in three rapidly expanding peri-urban areas in Cape Town, South Africa, investigated the relationship between physical activity, and social, demographic and physical neighbourhood characteristics. **Methods:** Census data, area type (formal/informal) and information on green spaces, parks and sports facilities, were linked to geo-located household survey data on reported level of physical activity (n=1500), measured by the International Physical Activity questionnaire (IPAQ). Participants were also asked about perceived neighbourhood safety and experiences of violence and crime. **Results:** Physical activity is significantly related to perception of neighbourhood safety and neighbourhood cleanliness. While people in formal areas are more likely to do vigorous physical activity, people living in informal areas, where transport may be less accessible, do significantly more light and moderate physical activity such as walking. Heat maps illustrate other important factors such as neighbourhood poverty and distances from and quality of facilities and parks, though these are closely related to perceived safety and socio-economics. **Conclusion:** Mapping physical characteristics of neighbourhoods is useful in illustrating access to recreational facilities and spatial inequalities, but perceived safety and order of neighbourhood and parks also play an important role in physical activity.

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SATISFACTION WITH THE BODY WEIGHT IN ADOLESCENTS WITH EXCESS WEIGHT: POPULATION BASED STUDY Antonio de Azevedo Barros-Filho*, Mariana Contiero San Martini, Daniela de Assumpção, Marilisa Berti de Azevedo Barros (State University of Campinas (UNICAMP))

INTRODUCTION: The increase of excess weight is an important public health problem that increases the risk of various non-communicable-diseases. The adolescence is a stage of life with many changes that can interfere with the construction of the body self-image. **OBJECTIVE:** To evaluate the prevalence of satisfaction with body weight in overweighted and by simple and multiple Poisson regression. **METHOD:** Cross-sectional population-based study, conducted with adolescents between 10 to 19 years old, living in Campinas, São Paulo - ISACamp, from February 2008 to April 2009. The sample was stratified by clusters and in two stages: census tracts and households. Nutritional status was assessed by body mass index (BMI) [weight (kg)/height (m²)], calculated using informed weight and height. We used the BMI cutoffs for age, recommended by the World Health Organization. The association between satisfaction with the weight and the independent variables – socio-demographic, behavior related to health and morbidity - was performed using the chi-square test at 5% significance level. Prevalence ratios (PR) crude and adjusted were estimated. **RESULTS:** 217 adolescents were evaluated with a mean age of 13y (CI95% 12.6-13.5). It was found a higher prevalence of satisfaction with body weight in individuals 10-14 years (PR = 2.51; 95% CI: 1.44-4.38), in those having 8 to 15 equipments at home (PR = 2.31; CI95%: 1.29-4.14), and 16 or more (PR=2.48; CI95%: 1.40-4.40) those using computer for more than 2 hours/day (PR = 1.22; 95% CI: 1.01-1.48), those that mentioned at least one chronic disease (PR = 1.31; 95% CI: 1.10-1.56) and two or more health complaints (RP = 1.66; 95% CI: 1.30-2.13). **CONCLUSION:** Adolescents 10-14y, those who had eight or more appliances at home, those who have more daily exposure to the computer, those with the presence of chronic disease and two or more health complaints showed higher prevalence of body weight.

1636

THE ASSOCIATION BETWEEN OBESITY AND NATIVITY STATUS AMONG ADULTS IN THE UNITED STATES, 2011-2014 Cheryl Fryar*, Tala Fakhouri, Margaret Carroll, Cynthia Ogden (CDC/ National Center for Health Statistics)

To examine the relationship between obesity in the United States and nativity status (foreign-born vs. US-born), data on 10,620 adults aged 20 years and older from the 2011-2014 National Health and Nutrition Examination Surveys (NHANES) were used. Measured height and weight were used to determine obesity, (body mass index ≥ 30 kg/m²). NHANES survey design features, which include weighting, stratification and clustering, were incorporated into the analysis. Differences between groups were tested using a t-statistic at the $p < 0.05$ significance level. Logistic regression was used to examine the association between obesity and nativity status, adjusting for sex, age group (20-39, 40-59, 60+), race-Hispanic origin (non-Hispanic white, non-Hispanic black, non-Hispanic Asian, Hispanic), and education ($<$ high school, high school, $>$ high school). There was no interaction between nativity status and cofactors in the model. Approximately, 38% of US-born and 29% of foreign-born adults were obese ($p < 0.0001$). For each sex, age, race-Hispanic, and education group, US-born adults had significantly higher prevalence of obesity than foreign-born adults, except for non-Hispanic Asians and adults with less than a high school education. Overall, US-born adults had higher odds for obesity than foreign-born adults, (unadjusted OR 1.49, 95% CI 1.33-1.67). This finding persisted after adjusting for sociodemographic factors. That is, US-born adults had approximately 65% increased odds of being obese than foreign-born adults (adjusted OR 1.65, 95% CI 1.43-1.91). In a separate adjusted model with foreign-born adults categorized by years in US, even adults who had been in the US more than 20 years had decreased odds of being obese compared to US-born adults. These findings underscore the need for further research to understand the disparities in obesity among those who are foreign-born in the US population.

1635-S/P

WEB-BASED SELF-REPORTED ANTHROPOMETRY IN THE NUTRITIONIST HEALTH STUDY: VALIDATION Luciana D Folchetti*, Isis Tande da Silva, Renata Vidonsky Luthold, Bianca Waltrick, Briana Duarte, Bianca de Almeida Pititto, Sandra R G Ferreira (Department of Nutritional in Public Health, School of Public Health, University of Sao Paulo, Brazil)

Introduction: In epidemiological studies, self-reported measurements of weight and height provide access to this information with good quality and low cost. Few have evaluated the validity of self-reported anthropometric data collected via web. **Objective:** To analyze the correlation and concordance of weight, height and BMI values collected electronically compared to direct measurements in participants of the Nutritionists' Health Study (NutriHS). **Methods:** The NutriHS involves undergraduates and graduates of Nutrition course; in its first cross-sectional phase, were applied online questionnaires with self-reported weight and height. This phase was followed by a face-to-face visit where participants had height, weight and waist circumference measured by trained personnel. The differences between self-reported and measured values as well as the correlation and concordance between these measures were calculated. It was also evaluated the correlation between BMI classification from the self-reported data and measured ones. **Results:** The sample included 144 participants (92.7% women, 24.4 \pm 6.7years). The self-reported and measured showed a strong correlation for weight ($r=0.965$, $p<0.001$), height ($r=0.928$, $p<0.001$) and BMI ($r=0.944$, $p<0.001$). Mean values of self-reported and measured showed no statistically significant differences. The difference between self-reported and measured weight was -0.21kg, while differences for height and BMI were 0.04cm and -0.22kg/m², respectively. The Bland-Altman analysis showed good concordance between all parameters, while the occurrences of positive and negative differences were similar in the evaluation of cumulative survival. The concordance of BMI classification obtained through the Kappa index was 0.77. **Conclusions:** Online collection of anthropometric data (weight, height and BMI) represents a valid and suitable method for obtaining these measurements, particularly when dealing with individuals related to the health care area.

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USING A SIBLING DESIGN TO EXAMINE THE ASSOCIATION OF BREASTFEEDING WITH EARLY CHILDHOOD OBESITY Summer Hawkins*, Sheryl Rifas-Shiman, Christopher Baum, Matthew Gillman, Elsie Taveras (Boston College)

The majority of epidemiological research examining the relationship between breastfeeding and childhood obesity has been from traditional observational studies, which produce associations but do not prove causation. However, few studies have been able to control for known confounding by sociocultural determinants of both breastfeeding and obesity. We used data on 45,438 children (from 35,352 families) from the Linked CENTURY Study, a longitudinal clinical database of well-child visits linked to each child's birth certificate, which contains measured height/weight and hospital report that mothers started breastfeeding. In a series of linear regression models, we examined associations of breastfeeding initiation (yes/no) with age- and sex-specific body mass index (BMI) z-scores at 5 years based on the CDC 2000 growth reference. Model 1 was adjusted for child sex and year of birth, maternal race, education, age, marital status, number of children in the household, and family clustering; Model 2 was re-run among families with siblings; and Model 3 was a fixed effects (within-family) model fit among siblings and adjusted for child sex and year of birth. Overall, 41% (18,627) of the children were siblings and breastfeeding initiation (78% with siblings versus 75% without) and child BMI z-scores (0.48 versus 0.50, respectively) varied between those with and without siblings. In the full (Model 1) and sibling (Model 2) samples, children whose mothers started breastfeeding had lower BMI z-scores than children whose mothers did not (-0.09 ; 95% CI -0.12 , -0.07 and -0.10 ; -0.14 , -0.06 , respectively). In the sibling fixed effects model (Model 3), breastfeeding initiation remained protective (-0.07 ; -0.12 , -0.01). These results suggest that breastfeeding may be protective against obesity by shifting the entire BMI distribution. Our findings highlight the advantages of linking databases, which can help assess causality in observational studies.

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ASSOCIATION OF BIRTH WEIGHT AND ADULT ADIPOSITY – HETEROGENEITY AMONG MEN AND WOMEN IN ELSA-BRASIL Vivian Cristine Luft*, Gabriele Rockenbach, Alvaro Vigo, Sheila Maria Alvim Matos, Bruce Bartholow Duncan, Maria Ines Schmidt (Federal University of Rio Grande do Sul Background: Intrauterine life adversities may increase the risk of future adiposity.)

Objective: We investigated the relationship of birthweight with categories of excess weight, waist circumference (WC) and waist-to-hip ratio (WHR) in men and women participating in the Brazilian Longitudinal Study of Adult Health (ELSA-Brasil). **Methods:** ELSA-Brasil is a multicenter cohort study of 15,105 adults (35-74 years), of universities or research institutions of six capital cities. Weights at birth and 20 years of age were obtained by interview; all other anthropometry was measured at baseline. Odds ratio and 95% confidence intervals (OR and 95% CI) for the association between birth weight with overweight/obesity and upper tertiles of WC and WHR were estimated using ordinal logistic regression models (using the lowest outcome categories and the mid exposure categories as reference). Models included sociodemographics and family history of diabetes. **Results:** For those born with high birth weight, odds of greater adiposity were always higher. For those born with low birthweight, results were inconsistent, and associations were heterogeneous across categories of sex and family history of diabetes. We found greater odds of a high adult WHR in women but not in men (OR= 1.56, IC95% 1.20–2.03; OR= 1.40, IC95% 1.11– 1.76, respectively for 2nd and 3rd tertiles of WHR; p for interaction = 0.01). We found higher odds of obesity at age 20 in the presence of family history of diabetes (OR = 3.38, 95% CI 1.67 to 6.82; p for interaction = 0.02). **Conclusions:** Though high birthweight was uniformly associated with risk of adiposity in adulthood, low birthweight in women and in those with a family history of diabetes also conferred adiposity risk. These findings support the hypothesis that an unfavorable intrauterine environment induces metabolic dysfunction in adulthood through genetic and/or epigenetic mechanisms.

1640-S/P

MODIFICATION OF THE EFFECT OF PHYSICAL ACTIVITY ON OBESITY BY FRUITS AND VEGETABLE CONSUMPTION AND GENDER AMONG 105,850 INDIVIDUALS FROM 48 COUNTRIES Roch Nianogo*, Onyebuchi Arah (Department of Epidemiology, Fielding School of Public Health, University of California, Los Angeles (UCLA))

Given the documented healthful benefits of moderate-to-vigorous physical activity (MVPA) in fighting obesity and associated morbidity and mortality, countries are encouraged to pursue and implement physical activity guidelines for their citizens. However, there is increasing realization that single-component as well as one-size-fits-all interventions can be a wasteful use of scarce resources for obesity prevention. Studying to what extent this effect is differential for different groups of people, especially in the global context can be valuable. We assessed the heterogeneity of the effect of MVPA on obesity risk by fruits and vegetable consumption and by gender. We also estimated the joint effect of both MVPA and fruits and vegetable consumption on the risk of overweight and obesity. We used data from 105,850 participants in the World Health Survey (WHS), conducted in 70 countries from 2002 to 2004. We used a multivariable adjusted logistic mixed model with random intercepts for our analysis. MVPA had a protective effect on obesity risk among men (adjusted odds ratio, aOR: 0.85 (95% CI: 0.80–0.90)) and women (aOR: 0.88 (95% CI: 0.84–0.93). Likewise, the effect of MVPA among people who consume five fruits and vegetables or more daily was higher (aOR: 0.80; 95% CI: 0.74–0.86) than such effect among people who consume fewer than five fruits and vegetable daily (aOR: 0.88; 95% CI: 0.85–0.92). The joint effect of both MVPA and fruits and vegetable consumption was aOR: 0.90 (95%CI: 0.85; 0.94) and the relative excess risk due to interaction (RERI) is -0.12 (95% CI: -0.21; -0.02). This suggests a protective additive interaction of MVPA and fruits and vegetable consumption on obesity risk. These findings underscore the need to customize public health interventions that are tailored to specific groups of people, as smarter and cost-effective ways to prevent obesity around the world.

“-S/P” indicates work done while a student/postdoc

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ASSOCIATIONS OF CHILDHOOD ABUSE HISTORY, DEPRESSION, AND POSTTRAUMATIC STRESS DISORDER WITH WEIGHT STATUS IN WOMEN Susan Mason*, Richard MacLehose, Bernard Harlow, Patricia Frazier, Karestan Koenen, Janet Rich-Edwards (University of Minnesota School of Public Health)

Background: Women with a history of childhood abuse are at increased risk for obesity. Posttraumatic stress disorder (PTSD) and depression symptoms are mental health conditions common among those with childhood abuse that are also risk factors for obesity. We examined the joint impact of childhood abuse and PTSD/depression symptoms on adult body mass index (BMI, kg/m²) among 4245 women in the Growing Up Today Study. **Methods:** We used linear regression to model BMI at age 25-33 years as a function of abuse prior to age 18 (physical, sexual, or emotional, categorized by the most severe experience as none, mild, or severe) and PTSD and depression at age 22-30 years, adjusting for sociodemographics and BMI at study baseline (age 9-16 years). From these models we estimated the adjusted mean BMI for each category of abuse and mental health symptom exposures as well as the differences between those categories. **Results:** 31% of participants had experienced mild and 15% had experienced severe abuse in childhood. Childhood abuse and mental health symptoms were each associated with elevated BMI. Compared to women no history of child abuse or mental health symptoms, women who had experienced severe abuse were on average 0.8 kg/m² (95% CI: 0.1, 1.5) heavier if they reported neither PTSD nor depression symptoms, 1.3 kg/m² (95% CI: 0.5, 2.1) heavier if they reported PTSD or depression symptoms (but not both), and 2.0 kg/m² (95% CI: 0.8, 3.2) heavier if they reported both PTSD and depression symptoms. Abuse-mental health interaction terms were not significant. Mean BMI at age 25-33 years, adjusted for sociodemographics and baseline BMI, ranged from 24.5 kg/m² among those with no abuse or mental health symptoms to 26.5 kg/m² among those with severe abuse and both PTSD and depression symptoms. **Conclusions:** Childhood abuse and young adult PTSD/depression symptoms are each associated with young adult BMI, with additive impacts when both are experienced together.

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SOCIAL MOBILITY AND OBESITY IN THE NEWCASTLE THOUSAND FAMILIES STUDY Mark Pearce*, David Chalton, Louise Hayes (Newcastle University)

Background: Membership of and movement between social classes are associated with differences in multiple health outcomes, including obesity. Obesity is associated with over 10,000, mostly preventable, deaths in the UK each year, and an estimated £5Bn in direct healthcare costs, with wider annual economic societal costs of around £27Bn. **Aim:** To investigate associations between social mobility and obesity at ages 49-51 and 61-63 years in the Newcastle Thousand Families Birth Cohort. **Methods:** Validation of self-reported height, weight and BMI was performed. Relationships between social mobility trajectory groupings, spanning multiple parts of the life course, and clinically-measured BMI and obesity were explored. **Results:** Cross sectional validation of self-reported data at age 49-51 revealed a bias in height and weight measurements in men and women compared to clinically-measured values. Female upwards mobility was associated with lower BMI compared to a stable manual work environment. Male late-life upwards mobility was associated with a significantly higher BMI increase between ages 49-51 and 61-63 and higher BMI at 61-63 years. Those in stable manual social class groups ages 5-49 years were more likely to be obese compared to those in non-manual environments even after correction for sex, physical activity and smoking status (OR 3.43, 95%CI: 1.32,8.92). **Conclusions:** Self-reported weight and height values in this cohort are unreliable. Few consistent trends between social mobility and BMI were detected for either sex. Male late-life upwards mobility (compared to downwards or social stability) is associated with a negative health outcome in terms of BMI.

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OBESITY DURING ADOLESCENCE AND DENTAL CARIES IN A BIRTH COHORT AT 18 YEARS IN SOUTHERN BRAZIL

Alexandre Silva*, Ana Maria Menezes, Maria Cecilia Assunção, Flávio Demarco, Marco Peres (Postgraduate Programme in Dentistry, Federal University of Pelotas, Pelotas, Brazil)

The aim of the present study was to evaluate the association between obesity throughout adolescence and dental caries at 18 years of age. Data were acquired from follow-up evaluations of a 1993 birth cohort in Pelotas, Brazil. The outcomes were the decayed, missed and filled teeth (DMFT) index and increase in the DMFT index from 12 to 18 years. Overweight/obesity was evaluated by weight and height using the reference curves of the World Health Organization: overweight/obesity +1 z-score. The trajectory of overweight/obesity was plotted from 11 to 18 years and categorized as never overweight, overweight at 11, overweight at 18 and always overweight. The DMFT index at 18 years was determined by a dentist who had undergone a training and calibration exercise. Negative binomial and Poisson regression models were used in the analyses, with adjustments for confounding variables. After the statistical tests, “visits to the dentist” was incorporated as an effect modifier. A total of 1014 adolescents were evaluated, 33% of whom had DMFT=0 at 18 years. No significant association was found between obesity in adolescence and caries at 18 or an increase in the DMFT index between 12 and 18 years. Stratifying the analysis by “visits to the dentist”, individuals with overweight/obesity who had not visited the dentist in adolescence had lower DMFT indices at 18 years (Mean Ratio: 0.62; 95% CI: 0.40-0.94). In conclusion, no association was found between the trajectory of obesity in adolescence and dental caries.

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ASSOCIATION OF BIRTH WEIGHT AND ADULT ADIPOSITY – HETEROGENEITY AMONG MEN AND WOMEN IN ELSA-BRASIL

Vivian Cristine Luft*, Gabriele Rockenbach, Alvaro Vigo, Sheila Maria Alvim Matos, Bruce Bartholow Duncan, Maria Ines Schmidt, (Federal University of Rio Grande do Sul)

Background: Intrauterine life adversities may increase the risk of future adiposity. **Objective:** We investigated the relationship of birthweight with categories of excess weight, waist circumference (WC) and waist-to-hip ratio (WHR) in men and women participating in the Brazilian Longitudinal Study of Adult Health (ELSA-Brasil). **Methods:** ELSA-Brasil is a multicenter cohort study of 15,105 adults (35-74 years), of universities or research institutions of six capital cities. Weights at birth and 20 years of age were obtained by interview; all other anthropometry was measured at baseline. Odds ratio and 95% confidence intervals (OR and 95% CI) for the association between birth weight with overweight/obesity and upper tertiles of WC and WHR were estimated using ordinal logistic regression models (using the lowest outcome categories and the mid exposure categories as reference). Models included sociodemographics and family history of diabetes. **Results:** For those born with high birth weight, odds of greater adiposity were always higher. For those born with low birthweight, results were inconsistent, and associations were heterogenous across categories of sex and family history of diabetes. We found greater odds of a high adult WHR in women but not in men (OR= 1.56, IC95% 1.20–2.03; OR= 1.40, IC95% 1.11– 1.76, respectively for 2nd and 3rd tertiles of WHR; p for interaction = 0.01). We found higher odds of obesity at age 20 in the presence of family history of diabetes (OR = 3.38, 95% CI 1.67 to 6.82; p for interaction = 0.02). **Conclusions:** Though high birthweight was uniformly associated with risk of adiposity in adulthood, low birthweight in women and in those with a family history of diabetes also conferred adiposity risk. These findings support the hypothesis that an unfavorable intrauterine environment induces metabolic dysfunction in adulthood through genetic and/or epigenetic mechanisms.

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SMOKING, OBESITY AND CHRONIC DISEASE MORTALITY IN NORTH CAROLINA COUNTIES: AN ECOLOGICAL STUDY

Matthew Spangler*, John Spangler (Wake Forest School of Medicine)

Purpose: To evaluate the potential mortality impact of NC public health budget cuts, this ecological study examined the relationship between 2008 county level smoking and obesity rates and 2010 mortality rates quantifying the adverse effects of tobacco use and obesity on county level mortality. **Methods:** NC county-level smoking and obesity rates from the CDC for 2008 were reported as percent of the county population for all 100 counties. County level demographic data and selected disease specific mortality rates per 100,000 county population were obtained from the NC State Center for Health Statistics. Linear regression analysis determined the association between 2008 county level smoking and obesity rates and 2010 mortality rates from all causes; total cancer; heart disease and diabetes, controlling for county covariates. **Results:** Smoking and obesity rates together accounted for 79% of all cause mortality variance, including 83% of the variance for total cancer mortality and 58% of the variance for heart disease mortality. Obesity, but not smoking, accounted for 69% of diabetes mortality variance across NC counties. County demographic covariates were not statistically significant. The analysis indicates that for every 1% increase or decrease in smoking or obesity rates at the county level there is a corresponding increase or decrease of approximately 3 “all cause” deaths per 100,000 county level population. **Conclusions:** The biggest contributors to total mortality as well as mortality from heart disease, cancer and diabetes rate for North Carolina counties were preventable, namely obesity and smoking. Cuts in public health programs in NC addressing obesity and smoking will have quantifiable mortality effects, which could impact policy decisions.

1650

SHIFTWORK AND CHANGE IN ENDOTHELIAL FUNCTION AMONG POLICE OFFICERS Luenda Charles* (CDC/NIOSH)

Background: Endothelial function has been shown to decrease after night shift work in at least one study. Our objective was to determine the effect of working any of three shifts (day, afternoon, night) on change in endothelial function over an average of seven years. **Methods:** This longitudinal study was conducted in 188 police officers (78.2% men) enrolled in the Buffalo Cardio-Metabolic Occupational Police Stress (BCOPS) study. Shiftwork status was assessed objectively using daily Buffalo, NY payroll work history records. The shift worked in the previous year was used in these analyses. Brachial artery flow-mediated dilation (FMD) was assessed using ultrasound. Brachial FMD percent was computed with the formula: maximum diameter – baseline diameter/baseline diameter multiplied by 100. Mean values of change in FMD% between the follow-up exam (2010-2015) and baseline exam (2004-2009) were compared across categories of shiftwork (at baseline) using analysis of variance/covariance. **Results:** Officers had a mean age of 41.3 years (SD=7.2). Overall, the mean FMD% decreased from the baseline (5.74 ± 2.83) to the follow-up exam (3.88 ± 2.11) among all officers; $p < 0.0001$. Analyses were computed separately for men and women due to significant effect modification by gender ($p = 0.039$). Among men, those who worked on the day shift had a smaller mean (\pm SE) decrease in FMD% (-0.89 ± 0.35) compared to those who worked the afternoon (-2.69 ± 0.39 ; $p = 0.001$) or the night shift (-2.31 ± 0.45 ; $p = 0.020$) after adjustment for age, percent body fat, educational level, and second job status. Shiftwork was not associated with change in FMD% among women. **Conclusions:** Among male officers only, work on the day shift resulted in a smaller decline in FMD% over a seven-year period compared to work on the afternoon or night shifts. Further investigation of the potential influence of shiftwork status on endothelial function is warranted.

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SEVEN-YEAR CHANGE IN CARDIOVASCULAR HEALTH AMONG POLICE OFFICERS Tara Hartley*, Cecil Burchfiel, Ja Gu, Michael Andrew, Desta Fekedulegn, John Violanti (National Institute for Occupational Safety and Health)

Police officers have more adverse levels of traditional and non-traditional cardiovascular disease (CVD) risk factors compared to the general population. Yet a comparison of how those risk factors change over time has not been previously explored. We assessed the seven-year change in poor, intermediate and ideal levels of cardiovascular health (CVH) among a cohort of police officers. The sample included 200 CVD-free police officers who participated in baseline and 7-year follow-up examinations of the Buffalo Cardio-metabolic Occupational Police Stress (BCOPS) Study. CVH was defined using American Heart Association criteria and included ideal, intermediate and poor levels for four health behaviors [cigarette smoking, body mass index (BMI), physical activity, diet] and three health factors (total cholesterol, blood pressure, fasting glucose). Means (SD) and percentages were calculated; p-values for differences between exams were from McNemar's test and paired t-test. Of the 200 officers, 73% were male, 80% white, and mean age at baseline was 39.5 years. Baseline prevalence of ideal CVH levels were highest for cigarette smoking (82.5%) and fasting glucose (83.0%), and lowest for diet (0.0%) and BMI (21.0%). Prevalence of ideal CVH declined from 19.0% to 14.5% at follow-up. The mean number of ideal components decreased significantly from 3.4 ± 1.3 at baseline to 3.2 ± 1.2 at follow-up (p -value=0.004). A significant improvement in cigarette smoking (p -value=0.002), and significant declines in ideal levels of BMI (p -value<0.001), total cholesterol (p -value=0.024), and fasting glucose (p -value=0.007) were found. We found an overall low prevalence of ideal CVH among this group of police officers, particularly for diet and BMI. Prevalence of ideal CVH decreased over seven years of follow-up with the greatest declines in fasting glucose, total cholesterol, and BMI. Future analyses will help to determine factors associated with the decline in CVH.

1651

OCCUPATIONAL SURVEYS OF BRAZIL (2005-2015): A DESCRIPTIVE APPROACH Tatiana Gobbi Mendes de Castro*, Ada Ávila Assunção (Universidade Federal de Minas Gerais, Brasil)

The scientific production in the Occupational Health field has been increasingly relevant with improvement in the quality and quantity of publications. The cross-sectional studies are often used to provide instant information on working conditions, employment and morbidity in the group of workers. However, the literature encourages the development of consensus methodology to enable comparison between results obtained in different occupational groups in different countries. In this line of thought, advancement and empowerment of sectoral programs and policies are expected. The aim of this study is to investigate the Occupational Surveys conducted in Brazil, in the period of 2005-2015. This is a descriptive study in which the selection of Occupational Surveys was carried out by identifying publications in indexed channels in the databases Medline, Lilacs and Scielo. At the same time, reports, and unindexed technical documents as well as theses and dissertations registered in the national library of such publications were surveyed. The data analysis discriminates the description of the main characteristics of the selected investigations in accordance with the techniques and tools used by researchers, scope (study population), and main results according to type of occupation or professional category searched. **Key words:** occupational health, health surveys, research methods

1653-S/P

EVIDENCE FROM THE RECRUITED FIREFIGHTERS' ASSESSMENT OF SAFETY AND HEALTH (REFLASH) PILOT STUDY Rachel Levy*, NatashaSolle, BreAnne Young, Erin Kobetz, David Lee, Tyler Harrison, Alberto Caban-Martinez (University of Miami Miller School of Medicine)

Purpose: Despite unique exposure to substances that are cancer-causing agents in the line of duty, the main health and safety concerns of "rookie" firefighters have not been studied. In the present pilot study, we examine the early perceptions of health and safety risks among newly recruited firefighters. **Methods:** Quantitative and qualitative methods were used in a cross-sectional study design to better understand the experiences and perceptions of health among newly recruited firefighters. We conducted structured interviews and focus groups with questions pertaining to perception of hazards at work, starting a new job, cancer risk for anticipated job exposures, and open-ended questions regarding general concerns about work and health. An 18-item demographic and work characteristics survey was also administered. **Results:** Five focus group sessions were conducted with a total of 57 male firefighters of mean age 30.3 ± 2.7 standard deviation. Group sessions were divided based on work experience, including: no work experience, 5 years experience and >5 years of experience. The main theme that emerged from the data was that firefighters enter their profession with a "high risk, high reward" mindset. Three sub-themes emerged as main health concerns for active firefighters: chronic illness (e.g. cancer and heart disease), high stress levels, and long-term effects of diet and sleep patterns. **Conclusion:** Firefighters in this pilot study were more concerned with the long-term effects of the fire service rather than the immediate dangers of fighting fires. Chronic illnesses including cancer and heart disease were discussed extensively in each focus group, as well as the long-term effects of stress and sporadic eating and sleeping patterns. Development of a quantitative survey instrument to assess early health and safety perceptions among newly recruited firefighters is warranted.

1654-S/P

CONDIÇÕES PRECÁRIAS DE EMPREGO E SAÚDE DE MOTORISTAS E COBRADORES METROPOLITANOS, BRASIL

Mariana Simões*, Ada Ávila Assunção (Universidade Federal de Minas Gerais)

Objetivo da presente pesquisa foi investigar a relação entre a situação de saúde e a precariedade das condições de emprego de motoristas e cobradores do transporte coletivo metropolitano. Mundialmente, foram registradas associações entre condições de trabalho inadequadas no setor e hábitos de vida nocivos e morbidades crônicas na categoria. Adotou-se o referencial multidimensional da condição de precariedade no trabalho para desenvolver a metodologia e análise dos dados. O estudo transversal coletou dados em 2012, nas cidades de Belo Horizonte, Betim e Contagem. Consideraram-se como elegíveis motoristas e cobradores (17.470 trabalhadores) para o cálculo amostral: 1126 trabalhadores selecionados por quotas e estratificados por ocupação. Na etapa piloto (n=30) a confiabilidade foi aferida por meio da reaplicação de perguntas. Nove variáveis (proxys) foram utilizadas na construção de um escore de precariedade (zero - não precário a 9 - elevada precariedade). O escore foi agrupado em quartis, do primeiro (menos precário) ao quarto (mais precário). Foram examinados auto-avaliação de saúde, diagnóstico médico de depressão e de distúrbio do sono, transtornos mentais comuns, dor musculoesquelética e absenteísmo doença. O qui-quadrado de Pearson χ^2 foi utilizado na análise bivariada e a regressão de Poisson nos modelos ajustados por variáveis sociodemográficas (sexo, idade e escolaridade). No grupo estudado (853 motoristas e 754 cobradores) encontrou-se maioria de homens, com idade inferior a 40 anos, casados ou em união estável, com nível médio de escolaridade e que se autodeclararam pardos ou negros. Na análise ajustada, as prevalências de todos os eventos de saúde foram significativamente maiores no quarto quartil de precariedade comparado ao primeiro quartil. Piores resultados de saúde foram associados aos indicadores de precariedade, com destaque para os sintomas mentais.

1656-S/P

PATERNAL OCCUPATIONAL EXPOSURES AND RISK OF SPORADIC RETINOBLASTOMA AMONG OFFSPRING

Negar Omidakshsh* (UCLA)

Retinoblastoma is the leading form of eye cancer affecting young children and can result in a malignant tumor in one eye (unilaterally) or in both eyes (bilaterally). The majority of sporadic bilateral cases are due to an allele mutation occurring before conception in the paternal germ line cells, thus occupational exposures are important potential risk factors to study. Exposure data were obtained from 282 unilateral and bilateral sporadic retinoblastoma cases, diagnosed between 2006 and 2012, and 155 matched controls. Case fathers were interviewed by trained personnel and asked detailed questions regarding their last 10 years job history. Our hypothesis is that paternal occupational exposure to any or all of pesticides, welding fumes, non-welding metals, sulfur dioxide (SO₂), polycyclic aromatic hydrocarbons (PAH), ionizing radiation, paints, chlorinated volatile organic compounds (VOC) and/or non-chlorinated and non-paint VOCs will be associated with increased risk of sporadic retinoblastoma. A trained occupational hygienist has been hired to rate all paternal occupational exposures for the abovementioned toxins and create a job exposure matrix assigning frequency, exposure probability, and overall exposure scores. Data will be analyzed in SAS for potential associations among both 10-year cumulative exposure as well as exposure levels in the year prior to conception. In a separate sub-analysis, we will look at whether the risk of retinoblastoma is increased among fathers with low-income vs. high-income jobs, as well as physically-demanding vs. physically-undemanding jobs.

1655-S/P

JOINT EFFECTS OF PSYCHOSOCIAL WORK FACTORS AND INFORMAL CAREGIVING ON LONG-TERM SICKNESS ABSENCE: A MULTI-COHORT STUDY

Jesper Mortensen*, Jesper Nadya, Dich Theis Lange, Kristina Alexanderson, Marcel Goldberg, Jenny Head, Mika Kivimaki, Ida Madsen, Reiner Rugulies, Jussi Vahtera, Marie Zins, Naja Hulvej Rod (University of Copenhagen, Denmark)

Objectives: To investigate the joint effects of psychosocial work factors and informal caregiving on long-term sickness absence with special attention to gender differences. **Methods:** Prospective cohort study of 26,800 working adults from three European cohorts. Psychosocial work factors were assessed using the demand/control model. Informal caregiving was defined as care for a sick, disabled or elderly person. Sickness absence was registered during two years follow-up. We used recurrent-events Cox regression in random-effects meta-analysis. **Results:** A total of 12 % of men and 21 % of women had at least on spell of long-term sickness absence during follow-up. Low control (HR=1.13; 95%CI: 1.01-1.25) and informal caregiving (HR=1.15; 95%CI: 1.05-1.24) were individual risk factors for sickness absence in women. Women with low demand or high control jobs providing informal caregiving were at increased risk of sickness absence with (HR=1.18; 95%CI: 1.05-1.32) and (HR=1.25; 95%CI: 1.10-1.41) respectively. These estimates did not change noteworthy for women with high demand or low control providing caregiving. **Conclusions:** Women who provide informal caregiving may be vulnerable to long-term sickness absence irrespectively of psychosocial work factors.

1657

UPDATE OF CANCER MORTALITY AMONG WORKERS EXPOSED TO TOLUENE DIISOCYANATE IN THE US POLYURETHANE FOAM INDUSTRY

Lynne Pinkerton*, James Yiin, Robert Daniels, Kenneth Fent (National Institute for Occupational Safety and Health, Cincinnati, OH, USA)

Background: We evaluated mortality among 4545 toluene diisocyanate (TDI)-exposed workers. The primary outcome of interest, based on previous studies, was lung cancer. **Methods:** We ascertained vital status through 2011 and conducted life table analyses including internal analyses by ten year lagged exposure duration and cumulative TDI exposure. **Results:** Lung cancer mortality was elevated in both men (standardized rate ratio (SMR)=1.30; 95% confidence interval (CI)=1.01-1.64) and women (SMR=2.27; 95% CI=1.70-2.96) compared with the US general population. Lung cancer mortality was not associated with exposure duration or cumulative TDI exposure. In post hoc analyses, lung cancer mortality was associated with employment duration in finishing jobs (lagged by ten years), but not in finishing jobs involving cutting polyurethane foam. **Conclusions:** The findings suggest that dermal exposure to TDI may play a role in the observed increase in lung cancer mortality. Limitations include the lack of smoking data, uncertainty in the exposure estimates, and exposure estimates that reflected inhalational exposure only.

1658

RISK COMPARISON OF MALIGNANT MESOTHELIOMA IN INDUSTRIAL VERSUS SHIPYARD PIPEFITTERS AND PLUMBERS: A PRELIMINARY META-ANALYSIS Alexander Riordan*, Shae Selix, Peter Ruestow, Kara Keeton, Gary Marsh (Cardno ChemRisk)

Objective: As a result of their job duties, including manipulation of pipe material and work near amphibole asbestos containing insulation, epidemiology studies of pipefitters and plumbers have revealed elevated rates of malignant mesothelioma (MM). Nonetheless, the exposure potential to insulation products is believed to differ between pipefitters and plumbers working in shipyards versus those working in industrial settings. Therefore, a preliminary meta-analysis was performed to estimate and compare summary measures of MM risk for pipefitters and plumbers by occupational setting. **Methods:** A systematic search of Pubmed for peer-reviewed literature was conducted to identify articles that provided effect estimates for MM in pipefitters and plumbers. Studies were included in our analysis if they provided effect estimates and variances for confirmed MM cases in white males (based on histological/pathological identification or through registries) for shipyard or industrial pipefitters and plumbers, separately. A random-effects meta-analysis was conducted and aggregated effect estimates for pipefitters and plumbers in both occupational settings were calculated. **Results:** We identified 204 relevant publications and eight met the inclusion criteria. Statistically significant meta-RRs were found for shipyard and industry combined (meta-RR: 6.77, 95% CI: 4.72-9.71); industry only (meta-RR: 6.06, 95% CI: 3.15-11.65) and shipyard only (meta-RR: 11.66, 95% CI: 5.50-24.72). We found that the meta-RR for shipyard pipefitters and plumbers was nearly two-fold that for industrial workers. **Conclusions:** The risk of MM was found to be higher in pipefitters and plumbers occupationally exposed in shipyards compared with industrial settings. This preliminary analysis underscores the importance of employment setting in deriving valid risk estimates for MM among pipefitters and plumbers.

1660-S/P

WORKPLACE HEALTH AND SAFETY INFORMATION PREFERENCES AMONG YOUTH WORKERS: EVIDENCE FROM THE FLYE.CO WEBSITE PILOT STUDY Katerina Santiago*, Tainya Clark, Julie Hollenbeck, Manuel Ocasio, Lora Fleming, David Lee, Alberto Caban-Martinez (University of Miami Miller School of Medicine)

Background: Youth workers (age 14-24 years) often have high occupational injury rates compared with the older workforce. Inexperience and lack of safety training may increase injury risks for these youth workers. Despite elevated injury rates, few worksite health and safety strategies exist for youth workers prior to the start of and during their job. As part of a dissemination component of an ongoing occupational health research study, we created the Florida Young Employee Health Project website. The website provides wellness, occupational health and safety information, as well as youth worker study results relevant to youth workers. **Methods:** To assess and understand what youth would find useful on the website and in the workplace, a short open and closed-ended online questionnaire was administered to a convenience sample of 161 youths aged 14-24. Survey items were assessed for acceptability, behaviors, interest, and the use of incentives in an employer-provided health and wellness program. **Results:** 72.6% of respondents said they would use an employer-provided health and safety program if offered. If the program offered options, 75.0% of all respondents would use an onsite gym, while only 13.8% would use weight-loss support. Female youth workers were significantly more interested than male in utilizing stress reduction support ($X^2=6.7903$; $p<0.01$) and nutrition information (5.413; $p<0.02$) options. Non-interested respondents cited "schedule conflicts/timing" (20%) as the most frequent non-motivators and "getting time off/being allowed to participate in the program" (20%) as motivators for participation in a wellness program. **Conclusions:** Workplace wellness programs were found to be of strong interest to youth participating in this study. The motivational factors for these programs identified in this study could provide guidance for the development of targeted occupational health information to youth engaging in work.

1659

EFFECTS OF OCCUPATIONAL EXPOSURE TO ENDOCRINE DISRUPTORS AND WORK-RELATED STRESS ON PREGNANCY OUTCOME Nel Roeleveld*, Maya Schulpen, Marleen van Gelder (Department for Health Evidence, Radboud university medical center, Nijmegen, The Netherlands)

Over the past decades, the labor participation rate among women of reproductive age in Europe has gradually increased and with it the chances of being exposed to chemical, physical, and psychosocial factors that may negatively influence pregnancy. Therefore, we investigated the effects of maternal occupational exposure to endocrine disruptors and work-related stress during pregnancy on birth weight and gestational age. The study was conducted among women participating in the PRegnancy and Infant DEvelopment (PRIDE) Study. Based on job titles and descriptions, a job exposure matrix was used to assess the probabilities of exposure to endocrine disruptors. In addition, the level of work-related stress was measured in gestational week 17 by a validated version of the Job Content Questionnaire. Birth weight, low birth weight, gestational age, and preterm birth were the main outcome measures. For confounding adjusted effect estimates were calculated using linear and logistic regression analyses. In total, 1369 women who had a singleton pregnancy resulting in a live birth between January 1st 2012 and May 1st 2015 were included. Infant birth weights were reduced by 200 to 300 grams after maternal exposure to ethylene glycol ethers (EGEs), alkylphenolic compounds, and metals, in particular mercury. In contrast, exposure to EGEs and alkylphenolic compounds seemed to prolong gestation by 5 days. High total job demands and high job strain increased the risk of delivering a low birth weight infant (OR 3.1, 95%CI 0.9-11.3 and OR 3.3, 95%CI 0.9-12.1, respectively). Moderate/high job control was associated with a reduced risk of preterm birth (OR 0.5, 95%CI 0.3-1.1). This study indicated that employment during pregnancy may adversely affect infant birth weight via occupational exposure to endocrine disruptors or work-related stress, whereas prenatal exposure to endocrine disruptors and increased job control may benefit gestational age and reduce the risk of preterm birth.

1661-S/P

ANALYSIS OF SEASONAL INFLUENZA VACCINATION COVERAGE AMONG HEALTHCARE WORKERS AT A LARGE, UNIVERSITY HEALTHCARE SYSTEM, 2010-2011 Sharleen Traynor*, Rafael Campo, David Lubarsky, Susanne Doblecki-Lewis, Kristopher Arheart, David Lee, Lora Fleming, Alberto Caban-Martinez (University of Miami)

Objective: Influenza vaccination coverage among healthcare workers (HCW) remains low despite proven efficacy and accepted infection control guidelines. This study explored influenza vaccination coverage among HCW employed at the University of Miami (UM) during the 2010-2011 flu season, compared coverage to the U.S. HCW population, and identified possible barriers to vaccination. **Methods:** All adult, full-time UM employees were required to complete an online questionnaire during benefits enrollment in October 2010. The survey assessed influenza vaccination coverage (defined as receipt of or intent to receive vaccine), job type, work location, and reasons for declining vaccination. Descriptive analysis of survey results and demographics was conducted. Chi-square tests were used to identify differences in coverage across groups. UM coverage was compared to national levels reported in the 2011 CDC Internet Panel Survey of HCW using one-sample Z tests. Logistic regression was used to identify significant factors predicting vaccine uptake and vaccine declination. **Results:** Vaccine coverage among all 10,823 employees was 54.8%. Coverage was higher among HCW (66.3%) than non-HCW (50.8%). UM HCW (n=2,771) coverage was higher than national HCW levels (63.5%) ($Z=3.062$, $p=0.002$). Physicians and clinician extenders were more likely to be vaccinated than non-clinical personnel (aOR=2.97 and aOR=1.85 respectively). Coverage for nurses and allied health professionals did not differ from that of non-clinical personnel. The primary reason specified for declining vaccination was fear of side effects (37.3%), although most decliners indicated "other" reasons for not being vaccinated. **Conclusion:** Even among at-risk HCW, influenza vaccination coverage remains inadequate. Further efforts to increase vaccination and explore vaccine declination are needed, especially among nurses and allied health professionals.

1662

PLEURAL PLAQUES AND LUNG FUNCTION IN THE MARYSVILLE WORKER COHORT: A RE-ANALYSIS Kirsten Zu*, Gloria Tao, Julie Goodman (Gradient In the 2014 Integrated Risk Information System (IRIS) assessment for Libby amphibole asbestos (LAA), US)

EPA calculated a Reference Concentration (RfC) based on the prevalence of pleural plaques in vermiculite workers in Marysville, Ohio. This RfC is based on the assumption that pleural plaques are associated with adverse lung function. We evaluated whether pleural plaques were associated with lung function decrements in this cohort to determine whether they are associated with adverse effects or, rather, are more likely a biomarker of cumulative exposure to LAA. To do this, we used multivariate linear regression models to estimate mean differences in various lung function parameters between worker groups with different pulmonary findings on HRCT/CT scans (i.e., normal, pleural plaques only, other abnormal findings). No statistically significant differences in lung function, including FEV1, FVC, FEV1/FVC, TLC, RV, and DLCO, were observed between workers with normal findings and those with pleural plaques only. In contrast, workers with other abnormal findings on HRCT/CT scans had statistically significant deficits in FEV1, FVC, TLC, and DLCO, compared with workers with normal HRCT/CT findings. Overall, this analysis does not support the notion that pleural plaques alone have a significant effect on lung function independent of exposure to LAA.

1670

VOICE PROBLEMS AND ASSOCIATED COMORBIDITIES AMONG ADULTS AGED 24-34 YEARS: THE ADD HEALTH STUDY

Kathleen Bainbridge*, Nelson Roy, Seth Cohen, Katalin Losonczy, Howard Hoffman (National Institute on Deafness and Other Communication Disorders)

Eight percent of the United States adult population reports having any voice problem within the past 12 months. Voice problems affect work productivity and quality of life. Health conditions previously associated with voice problems include allergies and gastroesophageal reflux disease, but voice problems in young adulthood are not well-described. Identifying comorbidities among younger people with voice problems may provide insight into conditions that predispose to voice problems later in life. We used cross-sectional data collected from 15,694 participants from the National Longitudinal Study of Adolescent to Adult Health (ADD Health) aged 24-34 years to identify health conditions that co-occur with voice problems among young adults. Participants were categorized as having a voice problem if they reported hoarse, raspy, breathy, or weak voice that lasted 3 or more days within the past 12 months. Six percent of this cohort reported a voice problem. We used multiple logistic regression to estimate odds ratios (OR) and 95% confidence intervals (CI) for health conditions independently associated with voice problems while controlling for sex, receiving public assistance, and self-reported general health while accounting for the complex sample design. Having diagnosed asthma and experiencing hay fever symptoms were each associated with a two-fold increased odds of voice problems [OR=2.0 (95% CI 1.6, 2.5)] and [OR 2.1 95% CI (1.6, 2.8)], respectively. Other health conditions associated with an elevated likelihood of a voice problem included migraine headaches [OR=1.6 (95% CI 1.2, 2.0)] and having suffered serious injury during the past 12 months [OR 1.5 (95% CI 1.2, 2.1)]. Symptoms of acute illness in the past two weeks, including fever, flu-like symptoms, and diarrhea/vomiting were each independently associated with twice the odds of a voice problem. Identification and treatment of potentially predisposing conditions may help reduce the impact of voice disorders.

1672

PAIN SYMPTOMS AMONG ADOLESCENTS COULD NEGATIVELY AFFECT SCHOOL GRADES - USING QUANTILE REGRESSION TO IDENTIFY VULNERABLE GROUPS

Anna Grimby-Ekman* (Health Metrics, Sahlgrenska Academy, Gothenburg University (UGOT), Sweden)

The aim was to quantify the prevalence of pain symptoms among teenage students, the prevalence of multi symptoms, and the impact of these symptoms on school grades. Two samples, from 2000 and from 2008, of 9th grade students in the south-west of Sweden were used. At both time points a questionnaire was sent to all 9th grade students in the specified region. In addition to the questionnaire data, data from SCB registries about school grades, parents' educational level, and information on parents and students country of descent were used. Among girls all pain symptoms increased between 2000 and 2008. For boys all symptoms were less prevalent, and pain in upper body and having any of the three symptoms seemed to decrease, while stomach ache seemed to increase. Lower school grades were associated with all pain symptoms and their combinations, except for the group with only pain in upper body. The associations were most pronounced for the combination of headache and stomach ache, both with and without pain in upper body. Among students with low school grades (10th percentile) the difference in school grades between students with and without these symptom combinations were of substantial size, -48 up to -73 grade units. Even among students with median school grade levels the differences between those with and without symptoms were substantial, about -20 school grade units. This raises questions about how to better support these students. Among students with low school grades (10% percentile) an effect modification by pain symptoms could be seen between low parental education respectively high sedentary behavior and severely decreased school grades, at least for combinations of headache and stomach ache. For both boys and girls headache and stomach ache were related to lower school grades, and among students with the lowest school grades the decrease were in the range of 15 to 23 %. If also having parents with low educational level these students were even more vulnerable.

"-S/P" indicates work done while a student/postdoc

1671

PREVALENCE AND FACTORS RELATED TO NON-INTENTIONAL NAPPING IN COMMUNITY-DWELLING ELDERLY

Margareth Guimarães Lima*, Maria Filomena Ceolim, Marilisa Berti A Barros, Tânia M Cardoso, Edilson Zancanella, Luiz Menna-Barreto, Carla Renata Silva Andrechuk, Denise Cuoghi Freitas, Thalyta Cristina Mansano-Schlosser, Sara Regina Almeida, Mila O Cunha (State University of Campinas - UNICAMP)

Objectives: Our objectives were: to estimate the prevalence of non-intentional napping in a sample of community-dwelling elderly; to identify associations between non-intentional napping and health and sleep related variables. **Method:** It is a population-based, cross-sectional study, carried out with data from the Campinas Health Survey developed in 2014/2015. Adolescents (n=1032), adults (n=1006) and elderly (n=982) participated in the study. We show results pertaining to the elderly (58.9% female, mean age 70.3 years, SD 0.4). The dependent variable was the reporting of non-intentional naps by the participants. Independent variables were age, gender, health related variables (such as hypertension, diabetes and dizziness), occurrence of falls and traffic accidents, and variables related to sleep quality (such as complaints about initiating and maintaining sleep and subjective evaluation of sleep quality). Prevalence and confidence intervals for the dependent variable were estimated according to independent variables. Differences were tested by Chi-square test and, for those with p<0.20, multiple Poisson regression was performed, adjusting for gender and age. The analyses were performed with svy commands of STATA 11.0. **Results:** The prevalence of non-intentional napping was 5.2%; 53.5% reported intentional napping. Non-intentional napping was significantly associated to dizziness (PR=2.9), occurrence of falls (PR=2.2), poor self-evaluation of health (PR=1.9), poor sleep quality (PR=3.6), difficult in maintaining sleep (PR=1.7), difficult in staying awake during the day less than once a week (PR=5.7) and once or twice a week (PR=4.4), and never feeling well disposed after awaking (PR=3.8). **Conclusions:** Non-intentional naps are associated to sleep complaints and to events of great relevance to the elderly, e.g., the occurrence of falls. The assessment of non-intentional napping should be included in the routine assessment of elderly health.

1673

A RANDOMIZED FACTORIAL DESIGN TO EXAMINE THE EFFECT OF REQUESTING A PERSONAL IDENTIFIER AND PARTICIPATION INCENTIVES ON PARTICIPANT'S CONSENT TO HEALTH RECORD LINKAGE: EVIDENCE FROM THE FAMILY COHORT

Michae Ni*, Brandford Chan, Herbert Pang, Betty Yuan, Tom Li, Gabriel Leung (University of Hong Kong)

Introduction: It is common for cohorts to enrich their survey data by linkage with health records. Experimental evidence on the effect of requesting a potentially sensitive personal identifier (Hong Kong identity number, HKID), and providing a participation incentive on consent to health data linkage is scarce. **Methods:** A randomized controlled trial nested within the FAMILY Cohort. Sampling of the FAMILY Cohort was based on randomly selected households in Hong Kong. A randomized factorial design (stratified by age, sex, and education) allocated 1,200 participants aged 18 years and above to: (1) request for HKID number vs. no request and (2) participation incentive vs. no incentive. All 4 groups received identical invitation and reminder letters through post. The main outcome was consent rate. **Results:** There were no significant differences in baseline characteristics among the 4 groups. Those who received a participation incentive had a higher consent rate (34.6%, 95% CI 30.8%, 38.4%) in magnitude compared to those without an incentive (32.2%, 95% CI 28.5%, 35.9%), although the difference was not significant (p=0.38). Those who received a HKID request had a lower consent rate (31.4%, 95% CI 27.7%, 35.1%) in magnitude compared to those without a request for HKID (35.4%, 95% CI 31.6%, 39.2%). The difference was also not significant (p=0.14). **Conclusions:** In a population-based cohort, the consent rate for health record linkage via post was around one-third. Participation incentives and reminding requests for HKID numbers appeared to increase the consent rate. However, these effects were not statistically significant.

1674-S/P

SCREENING AGREE TO ENTOMOLOGICAL INDICES AND FACTORS ASSOCIATED WITH HOUSING CHAGAS DISEASE

Miguel Romero*, Jose Nahum Martinez, Isabel Mendoza, Cinthia Garcia, Acho Garcia, Luis Sainz, Maria del pilar Mata, Erick Cruz, Miguel Albarran (IMSS)

To determine the prevalence of Chagas disease in the municipality of Veracruz Actopan, based on risk factors and entomological risk Property positive triatomino to *Trypanosoma cruzi* Material and Methods: A cross-sectional, descriptive, progressive, observational study, which was conducted from March 2012 to March 2013 in 17 rural communities in the municipality of Actopan, randomly was conducted 274 households were selected with risk structure to the habitat the triatomine, of which only allowed us to study 236 households. Subsequently the active capture method was used man / hour, after application of tetramethrin 0.2%, continued the exploration of the intra and peridomiciliary dwellings for the identification and collection of triatomine at all stages in plastic bottles labeled with filter paper black to be analyzed in the entomology laboratory. They were classified according to species, sex and stage of development; 1 in saline and be taken to their direct observation microscope (400X) and identify the presence of *Trypanosoma cruzi* by morphological criteria: the faeces of triatomine abdominal pressure and then diluted 1 were obtained. A questionnaire on risk factors of housing in which the presence of triatomine was demonstrated by the method of capture / hour / man corroborated information by direct observation in and around dwellings was applied. It was classified as cases to the homes studied with *T. cruzi* positive triatomino, later identified in the entomology laboratory cases and of the other homes studied. For statistical analysis, prevalence odds ratios and confidence interval 95% as statistical proof was obtained. Deliberate search of cases of Chagas entomological risk was performed, including 58 homes, 146 individuals who were shown the presence of infected with *Trypanosoma Cruzy* at home or peri home and meets other risk characteristics vector. ELISA screening and then process them IFI and HAI those who obtained positive ELISA seroprevalence for Chagas disease began.

1680

PLURALITY AND INFANT MORTALITY DUE TO EXTERNAL CAUSES IN THE UNITED STATES, 2000-2010

Katherine Ahrens*
Thoma Margaret Warner, Lauren Rossen, Alan Simon (National Center for Health Statistics)

Twins and higher order multiples are five time more likely to die within the first year of life compared to singletons in the US. While infant mortality overall is mostly driven by factors determined by the time of birth (e.g. prematurity, low birthweight, congenital anomalies) approximately 5% is due to external causes such as unintentional injury and homicide. Our objective was to evaluate the risk of infant mortality due to external causes in multiples vs. singletons in the US. We used US national birth cohort linked birth-infant death data (2000-2010). Approximately 1500 infant deaths due to external causes occurred annually; 70 were among multiples. Risk of death due to external causes was 3.6 in singletons and 5.0 in multiples per 10,000 live births. Using log-binomial regression, the corresponding unadjusted risk ratio was 1.40 (95% CI: 1.30, 1.50). After adjustment for maternal age, marital status, race/ethnicity, and education, the risk ratio was 1.68 (95% CI: 1.56, 1.81). Infant deaths due to external causes were most likely to occur between 2-6 months of age; during this time, multiples were more than twice as likely than singletons to die due to external causes (adjusted risk ratio=2.11 [95% CI: 1.92, 2.32]). Applying inverse probability weighting and assuming a hypothetical intervention where no infants were low birthweight, the adjusted controlled direct effect of multiples on infant mortality due to external causes was 1.63 (95% CI: 1.41, 1.88). In conclusion, twins and higher order multiples were at higher risk of infant mortality due to external causes in their first year of life, particularly between 2-6 months of age, and this risk appeared to be mediated largely outside of low birthweight status. As plurality is not a routinely collected demographic variable, it remains unknown whether multiples are at increased risk of injury (both fatal and non-fatal) across infancy and childhood.

1682

ASSOCIATION BETWEEN PLACENTAL WEIGHT AND BIRTH WEIGHT IN A BRAZILIAN BIRTH COHORT

Carlos Grandi*, Ligia Nascente, Davi Aragon Ricardo, Cavalli Lais, Ressel, Viviane Cunha Cardoso (Department of Obstetrics and Gynecology, Ribeirão Preto Medical School, University of São Paulo, Brazil.)

Research question: To investigate the association between placental weight and birth weight in a Brazilian birth cohort. Methods: Observational study of 958 trios of mothers, placentas and singleton newborns delivered at a tertiary hospital at Ribeirão Preto, São Paulo, Brazil, during 2010 and 2011. Mothers were interviewed after delivery in order to answer a standardized questionnaire about their demographic, social and health characteristics. Gestational age and birth weight were collected from medical files, while placental measures were available from pathology reports. Multiple nonlinear regression models were fitted to evaluate the effect of placental weight on birth weight, adjusting for maternal characteristics (age, parity, body mass index before pregnancy, hypertension, diabetes, anemia and smoking), gestational age and neonate sex. Results: Placental weight alone explained 53% (R²) of birth weight variability whereas placental weight and gestational age together explained 72% of it. Combined, placental weight, gestational age, neonate sex and maternal characteristics explained 74% of birth weight. Conclusion: 53% of birth weight variance was explained by placental weight in this Brazilian birth cohort.

1681

THE RELATIONSHIP BETWEEN NON-ALCOHOLIC FATTY LIVER DISEASE, SLEEP AND SCREEN TIME IN A SAMPLE OF OVERWEIGHT ETHNICALLY DIVERSE PEDIATRIC PATIENTS.

Pamela Botero*, Elizabeth Hoy, Maria Jimenez, Sarah Messiah, Tulay Koru-Sengul (University of Miami)

Background: Non-alcoholic fatty liver disease (NAFLD) is the most common cause of liver disease in children and adolescents in the United States (U.S.) affecting approximately 10% of the pediatric population. Although its pathogenesis is not completely understood, it has been recognized as a multifactorial disease with obesity being the main risk factor. Patients of Hispanic background have greater risk of NAFLD than their Non-Hispanic counterparts. The relationship between NAFLD and sleep and media use in children and adolescents has been largely unexplored. This study investigated the relationship between the prevalence of NAFLD and these specific lifestyle habits among a multiethnic sample of overweight children and adolescents. **Methods:** A sample of 209 patients (7-21 years old) were identified as overweight/obese (body mass index [BMI] > 85th percentile for age and sex) in a retrospective medical chart review of patients seen in the University of Miami Pediatric Gastroenterology clinics over a one-year period. A telephone survey was administered to 130 parents of these patients to obtain sleep and screen time pattern information. Logistic regression models were fitted to identify whether poor sleep habits and increased screen time were associated with NAFLD after adjustment for age, gender, heritage, and income. NAFLD was defined as alanine aminotransferase (ALT) and/or aspartate transaminase (AST) levels above the cutoff-specific value for age and gender, and in the absence of hepatotoxic medications or chronic conditions that could account for abnormal liver function or liver function tests. **Results:** Among the 130 patients (mean age 13.5 years, 55% males, 74% Hispanic) 34% had NAFLD. Compared to Non-Hispanic patients, those of Central American heritage were almost four times as likely to have NAFLD (OR=3.9, 95% CI 1.23 – 12.37). Sleep quality and screen time did not significantly contribute to the prediction of NAFLD. **Conclusions:** Our results showed that in an ethnically diverse

1683

USUAL MACRONUTRIENT AND MINERAL INTAKE AMONG CHILDREN 13 TO 23 MONTHS OF AGE, NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES), 2003–2012

Heather Hamner*, Cria Perrine, Kelley Scanlon (Centers for Disease Control and Prevention)

Dietary guidelines are being developed for children less than two years of age; however, nationally representative estimates of usual intake of macro- and micronutrients and the proportion meeting recommendations are not available. This study estimates usual intake of total calories, protein, carbohydrates, fat, calcium, iron, and zinc among US children aged 13 to 23 months (n=1122). Two days of dietary intake from NHANES 2003–2012 were used to estimate the proportion not meeting recommendations [Recommended Daily Allowances (RDA) or Adequate Intakes (AI)]. Since intake from breast milk cannot be quantified, children who consumed breast milk on either day were excluded. Mean usual caloric intake for children aged 13 to 18 months and 19 to 23 months were 1240 kcal/d and 1318 kcal/d, respectively. Among children aged 13 to 18 months, mean usual carbohydrate, protein, and total fat intake was 161.4 g/d, 47.6 g/d, and 46.5 g/d and increased to 175.1 g/d, 50.0 g/d, and 48.2 g/d among children aged 19 to 23 months, respectively. No children failed to meet the RDA for protein; however, 21.3% (95% CI: 15.0, 27.6) and 13.0% (95% CI: 8.2, 17.8) of children aged 13 to 18 months and 19 to 23 months were below the RDA for carbohydrates, respectively. Usual mean calcium, iron, and zinc intake among children aged 13 to 18 months was 1062 mg/d, 9.2 mg/d, and 7.1 mg/d; among children 19 to 23 months mean intakes were 1041 mg/d, 9.6 mg/d, and 7.3 mg/d, respectively. Less than 3% of children did not meet the calcium AI and less than 1% did not meet the zinc RDA. Approximately 30.3% (95% CI: 23.9, 36.8) and 19.9% (95% CI: 12.2, 27.6) of children aged 13 to 18 months and 19 to 23 months did not meet the iron RDA, respectively. These estimates for non-breastfeeding children could assist in the development of dietary guidelines. Results indicate 20 to 30% of children are not meeting the iron RDA during the second year of life, suggesting the need for interventions to increase iron intake.

1684- S/P

ASSESSING THE BURDEN OF BEHAVIORAL HEALTH COMORBIDITIES IN CHILDREN WITH SICKLE CELL DISEASE. Elizabeth McClure *, William Adams, Patricia Kavanagh (University of North Carolina at Chapel Hill)

Introduction: Sickle cell disease (SCD) is a life-limiting condition that disproportionately affects minority children and is associated with increased prevalence of anxiety and depression. However, these reports were based on administrative data or small studies which are prone to error, and there are few estimates of ADHD prevalence in this population. We used data from the medical home to assess the prevalence of behavioral health (BH) comorbidities among children with SCD compared to healthy controls. In children with SCD, we also examined the association of these conditions and acute care use. **Methods:** Electronic health record data were collected in 2011 from an academic institution and 8 health centers for children with SCD aged 5-18 years in 2011 who received primary and specialty care in this network. Data were also pulled for age and race-matched controls without SCD who had a primary care visit to a network provider in 2011. Depression, anxiety, and ADHD were identified from problem and medication lists. Depression and anxiety co-occurred in >80% of children; they were combined in logistic regression models. Models compared the odds of a BH diagnosis among those with and without SCD. Within the SCD subgroup, we assessed the association between BH comorbidities and the frequency of emergency department (ED) visits and admissions in 2012-13 using Poisson regression. **Results:** There were 111 children with SCD and 27,579 controls. Controlling for age, race, sex, and primary language, those with SCD had 4.04 (95% CI: 2.54-6.43) times the odds of having depression/anxiety and 2.45 (95% CI: 1.33-4.53) times the odds of having ADHD as controls. Among children with SCD, those with anxiety/depression had 2.43 (95% CI: 1.78-3.31) and 4.15 (95% CI: 3.06-4.62) times the incidence rate of ED visits and admission, respectively. **Conclusions:** These findings suggest children with SCD suffer disproportionately BH comorbidities; these are associated with increased acute care use.

1686-S/P

RACE MATTERS: THE IMPLICATION OF BREASTFEEDING ON ORAL HEALTH IN EARLY CHILDHOOD, NSCH, 2012 Isabel Morgan*, Kirk Dabney, Laurens Holmes (Nemours Office of Health Equity and Inclusion)

Objectives: The purpose of this study was to assess the association between exclusive breastfeeding (during the first 6 months) and oral health in early childhood. **Methods:** Data from the 2012 U.S. National Survey of Children's Health (NSCH) were used to assess the association between breastfeeding and oral health issues adjusting for race, maternal education, social hardship, insurance type coverage and maternal mental health status using survey multivariable logistic regression models. **Results:** The final sample consisted of n = 26,883 child-guardian dyads. Exclusive breastfeeding for the first six months was reported for n = 4,355 (16.2%) children ages >6 months - <6 years. Additionally, n = 2,328 (9.65%) children experienced an adverse oral health issue (i.e. toothache, decayed teeth, or unfilled cavity) in the previous 12 months. Children exclusively breastfed for 6 months had 29% reduced odds of developing toothaches as compared to children never breastfed, POR = 0.71, 95% CI, 0.62-0.81. Racial variances were observed in exclusive breastfeeding prevalence. Relative to Whites, Black children had a 60% increased risk of developing an oral health issue, POR = 1.60, 95% CI 1.41-1.84. The association between tooth decay and race remained after adjusting for known risk markers, adjusted prevalence odds ratio (APOR) = 1.31, 95% CI 1.13-1.52. In the adjusted model breastfeeding, not exclusively for six months showed a 21% decreased risk for oral health issues, APOR = 0.89, 95% CI 0.79-0.99. This association was most pronounced among Black children, APOR = 0.66, 95% CI 0.49-0.87. **Conclusions:** Racial variances were observed in the relationship between exclusive breastfeeding and adverse oral health. Children breastfed not exclusively for six months were least likely to experience oral health problems. These findings suggest that additional research is needed to explain how poor oral health manifest in environments of social disadvantage within the pediatric population.

1685-S/P

CLINICAL EPIDEMIOLOGIC CHARACTERIZATION OF PEDIATRIC CEREBRAL PALSIES Kirk Dabney*, Isabel Morgan, Johanna Taylor, Laurens Holmes, Kirk Dabney (Nemours Office of Health Equity and Inclusion)

Introduction: Cerebral palsy (CP) can be defined as a nonprogressive lesion in the brain occurring during the intrauterine or perinatal periods and is the most common motor impairment in the pediatric population with a prevalence of 2.1 to 3.1 per 1,000 in the U.S. Recently, racial and sex disparities have been noted in the CP population, where minorities and males bear the burden of the disease. This study sought: (1) to assess CP incidence and annual cumulative incidence in the state of Delaware as well as (2) examine the associated racial/ethnic variances in the level of motor involvement and CP severity. **Methods:** Patient information was obtained from the Nemours electronic medical records (2000-mid2015). To be included in the study, patients had to be treated in the Nemours Orthopedic Clinic, have a CP diagnosis, and reside in DE. In total, 16,442 DE CP patients were obtained with 400 having information on motor involvement and CP severity (2013-mid2015). Frequency and percentages were used to examine the relationship between CP, sex, race, ethnicity, zip code, GMFCS, and CP topography. Chi Square Statistics and Fischer Exact test were utilized to assess GMFCS and CP topography. Population size information was obtained from the US Census, 2010. **Results:** The cumulative incidence (CI) of CP was 80 per 1,000 children, while the annual cumulative incidence of CP was 5 per 1,000 children. The CI of CP among Blacks was 4.9 per 1,000, while the CI for CP among Whites was 5.3 per 1,000 children. Spastic CP was more common among males compared to females (71.6% vs. 61.1%), and hypotonic CP was more prevalent among females compared to males (15.4% vs. 9.8%). There were more Whites diagnosed with GMFCS I compared to Blacks (30% vs. 24.2%) while more Blacks diagnosed with GMFCS V than Whites (31.6% vs. 25.5%). **Conclusion:** Racial disparities in cerebral palsy exist in the State of Delaware with, Black children more likely to be diagnosed with the most severe form of CP, compared to White children

1687

MISLABELING OF CASE-CONTROL STUDIES IN PEDIATRIC RESEARCH Tabatha N. Offutt-Powell*, James G. Gurney, Rohit P. Ojha (Epidemiology, Health Data, & Informatics Section, Delaware Division of Public Health)

PURPOSE: Because of the potential for improper analytic strategies and incorrect interpretation of findings, we aimed to systematically assess the frequency with which case-control studies are mislabeled in pediatric research. **METHODS:** We searched PubMed to identify case-control studies published between 2009 and 2014 using the keyword "case-control" and an age group filter (<18 years). Given the large number of potentially eligible studies, we randomly selected 5% of the sample to screen for eligibility. Eligible studies were research reports that explicitly described the study design as case-control in the title or abstract, assessed an exposure-outcome relation, and pertained strictly to pediatric populations. We excluded reviews and methodologic reports. We assessed positive predictive value (PPV, i.e. the probability that a design reported as a case-control study indeed met standard criteria – sample selection based on outcome status) and corresponding 95% confidence limits (CL). In addition, we reclassified false-positive studies using standard criteria for defining epidemiologic studies (e.g. cross-sectional, cohort, etc.). **RESULTS:** Our search identified 5,876 potentially eligible reports, of which 280 were randomly selected for eligibility screening. The main reason for exclusion was lack of a pediatric study population (n=107). We identified 89 eligible reports, of which 33 mislabeled the study design as case-control (PPV=63%, 95% CL: 52%, 73%). Cross-sectional was the actual design of the majority (65%) of mislabeled studies. **CONCLUSION:** Case-control studies are frequently mislabeled in pediatric research. Given the profound implications of study design on data collection, analysis, and interpretation, improved epidemiologic education among pediatric researchers and greater scrutiny by manuscript referees are warranted.

CHIARI HEALTH INDEX FOR PEDIATRICS (CHIP): ASSESSING THE PREDICTIVE VALUE OF A VALIDATED QUALITY OF LIFE INSTRUMENT IN THE PEDIATRIC CHIARI TYPE I PATIENT POPULATION Rachel Pellegrino*, Ashly Westrick, Travis R Ladner, John C Wellons III, Chevis N Shannon (Vanderbilt University Pediatric Cardiac Surgery)

Introduction: The purpose of this study was to examine the predictive value of a patient-reported health-related quality of life (HRQOL) instrument for pediatric Chiari Type I malformation (CM-I). We hypothesize that improved clinical symptoms post-surgical intervention correlates with improvement of HRQOL over time. **Methods:** We retrospectively reviewed prospectively collected pre- and post-operative CHIPs of patients who underwent surgical intervention for CM-I between years 2013 and 2015. The CHIP is a validated patient-reported, CM-I-specific HRQOL instrument assessing pain-, cognitive-, and emotion-related quality of life, as well as symptomatic features unique to CM-I. CHIP has 45 items with 4 components making up 2 domain scores, physical (pain frequency, pain severity, non-pain symptoms) and psychosocial; physical and psychosocial scores are combined to create an overall HRQOL score. **Results:** Nineteen patients with CM-I completed the CHIP pre and post-operatively with at least 3 months of follow up (mean age 12.6 ± 1 year, 68% male). Before surgery, the most common symptoms were headache (84%) and neck pain (42%). Overall, 74% experienced an increase in HRQOL scores post-operatively (both psychosocial and physical scores were showed to improve). The average percentage change in pain frequency and pain severity was 26.2% and 25%, respectively. Overall, HRQOL for patients improved by an average of 19.5%. The majority of patients were found to have normal physical exam and resolution of symptoms on follow up. **Conclusions:** In this preliminary analysis, improved clinical symptoms after surgical intervention correlate with improved HRQOL in pediatric CM-I patients. The CHIP is now a part of standard of care in our clinics and we continue to collect prospective data to further evaluate symptomology and HRQOL. In addition, extramural funding has been awarded to further externally validate the CHIP in 45 centers across the United States.

1691-S/P

ACCURACY IN SELF-REPORTING THE USE OF DRUGS FOR CARDIOVASCULAR DISEASES AND DIABETES: AN ASSESSMENT OF THREE RECALL PERIODS

Cassia Moraes*, Cassia, So-
tero Mengue, Tatiane Dal Pizzol (Federal University of Rio Grande do Sul)

In most public health studies, surveys on the use of medications in patients with cardiovascular problems and diabetes are evaluated using a questionnaire, in which patients will self-report their medication use. Methodological studies on the accuracy of this measurement are rare, and the recall period used varies a great deal, from 1 day to 2 years. **Objective:** Evaluate the accuracy of three different recall periods (7, 14 and 30 days) for self-reporting medications used to treat cardiovascular diseases and diabetes, using a 24 hour recall period for reference. **Methods:** A cross-sectional study was conducted with professors, employees and students at the Federal University of Rio Grande do Sul in Brazil. Participants were randomly allocated to 1 of 3 groups that corresponded with recall periods that were 7, 14 and 30 days long. They were interviewed at two different times: after a 24 hour recall period during the first interview, and then with a questionnaire about medication use for a different recall period (determined by their group) in the second interview. The similarities were evaluated through comparing the questionnaires using the concordance rate and Cohen's kappa coefficient. **Results:** Of the 299 participants in the study who completed the second questionnaire, 23.4% said they used medication for cardiovascular diseases and diabetes. The concordance rate for self-reporting medications for cardiovascular diseases and diabetes in comparison to the 24 hour recall period was 99% for the 7 day period, 97% for the 14 day period, and 92.6% for the 30 day recall period. Analysis using Cohen's kappa coefficient showed a very high concordance rate for the 7 and 14 day periods (0.97 and 0.90, respectively) and high concordance for the 30 day period (0.81) according to the Altman rating. **Conclusion:** Concordance analysis suggests that the three recall periods evaluated are accurate for studying medication use for chronic issues such as cardiovascular disease and diabetes.

1693-S/P

DIAGNOSIS-BASED INSTRUMENTAL VARIABLES FOR SOCIAL NETWORK ANALYSES

Marissa Seamans* (University of North
Carolina at Chapel Hill)

Identifying contagion effects in non-experimental studies of social networks is challenging due to potential unmeasured confounding by homophily (the tendency for individuals with similar behaviors to associate) and environmental factors. In studies with unmeasured confounding, instrumental variable methods can be used to identify average treatment effects; however, commonly used exogenous variables such as calendar time would fail the exclusion restriction in social network studies. We propose a novel, diagnosis-based instrument associated with prescription medication receipt to estimate the spread of prescription opioid use in a large social network of commercial insurance beneficiaries and their households. Using type of ankle injury (sprain vs. fracture) as an instrument for receipt of prescription opioids vs. prescription NSAIDs, we derived the difference in 1-year risk of prescription opioid initiation by another household member (contagion effect) from Kaplan-Meier survival curves. Using the 2000-2013 MarketScan Commercial Claims and Encounters Database, we identified 83,576 ankle fracture and 160,536 ankle sprain injuries. Ankle fracture and ankle sprain patients had similar baseline characteristics, but fracture patients were more likely to fill an opioid prescription after the injury than sprain patients ($P < 0.05$). Assuming stochastic monotonicity, among the 16% of patients whose use of prescription opioids after injury appeared to depend only on type of injury, prescription opioid use was associated with increased 1-year risk of prescription opioid use by another household member. Assuming instrument validity, these results would suggest that opioid prescriptions may be transmissible within households. In studies of contagion effects in large longitudinal social network data, exploiting random assignment at the individual level may help account for unmeasured confounding between individuals.

1692- S/P

DETECTION OF ABERRANT OPIOID USE IN PRESCRIPTION CLAIMS DATA: COMPARISON AND VALIDATION OF FIVE ALGORITHMS

Kathryn Rough*, Krista Huybrechts, Sonia Hernandez-
Diaz, Rishi Desai, Elisabetta Paterno, Brian Bateman (Harvard T.H. Chan
School of Public Health)

Background: Given soaring rates of prescription opioid abuse and overdose in the US, there is growing interest in using prescription claims data to identify aberrant behaviors, such as misuse, abuse or diversion. Yet, the relative performance of available algorithms has not been evaluated. **Objective:** To compare and validate 5 previously published algorithms to detect aberrant opioid use: the Opioid Misuse Score, Controlled Substance-Patterns of Utilization Requiring Evaluation (CS-PURE), Overutilization Monitoring System, Katz, and Cepeda algorithms. **Methods:** Claims data for incident prescription opioid users were extracted from the Medicaid Analytic eXtract (MAX) for 2000-2010 and United Healthcare for 2004-2013. Patients were followed for 1 year after their first opioid dispensing. Aberrant opioid behavior was defined according to each of the 5 algorithms. Cohen's kappa was calculated to assess algorithm agreement. Unadjusted risk differences (RD) between the identified aberrant and non-aberrant users were also calculated to assess risk of an opioid-related event (defined as an ICD-9 code for opioid abuse, overdose, or dependence) for each algorithm. **Results:** There were 3.7 million eligible individuals in MAX and 4.3 million in United who received at least one new opioid prescription. Algorithms ranged from flagging potential aberrant behavior in 0.02% to 12.8% and 0.01% to 7.9% of patients in MAX and United, respectively. Kappa values were poor to moderate (0.01-0.50 in MAX; 0.01-0.30 in United). Algorithms varied substantially in their ability to predict opioid-related events; the Overutilization Monitoring System had the highest RD (14.8% in MAX; 13.4% in United) and Katz had the lowest (1.03% in MAX; 0.47% in United). **Conclusions:** In large cohorts of publically and commercially insured patients, we demonstrated that algorithms differed substantially in agreement and performance. Further improvements to algorithms may be possible.

1694

LEVERAGING ELECTRONIC HEALTH RECORDS TO DESCRIBE PRESCRIPTION PATTERNS OF MEDICATIONS THAT INCREASE FALLS RISK AMONG OLDER ADULTS IN NEW YORK CITY

Jenny Smolen*, Arti Virkud, Remle Newton-Dame
(NYC Department of Health and Mental Hygiene)

Background: Falls are the leading cause of injury-related hospitalizations among older adults in New York City (NYC) and may increase as the older adult population grows. Electronic health record (EHR) data could provide a way to explore modifiable risk factors for falls. Our aim was to evaluate prescribing of medications that increase falls risk among older adults (aged 65-100) by various patient and practice characteristics in NYC ambulatory practices. **Methods:** We analyzed aggregate data through the Hub Population Health System (n=175,304 patients). We identified and modeled the percentage of older patients with a visit in 2013 that were prescribed at least one medication from six falls-risk medication categories. **Results:** Adults aged 75 years and older (vs<75) had higher odds of being prescribed any of five of the six medication categories examined. Women were more often ($p < 0.05$) prescribed anticonvulsants (OR: 1.18), antidepressants (1.65), antipsychotics (1.21), benzodiazepines (1.78), and sedatives (1.30). In general, significant differences between practices with different provider specialty profiles did not persist after adjusting for other patient and practice characteristics. Black and Hispanic patients, compared to whites, had significantly higher odds of being prescribed anticonvulsants (B: 1.18; H: 1.37) and antihypertensives (B: 1.79, H: 1.51) and lower odds of being prescribed antidepressants (B: 0.37; H: 0.74) and benzodiazepines (B: 0.20; H: 0.43). Medication prescribing for all categories was highest in the Bronx and Staten Island. **Conclusions:** This data suggests a need for regional messaging on medication review to practices serving high proportions of older patients who receive prescriptions for medications that can increase their risk for falls. The study demonstrates the potential of EHR data to explore modifiable risk factors, identify potential disparities by patient characteristics, and inform health care providers about vulnerable populations.

1700

SELF-CARE ASSESSMENT OF MEN'S HEALTH GROUPS IN THE FAMILY HEALTH STRATEGY Romulo Augusto Filho *, Aluisio Lima, Luis Fernando Tofoli, Paulo Cesar Almeida (Universidade de Fortaleza; Universidade Federal do Ceará)

The health of men has been neglected in many aspects, mainly those related to the way men deal with their own health. The study aims to assess self-care practices in men aged above 25 years, participants in men's health groups, linked to teams of the Family Health Strategy - ESF in a neighborhood of Fortaleza - Ceará/Brazil, considering socioeconomic aspects and habits developed for health maintenance and disease prevention by group participants. This is a quantitative, correlational and descriptive survey conducted in the year 2013. 170 men were interviewed. Of these, 42.1% reported go to the doctor regularly and 41.8% practiced regular physical activity. Among men 50-59 years old, 42.6% had undergone digital rectal exam. Of those sexually active, 68.9% did not use condoms. It is highlighted by this study the need for integration of preventive measures for the male population in the search for effective self-care practices, including the training of professionals and the transformation of primary health care units in environments that consider the universe of men and their singularities.

1702

ASSOCIATION BETWEEN PERCEIVED STRESS AND RISK OF ANY OSTEOPOROTIC FRACTURE Alma Becic Pedersen*, Lisbeth M Baggesen, Vera Ehrenstein, Lars Pedersen, Mathias Lasgaard, Ellen M Mikkelsen (Department of Clinical Epidemiology, Aarhus University Hospital, Denmark)

Purpose: We conducted a population-based cohort study in Denmark to examine the association between perceived stress and risk of subsequent osteoporotic fracture. **Methods:** A 2006 population-based health survey in the Central Danish Region (with 1.25 million inhabitants) was used to identify 7,943 persons who were 55 years or older on the survey date and completed the Perceived Stress Scale. Individuals were categorized into two groups: high level of stress and low level of stress (including no stress). We obtained information on all osteoporotic fractures through linkage to the Danish National Registry of Patients. We used Cox regression to compute hazard ratios (HRs) with 95% confidence interval (CI) adjusted for a number of lifestyle factors, socioeconomic data, perceived general health, and prescription history, comparing high and low stress persons. **Results:** A total of 1,799 persons (22.6%) reported high level of perceived stress, whereas 6,144 (77.4%) reported low level or no stress. The five-year risk of any osteoporotic fracture was 7.4% and 5.4% in persons with high and low perceived stress, respectively, corresponding to adjusted HR of 1.37 (CI: 1.00-1.89). The adjusted HR for hip fracture within five years associated with high perceived stress was 1.68 (CI: 1.04 - 2.72). The associations weakened with increasing follow-up time. **Conclusions:** Persons with high perceived stress have an increased risk of any osteoporotic fracture, in particular risk of hip fracture within five years of stress assessment even after adjusting for differences in lifestyle, comorbidities and socioeconomic status. The association attenuated after longer follow up time.

1701-S/P

EARLY SYMPTOMS OF NICOTINE DEPENDENCE AMONG ADOLESCENT WATERPIPE SMOKERS Raed Bahelah*, Joseph DiFranza, Fouad Fouad, Kenneth Ward, Thomas Eissenberg, Wasim Maziak (Florida International University)

BACKGROUND Although waterpipe smoking is increasingly popular among youth and can lead to nicotine dependence (ND), no studies documented how ND develops in waterpipe smokers. We examined the emerging symptoms of ND among adolescent waterpipe smokers in Lebanon. **MEHODS** Individual confidential interviews were used to evaluate ND in 160 waterpipe smokers and 24 cigarette smokers from a sample of 498 students enrolled in 8th and 9th grades in Lebanon. **RESULTS** Among waterpipe smokers, 71.3% endorsed at least one Hooked on Nicotine Checklist (HONC) symptom and 38.1% developed the full syndrome of ND (3 criteria using the International Classification of Diseases, 10th revision). The early symptoms of ND among waterpipe smokers were craving (25%), feeling addicted (22.5%), and failed quit attempts (14.3%). The first HONC symptom and the full syndrome of ND emerged 10.9 and 13.9 months, respectively after the onset of waterpipe smoking. The median tobacco use when the first HONC symptom emerged was 7.5 waterpipes/month with smoking frequency of 6 days/month, and the median tobacco use when the full syndrome of ND emerged was 15 waterpipes/month with smoking frequency of 15 days/month. Compared to waterpipe smokers, ND among cigarette smokers emerged at higher levels of tobacco use, and within a longer period after the onset of smoking. In addition, waterpipe-specific cues such as waterpipe smell and sight, and the café environment were endorsed by the majority of ND waterpipe smokers, suggesting an important role of these factors in the development of ND among waterpipe smokers. **CONCLUSIONS** ND among adolescent waterpipe smokers can appear early, at lower levels of use frequency compared to cigarettes, and is shaped by its distinctive use patterns and cues. Waterpipe-specific prevention and intervention programs are needed to control its use among youth.

1703-S/P

CESSATION OF SMOKING AND BODY WEIGHT: FINDINGS FROM THE FIRST RANDOMIZED SMOKING CESSATION TRIAL IN A LOW-INCOME COUNTRY SETTING Ziyad Ben Taleb* (Florida International University)

Introduction: Quitting cigarettes smoking is known to be associated with gain in body weight, which in turn can threaten motivation to attempt or sustain attempts to quit. The pattern of weight gained by smokers who receive cessation treatment in a low-income country context has never been described. We aimed to determine the post cessation weight gain and its predictors among smokers who participated in a smoking cessation intervention in a low-income country setting. **Methods:** We performed an ancillary analysis of data from 269 smokers who participated in a multi-site, two-group, parallel-arm, double-blind, randomized, placebo-controlled smoking cessation trial in primary care clinics in Aleppo, Syria. We used generalized estimation equation (GEE) modelling to identify predictors of changes in Body Mass Index (BMI) throughout the study (baseline, 6 weeks, 6 months and 12 months follow-ups). **Results:** Compared with non-abstainers, smoking abstinence gained more weight at six weeks (+2.4Kg vs. 1.4Kg), six months (+4.0Kg vs. -1.0kg) and 12 months (+4.1Kg vs. 0.24Kg) (all P<0.05). For the sample as a whole, weight concerns (smoking to control weight) (P=.006), gender (female) (P=.005), higher weight at baseline (P=<.001) and abstinence from smoking (P=<.001) were associated with higher BMI throughout the study. There was a non-significant trend toward lower weight gain with use of nicotine replacement therapy. **Conclusion:** smokers who attempt to quit in low-income countries like Syria, may benefit from tailored cessation interventions with integrated body weight management elements such as physical activities and diet regimens particularly for female smokers and for those who have weight concerns prior to quitting.

1704-S/P

FAMILY HISTORY OF DIABETES AND HYPERTENSION AND PARTICIPATION IN LEISURE-TIME PHYSICAL ACTIVITY Jaesung Choi*, Ji-yeob Choi, Sang-Ah Lee, Aesun Shin, Juhwan Oh, Minkyong Song, Jae Jeong Yang, Joo Yong Park, Jong-Koo Lee, Daehee Kang (Department of Biomedical Sciences, Seoul National University Graduate School, Seoul, Korea)

We investigated whether family history of hypertension and diabetes affected on participation in leisure-time physical activity. A total of 52,603 men and 102,419 women enrolled in the Health Examinees (HEXA) study during 2004-2012 were used for analysis. Data was collected by interviewer-administered self-reported questionnaire including leisure-time physical activity, family history and medical history of diabetes and hypertension. In addition, blood pressure and fasting glucose level were measured. Men and women with family history of hypertension or diabetes were more likely to participate in leisure-time physical activity (150 min/week) which met the recommendation on physical activity by WHO; OR=1.11 (95% CI=1.06-1.16) (men) and 1.11 (95% CI=1.08-1.14) (women) for hypertension; OR=1.17 (95% CI=1.11-1.23) (men) and 1.13 (95% CI=1.09-1.17) (women) for diabetes compared to participants without any family history. These associations were stronger when a sibling was affected rather than a parent; OR=1.20 (95% CI=1.07-1.33) (men) and 1.17 (95% CI=1.09-1.24) (women) for hypertension; OR=1.22 (95% CI=1.11-1.35) (men) and 1.17 (95% CI=1.10-1.24) (women) for diabetes compared to participants without any family history. When family history and personal medical history were combined, participants who had any family history but did not have medical history still showed higher rates for engaging in physical activity compared to participants who did not have either family and medical history of diseases; OR=1.09 (95% CI=1.05-1.13) (women) for hypertension; OR=1.13 (95% CI=1.06-1.20) (men) and 1.11 (95% CI=1.07-1.15) (women) for diabetes. As expected, participants with any family history as well as medical history showed the highest rates for engaging in physical activity. Our study found that family history of hypertension and diabetes and medical history were associated with more active participation in physical activity.

1706

OBJECTIVELY MEASURED WALKING DURATION AND SEDENTARY BEHAVIOUR AND FOUR-YEAR MORTALITY IN OLDER PEOPLE. Dhayana Dallmeier*, Jochen Klenk, Michael Denninger, Kilian Rapp, Wolfgang Koenig, Dietrich Rothenbacher (Dept. of Internal Medicine II-Cardiology, University of Ulm Medical Center, Ulm, Germany. Agaplesion Bethesda Clinic, Ulm, Germany.)

Background: Physical activity is an important health component. Recommendations based on sensor measurements are sparse in older people. We investigated the effect of objectively measured walking and sedentary duration on four-year mortality in community-dwelling older people. **Methods:** Between March 2009 and April 2010, physical activity of 1271 participants (65 years, 56.4% men) from Southern Germany was measured over 7 days using an uniaxial accelerometer (activPAL; PAL Technologies, Glasgow, Scotland). Mortality was assessed at four-year follow-up. Cox-proportional hazards models evaluated the associations between walking and sedentary duration with mortality adjusting for age, sex (Model 1), plus school duration, smoking status, alcohol intake, body mass index, diabetes, hypertension, cardiovascular disease, cancer, chronic kidney disease (Model 2) and selected biomarkers: N-terminal pro-Brain natriuretic peptide, high sensitive Troponin I and blood glucose (Model 3). **Results:** An U-shaped relationship between daily walking duration and mortality with a minimum risk at the 3rd quartile (102.2-128.4 min. walking) was found even in Model 3 with HRs for quartiles 2 to 4 compared to quartile 1 of 0.54 (95% CI 0.31; 0.95), 0.26 (95% CI 0.12; 0.60), 0.43 (95% CI 0.21; 0.90), respectively. For sedentary duration an age- and sex-adjusted increased mortality risk was observed for the 4th quartile (daily sedentary duration 1137.2 min.) (HR 2.05, 95% CI 1.13; 3.73), which diminished after further adjustment (Model 2) (HR 1.63, 95% CI 0.88; 3.02). Furthermore, our results suggested the presence of effect modification between walking and sedentary duration, such that in people with low walking duration a high sedentary duration was noted as an independent factor for increased mortality. **Conclusions:** Walking duration was clearly associated with four-year overall mortality in community-dwelling older people. The presence of effect modification requires further investigation.

1705

TRENDS IN PHYSICAL ACTIVITY DURING LEISURE TIME IN BRAZIL (2006-2013) Rafael Claro*, Michele Cruz (Nutrition Department/ Universidade Federal de Minas Gerais)

Introduction: Changes in recent decades in Brazilian population's health profile highlighted a large increase in the incidence of noncommunicable diseases directly related to modifiable conditions such as smoking, insufficient physical activity and unhealthy diet. **Objective:** To describe trends in physical activity during leisure time in Brazilian state capitals and the Federal District between 2006 and 2013. **Methods:** Data from the Telephone Surveillance System for Risk and Protective Factors for Chronic Noncommunicable Diseases (Vigitel) were used. During the study period, 2006 to 2013, an annual average of 50,000 interviews with adults (18 years) living in households with at least one phone line was conducted. The information of main interest of this study is the frequency, duration and intensity of physical activity performed during leisure time. Time trends in physical activity during leisure time and its components were studied for the entire population and according to strata of sex, age and education. **Results:** Between 2006 and 2013 there was a significant increase ($p<0.05$) in the percentage of individuals who reported practicing physical activity during leisure time at least once a week (40.8 to 45.1%, 0.61pp/year). Also, an increase in the participation ($p<0.05$) of moderate-intensity activities was seen, as well as an increase in the weekly frequency and duration of episodes of practice. As a result, the percentage of individuals reaching the WHO recommendations for physical activity increased from 30.3 to 33.8% between 2009 and 2013 (0.99pp/year). Increases were more frequent among women, young adults and among those with higher education. **Conclusion:** An increase of the levels of practice of physical activity during leisure time was verified. Although this increase has reduced the differences in the level of practice between men and women, he emphasized the differences between younger and older individuals and among those in extreme levels of education.

1707

SOCIAL INEQUALITIES AND PREVENTIVE PRACTICES AMONG MEN IN SÃO PAULO / BRAZIL Neuber José Segri*, Priscila Maria S B Francisco, Neuber José Segri, Chester Luiz G Cesar Marilisa, B A Barros, Cecília G P Alves, Moisés Goldbaum (Universidade Estadual de Campinas (UNICAMP), Brazil)

Introduction: Population-based health surveys are conducted to provide information about health status, access to health care and inequalities in health. Currently with over 5 million men, Sao Paulo/Brazil has characteristics of a large urban center where social inequality in access to health services require attention. **Objective:** Describe the coverage of preventive practices among men, as well as the involvement of the Brazilian health care system - SUS in the realization of the exams. **Methodology:** Analyzing data from the Sao Paulo Health Survey ("ISA-Capital-2008") we calculated the prevalence estimates, prevalence ratios (PR) and chi-square tests (Rao-Scott) to verify the existence of association between the examinations (dental care, prostate exam and colon exam) and the involvement of SUS, in four different levels of scholarship. Stata 11 was used considering the complex sample design of the survey. **Results:** Higher prevalence of dental care, prostate exam and colon exam was observed in higher levels of education ($p<0.001$) with linear tendency. Regarding the contribution of SUS in these examinations, we found significant inverse association with education level, as a result in categories with less education, the participation of SUS is greater. **Discussion:** The government has been relying on the incorporation of strategies to generate opportunities for access to health services for all men, in a less unequal manner and SUS has great importance in this process.

1708-S/P

SCREEN TIME DURING ADOLESCENCE AND INTELLIGENCE QUOTIENT AT 18 YEARS OF AGE: RESULTS FROM 1993 PELOTAS (BRAZIL) BIRTH COHORT STUDY Bruna G C da Silva*, Gregore Mielke, Shana Silva, Ana Menezes, Helen Gonçalves, Michael Pratt, Pedro Hallal (Postgraduate Program in Epidemiology, Federal University of Pelotas, Pelotas, Brazil)

Adolescents spend many hours a day using technology. However, the association between screen time and cognitive development in adolescents is still unclear. Purpose: To evaluate the association between screen time spent on video games, television, and computers during adolescence and intelligence quotient (IQ) at age 18 years. Methods: Data from a longitudinal prospective study conducted among the participants of the 1993 Pelotas (Brazil) Birth Cohort Study. Time spent with video games, television and computers was self-reported at ages 11, 15 and 18 years. When participants were 18 years old an IQ test (WAIS-IV) was applied (n=4050). Screen time was categorized as <1, 1–2 and 2 hours per weekday. IQ was used as continuous score. Crude and adjusted linear regressions were performed. Results: The highest prevalence of screen time 2 hours per weekday occurred for video games at 15 years (12.9%), for television at 11 years (79.6%) and for computers at 18 years (51.9%). The mean IQ score was 96.5 (SD=12.6) at 18 years. In adjusted analyses, when compared with <1 hour per weekday, use of video games for 2 hours at 11 years was associated with higher IQ ($\beta=1.77$; 95%CI:0.64;2.90). On the other hand, video games for 2 hours at 18 years was associated with lower IQ ($\beta=-1.27$; 95%CI:-2.44;-0.09). For television, those who reported watching television for 2 hours at ages 11 and 15 years showed higher IQ ($\beta=2.76$; 95%CI:1.43;4.09, $\beta=3.28$; 95%CI:2.05;4.51, respectively), but at 18 years they showed lower IQ ($\beta=-1.72$; 95%CI:-2.61;-0.83). Use of computers for 2 hours at three ages was associated with higher IQ ($\beta=4.26$; 95%CI:2.55;5.98, $\beta=3.51$; 95%CI:2.61;4.41, $\beta=2.74$; 95%CI:1.89;3.60, respectively). Conclusion: Video game and television time in early adolescence was associated with higher IQ at 18 years, while these behaviors at 18 years were associated with lower IQ at the same age. Computer time throughout adolescence was associated with higher IQ at 18 years.

1711-S/P

THE RELATIONSHIP BETWEEN SMARTPHONE USE, SELF-ESTEEM AND ADOLESCENT SOCIAL PHYSIQUE ANXIETY Hung-Chan Mao*, Pei-wen Wu, Yu-Cheng Yang, Wei-Ting Lin, Chun-Ying Lee, Sharon Tsai, Hsiao-Ling Huang, Chien-Hung Lee (Department of Public Health, College of Health Science, Kaohsiung Medical University, Kaohsiung, Taiwan)

Body appearance and other physical characteristics are the centrals that affect an adolescent's self-worth sense and overall well-being. Excessive smartphone use may influence healthy behaviors, self-esteem and certain type of anxiety. Adolescence is a susceptible period for perturbations in body image, however, data in regard to the association between health behaviors and adolescent social physique anxiety is limited in Taiwan. To investigate the effect of excessive smartphone use, obesity and self-esteem on social physique anxiety among adolescents in Taiwan, we performed a cross-sectional study using a multi-stage stratified cluster sampling scheme. A total of 1951 representative adolescents randomly selected from 18 diverse urbanization-levels of schools during 2013 and 2014 participated in this study. Detail demographic, physical and dietary factors, anthropometric variables and the measurements of self-esteem and social physique anxiety were collected. Survey-data modules were used to adjust for survey design and multivariate logistic regression models were used to control for covariates. Adjusted for confounders, adolescent with overweight/obesity and low self-esteem respectively had a 7.4-fold and a 10.0-fold likelihood of having high physique anxiety than those with normal weight and normal self-esteem. Smartphone use were also found to associate with social physique anxiety score. The relationship between daily >2 hours of smartphone use and high physique anxiety was strengthened among adolescents who had a low self-esteem (adjusted odds ratio= 17.9, P for interaction <0.05). Our findings stress the combined effect of excessive smartphone use and low self-esteem on adolescent social physique anxiety.

1709-S/P

VALIDITY OF RESPONDENT RESPONSES WHILE REVEALING CURRENT TOBACCO USE STATUS IN LARGE SCALE COMMUNITY SURVEYS: EVIDENCE FROM 20 COUNTRIES GATS DATA Sudhir Satpathy*, Pratap Jena, Mackwin Dmello, Sudhir Satpathy (KSPH, HSRII, Premier Research Group, and Nitte University)

Introduction: Standardized Global Adult Tobacco Survey (GATS) has given a wonderful opportunity to estimate current tobacco use status directly from items B01 and C01, and also indirectly from items B06, B10, C06 and C10 items. The 22 sets of GATS data from 20 countries were analyzed to assess the validity of respondent responses while revealing current tobacco use at different times of interview. **Method:** Direct estimates of current smoking status from B01 and current smokeless tobacco use from C01 items of GATS, were compared with indirect estimates of current smoking status from B06 and current smokeless tobacco use status from C06. **Result:** The difference in direct and indirect estimations of daily smoking prevalence was observed in 12 sets of country data in the range of 0.1 to 0.6 percent. Similar difference (range 0.1% to 0.6%) existed in less than daily smoking prevalence in 19 data sets involving 17 countries. The difference in daily smokeless tobacco use prevalence between direct and indirect estimations was 0.1% in Mexico and Philippines, 0.2% in Bangladesh and 0.8% in India. Similarly, out of 12 sets of data, in 5 sets of data from 5 countries had no difference for less than daily smokeless tobacco use estimates. In other sets of data, difference was ranged from 0.1% to 0.9%. **Conclusion:** In absence of respondent refusal, current smoking prevalence estimates from consumption pattern questionnaires (B06, B10, C06 and C10) should tally with estimates from direct question at B01 and C01. Though the difference looks negligible, in terms of absolute numbers it can be high for countries like India. Use of appropriate checks to validate the responses instantly by cross tallying the previous responses or with indicating input error in the handheld devices for data collection, is a priority.

1712

THE MYTH ON SMARTPHONE USE AND SLEEP – IS IT REAL? Naja Rod*, Nete Dissing, Alice Clark, Thomas Gerds, Rikke Lund (Department of Public Health, University of Copenhagen) Bip...zzzz...bip...zzz...bip...zzz...bip...zzz...! Being constantly awakened during sleep is a method used in experimental sleep studies to show adverse health consequences of sleep deprivation. The widespread use of smartphones provides an interesting analogy to these experimental sleep studies. Smartphones are easy to carry into bed and offer multiple facilities, e.g. calling, social networking, texting, gaming, internet, which may disrupt sleep initiation and maintenance. We aim to comprehensively describe cell phone activity during the nightly sleep span and evaluate how it relates to physical and mental health symptoms. We use data on 800 college students enrolled in the Copenhagen Social Networks Study, which includes continuous monitoring of cell phone data in all enrolled students. High-resolution objective data on duration and timing of cell phone activity (including calls, texting, and social networking) during night time is used as a measure of disrupted sleep. Information on physical and mental symptoms was obtained from smartphone administered questionnaires. We found substantial cell phone activity during self-reported sleep hours. While cell phone activity in the hours around bed time and awakening is expected, it is striking that more than 10 percent were also found to have cell phone activity in the middle of the nightly sleep period. Cell phone activity during sleep hours may interfere with normal physiological restitution and potentially constitute a rising public health problem.

1713-S/P

MODIFIED E-CIGARETTES: A COMPARATIVE ANALYSIS OF ELECTRONIC CIGARETTES AND TOBACCO USE BEHAVIORS BETWEEN SUBCULTURES Clara Sears*, Alexander Lee Courtney Smith, Kandi Walker, Joy Hart, Rachel Keith, S. Lee Rider (University of Louisville)

Background: As the popularity of electronic cigarettes (e-cigarettes) has increased, so has diversity in product design. A distinct subculture has emerged surrounding modified e-cigarettes (mods). These advanced personal vaporizers allow users to customize products for desired performance. Because these products vary greatly from more basic e-cigarettes, it is important to characterize use behaviors in the mod community to adequately assess exposure and health risk. The aim of this study is to compare use of e-cigarettes and tobacco among mod users and nonusers (basic e-cigarette or vape pen users). **Methods:** In 2015, a cross-sectional survey about e-cigarette and tobacco use behaviors was conducted with e-cigarette users in nine vape shops. Descriptive statistics and logistic regression were used to compare e-cigarette and tobacco use between mod users and nonusers. **Results:** A majority of mod users and nonusers indicated their main reason for trying e-cigarettes was to cut back on traditional cigarettes. There was no significant difference in the total amount of e-liquid used per day between mod users and nonusers ($p = 0.16$). However, nonusers reported vaping significantly greater levels of nicotine in e-liquid ($p = 0.0001$) and vaping sooner in the morning ($p = 0.03$) compared to mod users. There was no significant difference in past cigarette use (at least 100 cigarettes/lifetime) between mod users and nonusers ($p = 0.36$). Yet mod users were significantly less likely to have used traditional cigarettes in the past month compared to nonusers ($OR = 0.16$; $95\% CI = (0.04, 0.71)$). **Conclusions:** Mod users were significantly less likely to report using traditional cigarettes in the past month compared to nonusers. Thus, differences in e-cigarette use may influence traditional cigarette use. These findings are important to consider when evaluating the effectiveness of e-cigarettes for tobacco harm reduction.

1715

PATTERNS OF MARIJUANA AND TOBACCO USE ASSOCIATED WITH SUBOPTIMAL SELF-RATED HEALTH AMONG US ADULT LIFETIME MARIJUANA USERS James Tsai*, Italia Rolle Tushar, Singh Sheree, Boulet Timothy McAfee, Althea Grant (Centers for Disease Control and Prevention (CDC))

Objective: The aim of this study was to examine patterns of marijuana and tobacco use and their associations with suboptimal self-rated health (SRH) among US adult lifetime marijuana users. **Methods:** Data came from the 2009–2012 National Health and Nutrition Examination Survey, a nationally representative household-based survey sample, restricting to respondents aged 20 years and older who reported lifetime marijuana use at least once ($n = 3,210$). We assessed the age-adjusted prevalence of mutually exclusive patterns of regular marijuana use (at least once a month for more than one year) and current tobacco use (serum cotinine 3.08 ng/mL). Suboptimal SRH status was defined as “fair” or “poor” in response to the question “Would you say that in general your health is excellent, very good, good, fair, or poor?” We produced prevalence ratios with multivariable log-linear regression models by using patterns of regular marijuana use and current tobacco use as the predictor and suboptimal SRH as the outcome while adjusting for sociodemographic, behavioral, and health-related risk factors. **Results:** The age-adjusted prevalence of regular marijuana use with current tobacco use, non-regular marijuana use with current tobacco use, and regular marijuana use without current tobacco use among US adult lifetime marijuana users during 2009–2012 was 24.7%, 15.2%, and 21.1%, respectively. Marijuana users with these usage patterns had, in the aforementioned order, 1.98 (95% CI: 1.50–2.61), 1.82 (95% CI: 1.40–2.37), and 1.34 (95% CI: 1.05–1.69) times increased prevalence of reporting suboptimal SRH, when compared to non-regular marijuana users without current tobacco use. **Conclusions:** The results of this study indicate that, among adult lifetime marijuana users in the US, current tobacco use is high and strongly associated with suboptimal SRH; regular marijuana use with or without current tobacco use is significantly associated with suboptimal SRH.

1714

SPOUSAL INFLUENCE ON SMOKING CESSATION AMONG JAPANESE COUPLES: MODIFYING EFFECTS OF GENDER AND EDUCATION Daisuke Takagi*, Naoki Kondo, Misato Takada, Hideki Hashimoto (The University of Tokyo)

Background: In parallel with studies of individual factors affecting smoking initiation and cessation such as age and gender, researchers have also reported that spousal non-smoking has a spillover effect on the partner's cessation among married couples. Despite a number of studies linking a spouse's smoking cessation to that of their partner, discussion of the factors modifying these associations is lacking. This study examined whether the spillover effect of spousal non-smoking was modified by the couple's educational attainment. **Methods:** We used paired marital data from the Japanese Study on Stratification, Health, Income, and Neighborhood (J-SHINE), which targeted residents aged 25–50 years in four Japanese municipalities. We selected a spouse smoker at the time of marriage (target respondent), and set his/her smoking status change (continued or quit smoking after marriage) as an outcome, regressed on the counterpart's smoking status (continued smoking or non-smoking) and combinations of each couple's educational attainment as explanatory variables using log-binomial regression models ($n = 1001$ targets; 708 men and 293 women). **Results:** Regression results showed that a counterpart who previously quit smoking or was a never-smoker was associated with the target male spouse's subsequent cessation ($RR = 1.94$; $95\% CI: 1.12, 3.37$). However, for women, the association between husband's non-smoking and their own cessation was significant only for couples in which both spouses were highly educated ($RR = 1.48$; $95\% CI: 1.05, 2.08$). **Conclusions:** Our findings suggest that a spouse's smoking status is associated with men's smoking cessation. For women, however, a couple's combined educational attainment may matter in that association. The present study implied that cessation programs should involve both members of a couple, and such programs should take into account the educational backgrounds of the couple in the case of women smokers.

1716

DEMOGRAPHIC AND HEALTH CHARACTERISTICS AMONG A DIVERSE GROUP OF ADULT BLACK FEMALES (AGES 18 TO 64 YEARS) IN THE UNITED STATES Shondelle Wilson-Frederick*, Juanita Chinn, Roland Thorpe, Jr, Rashida Dorsey (U.S. Department of Health and Human Services)

Background: Black females in the United States experience vastly different morbidity and mortality profiles relative to other racial and ethnic U.S. populations. To identify the underlying factors that contribute to disparate health outcomes in Black females, it is important to examine the health status of both U.S.-born and foreign-born Black females. **Objective:** To describe patterns of heterogeneity for demographic and health measures among non-elderly Black females in the United States. **Methods:** Using data from National Health Interview Surveys 2002–2012, we examined 23,210 non-elderly Black females (ages 18–64 years) classified as: U.S.-born (91%), foreign-born with less than 10 years in the United States (3%) and foreign-born with 10 years or more in the United States (6%). Chi-square tests were used to assess the proportional differences for demographic and health characteristics by nativity and years in the United States. **Results:** On average, foreign-born Black females who lived in the United States for 10 years or more were older (mean \pm SD; 42 ± 12 years) than their counterparts. Foreign-born Black females who lived in the United States for 10 years or more (60%) represented the highest proportion of Black females who completed some college or greater. Compared to the total sample (79%), a lower proportion of foreign-born Black females who lived in the United States for less than 10 years (63%) had health insurance coverage. Only 36% of foreign-born Black females who lived in the United States for less than 10 years had a usual place for preventive care compared to 55% of the total sample. However, U.S.-born Black females had the highest proportion of Black females classified as obese (47%) and diagnosed with hypertension (40%). **Conclusions:** These findings demonstrate the importance of examining health data by nativity and length of time in the United States among Black females.

1720

FACTORS ASSOCIATED WITH PHYSICIAN FOLLOW-UP AFTER A FIRST DIAGNOSIS OF PSYCHOTIC DISORDER IN ONTARIO, CANADA

Kelly Anderson*, Paul Kurdyak (University of Western Ontario)

Background: Physician follow-up after a first diagnosis of psychotic disorder is crucial for improving engagement with treatment. We sought to examine factors associated with physician follow-up within 30 days of a first diagnosis of psychosis. **Methods:** We used linked health administrative data to identify incident cases of schizophrenia between 1999 and 2008 among people aged 14-35 years living in Ontario, Canada. We estimated the proportion of patients who had physician follow-up within 30 days of the index diagnosis. We used multivariate logistic regression models to examine the factors that were predictive of any physician follow-up and follow-up by a psychiatrist specifically. **Results:** We identified 20,096 people with a first diagnosis of psychotic disorder over our observation period, of whom 40% did not receive any physician follow-up within 30 days. Males had lower odds of receiving any physician follow-up, and the odds of psychiatrist follow-up decreased with increasing age and were lower for those living in rural areas. Both prior contact with a general practitioner for a mental health reason and prior contact with a psychiatrist were strongly predictive of higher odds of receiving follow-up. **Interpretation:** A substantial proportion of patients receiving a first diagnosis of psychotic disorder do not have any physician contact within 30-days following the index diagnosis. Patients without prior engagement with mental health services are at highest risk of falling through the cracks. Linkages between service providers should be improved to help ensure that patients are engaging with services during the crucial early stages of psychotic disorder.

1722

CLUSTERING OF INTIMATE PARTNER VIOLENCE AND MENTAL HEALTH DIAGNOSES IN THE NATIONWIDE EMERGENCY DEPARTMENT SAMPLE, 2010

Hind Beydoun*, Meghan Williams, May Beydoun, Shaker Eid, Alan Zonderman (Graduate Program in Public Health, Eastern Virginia Medical School, Norfolk, VA)

Objectives: We examined associations of IPV status in an emergency department (ED) setting with selected mental health outcomes using a nationally representative sample of adult discharges (18-64y) from the 2010 Healthcare Cost and Utilization Project's (HCUP) Nationwide Emergency Department Sample (NEDS). **Methods:** NEDS 2010 included ~130 million weighted discharges of all ages, of whom 81,386,155 were selected. IPV was determined using ICD-9-CM external cause of injury code E967.3 (battering by spouse or partner). Similarly, ICD-9-CM clinical classification of discharge diagnoses (any of possible 15 diagnoses) were used to identify selected mental health problems. Multivariable logistic regression models were constructed, controlling for potential confounders. **Results:** Estimated IPV prevalence was 0.36 per 1,000 ED discharges (Weighted n=28,970). IPV was associated with combined mental health disorders (multivariable-adjusted odds ratio, ORadj=1.35, 95% CI: 1.23-1.48). The strongest correlates of IPV were alcohol-related (ORadj=3.02, 95% CI: 2.62-3.50) and adjustment (ORadj=2.37, 95% CI: 1.56-3.58) disorders, followed by intentional self-harm (ORadj=1.41, 95% CI: 1.05-1.89), anxiety disorders (ORadj=1.23, 95% CI: 1.07-1.40), drug-related disorders (ORadj=1.22, 95% CI: 1.01-1.47) and mood disorders (ORadj=1.16, 95% CI: 1.04-1.31). IPV's association with alcohol-related disorders was stronger among women (ORadj=3.22, 95% CI: 2.79-3.72) vs. men (ORadj=1.98, 95% CI: 1.42-2.77). Similarly, drug-related disorders were stronger correlates to IPV among women (ORadj=1.32, 95% CI: 1.09-1.60) vs. men (ORadj=0.59, 95% CI: 0.31-1.16). Unlike the other disorders, schizophrenia and other psychotic disorders were inversely related to IPV (ORadj=0.49, 95% CI: 0.35-0.71). **Conclusions:** In ED settings, IPV was linked to some mental health disorders but not others, with women experiencing clustering of IPV with substance use more frequently than men.

1721-S/P

FACTORS ASSOCIATED WITH HISTORY OF HOMELESSNESS AND INCARCERATION AMONG PSYCHIATRIC PATIENTS IN BRAZIL

Fabiana Barros*, Ana Melo, Eduardo Lima, Lidyane Camelo, Mark Guimarães (UFMG (Federal University of Minas Gerais))

Introduction: The prevalence of history of incarceration and homelessness among psychiatric patients are higher than in the general population. Objective: The aim of this study was to assess sociodemographic, clinical, behavioral, and contextual factors associated with history of homelessness, incarceration and the co-occurrence of both conditions among Brazilian psychiatric patients. **Methods:** Representative cross-sectional multicenter study of 2,475 patients selected from 26 mental health services in Brazil in 2006. Participants with a lifetime history of homelessness, incarceration or both were compared to those without any history of either condition using multinomial logistic regression models. Odds ratios (OR) with 95% confidence interval were estimated. **Results:** Two hundred and twelve (8.6%) participants had a history of homelessness only; 405 (16.4%) of incarceration only; and 232 (9.4%) of both. Although many characteristics were independently associated ($p < 0.05$) with homelessness only or incarceration only, the magnitude of the associations of most variables was much higher among patients with the co-occurrence of both conditions, including physical violence (OR=4.69), sexual violence (OR=5.18), sex under the influence of drugs and/or alcohol (OR=2.12), multiple lifetime number of partner (OR=4.41), lifetime cigarette smoking (OR=2.72), and any illicit drug (OR=4.31) or injecting drug use (OR=12.22). **Conclusions:** This representative study showed that history of incarceration and homelessness among psychiatric patients in Brazil are highly prevalent and strongly correlated, and they share many associated factors. Our findings may have implications for the implementation of public policies and efforts to reduce the likelihood of criminal arrest and homelessness episodes among psychiatric patients. Many of the associated factors are potentially modifiable and may act synergistically, thus requiring greater attention from health professionals.

1723-S/P

DEPRESSION AND COGNITIVE DECLINE AMONG ADULTS WITH DIABETES: A SYSTEMATIC REVIEW AND META-ANALYSIS

Sofia M. Danna*, Eva Graham, Sonya Deschênes, Rachel Burns, Norbert Schmitz (McGill University, Department of Epidemiology, Biostatistics and Occupational Health; Douglas Mental Health University Institute)

Depression is a common mood disorder that is associated with an increased risk of cognitive decline. However, the role of depression in cognitive decline among people with diabetes is not well understood. Diabetes is a chronic metabolic disease also associated with cognitive decline; and depression and diabetes show a bidirectional relationship. This systematic review and meta-analysis will assess whether adults with comorbid depression and diabetes exhibit greater cognitive decline relative to individuals with diabetes alone. This review searched CINAHL, the Cochrane Central Register of Controlled Trials, EMBASE, PsycINFO, and PubMed without time or language restrictions. After full-text screening, 23 articles were selected for analysis. These articles will be handsearched for pertinent articles and forward-searched for later citations. In order to be selected for the final analysis, studies must report cognitive outcomes in adults with diabetes and depression compared to outcomes in adults with diabetes alone. Two reviewers will independently extract data and assess the methodological quality of each study using Cochrane Collaboration guidelines. Disagreements will be resolved by consensus. Publication bias will be assessed using a funnel plot and Egger test. The primary outcome of cognitive decline will include cognitive function test scores or incident dementia of any kind. Secondary outcomes will include participant characteristics and potential sources of heterogeneity between studies. If relatively homogeneous studies are found to measure the same outcome, their data will be meta-analyzed using a random effects model. Heterogeneity will be assessed graphically by plot inspection and statistically with I² tests. Subgroup analyses will be performed stratifying by study type, study quality, and participant characteristics. The final review and meta-analysis will provide insight into the role of depression in cognitive decline among adults with diabetes.

1724

MENTAL HEALTH WELL-BEING OF ARAB ADOLESCENTS: FINDINGS FROM 19 MULTI-COUNTRY GLOBAL SCHOOL-BASED HEALTH SURVEYS

Lilian Ghandour*, Rima Afifi Fadi

Maalouf, Sirine Anouti (American University of Beirut)

Mental health research among adolescents from the Arab world remains limited, and partially contributing to the shortage of evidence-based policies and services. This study describes the prevalence of mental health indicators using the Global School-based Health Surveys conducted from 2005–2011 representing 18 different Arab countries and 58,659 school-attending students aged 13–15 years. The objective is to draw cross-national comparisons and inform evidence-based policies/services. Approximately 1 in 4 adolescents reported being bullied at least once in the 30 days preceding the survey; estimates reaching 50% in countries such as Egypt (2011), Algeria (2011), Gaza and West Bank (2010). In most Arab countries with available data, approximately 15% of the adolescents had felt lonely “most of the time/always” in the preceding year, 15% couldn’t sleep at night, and a similar percentage reported suicide ideation/attempt, rising up to 23% among adolescents in Gaza. The odds of reporting these mental health symptoms were much higher in females. Controlling for gender, experiencing each of these symptoms in the preceding year was associated with significantly higher odds of simultaneously smoking. These estimates are similar to or higher than world averages and call for immediate attention, particularly when paired with evidence of a substantial treatment gap for adolescents. The school-based findings stress the need for early detection and prevention to ultimately reduce the burden from mental health problems in these countries, which has been estimated by the Global Burden of Disease study to be greater among Arab adolescents compared with other world regions. This presentation will explore these dichotomies further, contextualize them within the structural conditions of political social and economic uncertainty engulfing many Arab countries, and suggest possible program and policy options for youth mental well being both within the school system and beyond.

1726

SEVERE MENTAL DISTRESS AMONG ADULTS IN THE UNITED STATES 1993-2014

Tammie Johnson*, James Churilla

(University of North Florida)

Background: Mental distress is a major public health concern. Frequent mental distress (FMD) is a dichotomous variable that has been used to examine mental distress in the U.S. adult population since 1993. The FMD variable allows us to determine the prevalence of adults who have reached mental distress levels similar to the diagnostic criteria for depression (14 days of poor mental health out of the past 30 days); however, mental distress and mental health are more adequately examined on a continuum of severity. The purpose of this study was to examine mental distress from 1993-2014 using a 5-level mental distress index that ranges from no mental distress (level 1) to severe mental distress (level 5). **Methods:** Behavioral Risk Factor Surveillance (BRFSS) data from 1993-2014 were used. A 5-level mental distress index was constructed and validated against a similar 5-level variable derived from the BRFSS Anxiety and Depression Module, which utilizes the Personal Health Questionnaire Depression Scale (PHQ-8) questions. The data were age-adjusted and weighted. Prevalence rates were computed and trend analyses were run. **Results:** The proportion of the U.S. adult population with mild to severe mental distress increased from 16.9% in 1993 to 20.9% in 2014. Most of the increase stemmed from those in the moderately severe and severe mental distress categories, each having a 50% increase comparing 1993 to 2014. The prevalence of severe mental distress increased from steadily from 1993 to 2014 from 4.3% to 6.5%. **Conclusion:** Along the continuum of mental distress, severity matters. The prevalence of severe mental distress in U.S. adults has increased at an alarming rate. Severe mental distress is associated with many health outcomes. The mental distress index is a useful tool for monitoring mental distress as a continuum of severity and provides insights not detectable using the FMD variable.

1725

PROSPECTIVE ASSOCIATION BETWEEN MAJOR DEPRESSIVE DISORDER AND CORONARY HEART DISEASE: NATIONAL EPIDEMIOLOGIC SURVEY ON ALCOHOL AND RELATED CONDITIONS (NESARC, 2001-2005)

Boji Huang*, Bridget

Grant, Sharon Smith, S. Patricia Chou (NIH/NIAAA)

Purpose. The association between depression and coronary heart disease (CHD) has been recognized for decades, but nationwide data on the association examined using DSM-IV criteria to diagnose psychiatric disorders are not widely available. Psychiatric disorders comorbid with depression were not taken into account of the association. The reasons of why treatments for depression did not demonstrate the expected benefits to reduce CHD remained unknown. We conducted the present prospective study to explore the reasons. **Methods.** The study population comprised 31,641 individuals free of CHD at the baseline examination of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). Face-to-face interviews using the Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV version were conducted at both baseline and the Wave 2 examinations. Past year major depressive disorder (MDD), any mood disorders other than MDD (OTMD), any anxiety disorders (ANX) and lifetime any personality disorders (PD) were diagnosed using DSM-IV criteria at the baseline examination. Self-reported past year doctor diagnosis of CHD was reassessed at the Wave 2. **Results.** MDD increased CHD by more than 50% (odds ratio was 1.53, 95% confidence interval was 1.09-2.15) after controlling for sociodemographic characteristics, substance consumption and CHD risk factors. Once OTMD, ANX and PD were controlled in the multivariate regression model, the association of MDD with CHD became insignificant. However, the associations of OTMD, ANX and PD with CHD remained significant. **Conclusion.** The association of MDD with CHD was confirmed in the present study. Our findings suggest that treatment for MDD only is insufficient to reduce CHD. The equal attentions to the comorbid OTMD, ANX and PD should be paid in the treatment.

1727

THE ASSOCIATION OF CANNABIS, TOBACCO AND SOCIO-ECONOMIC BACKGROUD WITH FIRST EPISODE PSYCHOSIS

Paulo Menezes*, Marcia Scazufca, Geraldo Busatto, Robin Murray

(Universidade de Sao Paulo)

Background: Incidence of schizophrenia varies significantly between and within populations worldwide. In high income countries the risk of first episode psychosis has been associated with history of cannabis use and with low socioeconomic status. More recently, an association with tobacco use has been described. We examined whether these associations also hold in a population from a middle income country. **Method:** A population-based case-control study was carried out in Sao Paulo, Brazil. First episode psychosis cases aged 18-64 years were individually matched by sex, age range, and neighbourhood to healthy controls. Years of education, household income per capita, civil status, history of cannabis use and of cigarette smoking were ascertained through direct interview of cases and controls. Conditional logistic regression was used to estimate adjusted Odds Ratios (OR) with 95% confidence intervals (95%CI). **Results:** 191 cases and 375 controls were included (52.8% females). In the multivariate analysis, risk of first episode psychosis was independently associated with years of education (OR: 3.6 [95%CI: 1.7-7.8]; none vs. University), household income per capita (OR: 3.0 [95%CI: 1.4-6.4]; lower vs. higher), having a partner (OR: 0.4 [95%CI: 0.3-0.7]; yes vs. no), and previous use of cannabis (OR: 2.6 [95%CI: 1.4-4.9]; once/week or more vs. none), but not with cigarette smoking (OR: 1.2 [95%CI: 0.7-1.8]; yes vs. no). **Discussion:** We found independent associations between worse socioeconomic conditions, and history of cannabis use and higher risk of first episode psychosis. The association between tobacco use and FEP was confounded by these exposures. Public policies aimed at reducing poverty and at improving access to education may have an impact in reducing the incidence of FEP in low and middle income countries.

1728-S/P

MATERNAL PRE-PREGNANCY BODY MASS INDEX AND OFFSPRING BEHAVIORAL PROBLEMS - A STUDY WITHIN A NATIONAL BIRTH COHORT Susanne Hvolgaard Mikkelsen* (Department of Public Health, Aarhus University, Denmark)

Background: Studies have suggested that maternal pre-pregnancy obesity is associated with increased risk of offspring behavioral problems. We aimed to examine if this association may be explained by family factors by comparing the association between maternal pre-pregnancy BMI and offspring behavioral problems with the association of paternal BMI. **Methods:** We studied 38 314 live-born children enrolled in the Danish National Birth Cohort during 1996-2002. Self-reported data on maternal pre-pregnancy BMI was collected at the first pregnancy interview (approximately 15 weeks of gestation) and data on paternal BMI was collected at the fourth interview (approximately when the child was 18 months old). When the child was 7 years old, a follow-up questionnaire including the Strength and Difficulties Questionnaire (SDQ) was filled out by the primary caregiver. We estimated odds ratios for behavioral problems in children born to overweight or obese parents. **Results:** We found a dose-response relationship between maternal pre-pregnancy BMI and behavioral problems in 7 years old offspring, with associations being marginally attenuated after adjustment for the measured covariates. Also paternal obesity was associated with higher risk of offspring behavioral problems, but stronger associations were observed with maternal pre-pregnancy obesity. We found a tendency of higher risk with maternal pre-pregnancy BMI ≥ 25 and paternal BMI < 25 , compared to the opposite: maternal pre-pregnancy BMI < 25 and paternal BMI ≥ 25 . Offspring with both parents being overweight or obese had the highest risk for total difficulties and total difficulties with impact. **Conclusion:** Our results suggest that a great part of the association between maternal pre-pregnancy BMI and offspring behavioral problems can be accounted for by common genetic and social factors, but also environmental risk factors related to maternal pre-pregnancy overweight and obesity might contribute to the aetiology of behavioral problems in the offspring.

1730

ASSOCIATIONS OF BIPOLAR II, CHILDHOOD ABUSE, AND RELATIVE SUICIDE ATTEMPTS AND SUICIDE WITH LIFE-TIME SUICIDE ATTEMPTS USING NATIONALLY REPRESENTATIVE DATA Roger Pickering*, Bridget Grant, Tulshi Saha (NIH/ NIAAA)

Introduction: Suicide Attempts (SA) confer risk for death and injury and cause enormous suffering, incurring an estimated \$2 billion in hospital costs and \$4.3 billion in indirect costs, e.g., lost wages and productivity. Although it is well known that SA are highly comorbid with psychiatric disorders, this study is the first to examine associations of SA with Bipolar II (BP2), Relatives SA or Suicide (RSA), Childhood Verbal Abuse (CVA), Sexual Abuse (CSA), and Physical Abuse (CPA) while accounting for potential sociodemographic, diagnostic, and childhood adversity-related confounders (Fully Adjusted Models [FAM]). **Methods:** Data are drawn from the National Epidemiologic Survey on Alcohol and Related Condition-III, a nationally representative survey of 36,309 civilian, noninstitutionalized United States adults. Diagnoses were made according to DSM-5, using the Alcohol Use Disorder and Associated Disabilities Interview Schedule-5. SA were assessed on a lifetime basis. **Results:** BP2 was no longer significantly associated with SA in the FAM (AOR 1.39 95%CI 0.76-2.54). RSA was significant for both men and women (AOR 2.98 95%CI 2.06-4.30 and AOR 2.00 95%CI 1.56-2.58), but lost significance for women with Bipolar I (BP1) (AOR 1.23 95%CI 0.52-2.87). CVA, CSA, and CPA were all significant (AOR 1.23 95%CI 1.02-1.48, AOR 2.27 95%CI 1.99-2.58, and AOR 1.32 95%CI 1.11-1.58), but only CSA stayed significant for men and women with and without BP1 (AOR 4.18 95%CI 2.05-8.52, AOR 2.46 95%CI 2.03-2.98, AOR 4.93 95%CI 2.19-11.08, and AOR 1.80 95%CI 1.41-2.31). **Conclusions:** The association of BP1 with SA was mediated by other factors. Both RSA and CSA (especially among those with BP1) should be considered when assessing SA risk.

1729-S/P

STRESSFUL LIFE EVENT EXPERIENCES OF PREGNANT WOMEN IN THE UNITED STATES: A LATENT CLASS ANALYSIS Soumyadeep Mukherjee*, Stefany Cox, Kristopher Fennie, Purnima Madhivanan, Mary Jo Trepka (PhD candidate, Dept. of Epidemiology, Florida International University)

Background: Nearly 65-70% of pregnant women in the United States (U.S.) experience one or more stressful life events (SLEs), which can lead to adverse maternal and/or fetal outcomes. This study aimed to identify groups of women, with similar patterns of SLE experiences during pregnancy, and to examine the socio-demographic correlates of these groups. **Methods:** Data from the 2009-11 Pregnancy Risk Assessment Monitoring System (PRAMS) were used. A latent class analysis (LCA) was performed on women with valid response(s) (N=115,704) to one or more of 13 SLE questions, to identify unobserved class membership. Optimal number of classes was determined using fit indices, considerations of parsimony, and substantive meaning. Multinomial logistic regression was used to explore the relative likelihood of membership in each latent class. **Results:** A three-class model was the most appropriate, with the majority (64%) in a low-stress class. Women in the emotional stress class (13%) had high prevalence of sickness/hospitalization of a family member (77%) and death of someone very close (63%). The women in the high-stress class (22%) endorsed most SLEs, especially having more than usual arguments with husband/partner (66%), moving to a new address (59%), and having a lot of bills that could not be paid (60%). Unmarried women were more (adjusted odds ratio [aOR]: 2.35; 95% confidence interval [CI]: 2.11, 2.61), while women with the highest-income were less likely (aOR: 0.09; 95% CI: 0.07, 0.11) to be in the high-stress class. Relative to non-Hispanic whites, Asian and Pacific Islanders and Hispanics were less likely to be in the high-stress and emotional-stress classes. **Conclusion:** That 1 out of every 5 women was in the high-stress class and 1 out of every 8 women was in the emotional stress class suggest that SLEs are common among pregnant women. SLE experiences and the relative vulnerabilities of socio-demographic groups, need to be considered during routine prenatal care.

1731-S/P

CHILDHOOD EXPOSURE TO PSYCHOSOCIAL ADVERSITY AND THE RISK OF DEVELOPING ADHD - A FAMILY-BASED COHORT STUDY Mina Rydell*, Henrik Larsson (Karolinska Institutet)

Previous studies suggest that psychosocial adversity in childhood may increase the risk of ADHD. However, confounding from shared genetic and environmental influences has not been taken into account. This study aimed to clarify the influence of accumulated psychosocial adversity within the family during upbringing, on the risk of developing ADHD in offspring. The study was based on a cohort of 775,587 individuals born 1992-2000 in Sweden, identified from nation-wide registries. Six indicators of psychosocial adversity were summed up to form an index: parental dependence on social allowance, low level of parental education, parental divorce, parental mental disorder, paternal violent criminality and large family size. Individuals with ADHD were identified based on having a diagnosis of ADHD, or by using ADHD medication. Cox proportional hazards regression were used to calculate hazard ratios (HR) and corresponding 95 % confidence intervals (CI). Analyses were replicated in a subsample of cousins (n=126,809) and half-cousins (n=27,978) to adjust for familial confounding shared between relatives. Results showed that a higher score on the Psychosocial Adversity Index was associated with a higher risk of developing ADHD. Children exposed to the highest level of psychosocial adversity (at least five of the six indicators) was associated with a more than six times higher risk of developing ADHD than unexposed children (HR 6.49, 95% CI 5.80-7.26). This association remained when analyses were restricted to half-cousins (HR 4.69, 95% CI 2.90-7.57) and cousins (HR 5.49, 95% CI 3.87-7.79). Lower scores on the index were similarly associated with lower, but significant, risks of ADHD. Findings from this study indicate that the aggregated risk of psychosocial adversity within the family is associated with a higher risk of developing ADHD, even when familial confounding has been taken into account. Further studies are needed to disentangle the mechanism behind this association.

1732

TRAJECTORIES OF EARLY LIFE ADVERSITY AND RISK OF DEPRESSION IN YOUNG ADULTHOOD IN A PROSPECTIVE COHORT STUDY Melissa Tracy*, Allison Appleton, Maggie Ryan (Department of Epidemiology & Biostatistics, University at Albany School of Public Health)

Evidence is accumulating that adversity in early life may have life-long consequences for mental health, including greater severity of mental disorders and functional impairment. Existing studies have been hampered by methodological limitations, including reliance on retrospective self-reports of childhood adversity and use of unweighted counts of adverse events irrespective of severity, chronicity, or timing. We used prospectively collected data from 4,562 participants in the Avon Longitudinal Study of Parents and Children (ALSPAC), a longitudinal birth cohort, to examine the influence of trajectories of adversity on depression risk in young adulthood. Early life adversity was measured with items assessed at multiple time points for several domains: acute stressful life events; chronic exposure to violence; family conflict; family disruption; parental legal troubles; financial hardship; housing inadequacies; and neighborhood disadvantage. Using semi-parametric group-based trajectory modeling, we identified six trajectories of adversity during childhood and early adolescence: stable low levels (57.8%), stable mild levels (25.7%), moderate levels (4.8%), decreasing adversity (5.7%), increasing adversity (3.5%), and chronically high adversity (2.5%). Nearly 8% of the sample met criteria for probable depression based on the Clinical Interview Schedule-Revised (CIS-R) at age 18 years. In logistic regression models adjusted for socio-demographics and maternal psychopathology, risk of depression was higher among those with moderate adversity (OR=1.79, 95% CI:1.11–2.89), chronically high adversity (OR=2.29, 95% CI:1.28–4.12), and adversity that increased in early adolescence (OR=2.98, 95% CI:1.83–4.87), compared to those experiencing consistently low adversity. These results highlight the importance of considering both the timing and magnitude of adversity, with implications for interventions aimed at mitigating the mental health consequences of early life adversity.

1740-S/P

HEALTHY LIFESTYLE DURING EARLY PREGNANCY AND RISK OF GESTATIONAL DIABETES MELLITUS

Sylvia E Badon*, Daniel A Enquobahrie, Paige D Wartko, Raymond S Miller, Chunfang Qiu, Bizu Gelaye, Michelle A Williams (University of Washington)

Background: Previous studies have found associations between healthy lifestyle before pregnancy and reduced risk of gestational diabetes mellitus (GDM); however, the association of healthy lifestyle during early pregnancy with GDM has not been examined. **Methods:** Study participants (N=3,005) were identified from the Omega study, a prospective pregnancy cohort in Washington State. Reported diet, physical activity, smoking, and stress during pregnancy (5-25 weeks gestation) were dichotomized into healthy/unhealthy using Alternate Healthy Eating Index-2010 (AHEI) score, minutes/week of leisure time physical activity (LTPA), smoking history, and perceived stress scale (PSS), respectively, and combined into a lifestyle score (0-4). GDM diagnosis was abstracted from medical records. Regression models adjusted for age, race, and parity were used to determine relative risk of GDM related to healthy lifestyle. **Results:** Overall, 20% of participants had healthy diet (AHEI score ≥ 62), 66% were physically active (≥ 150 min/wk of LTPA), 95% were non-smokers, and 55% had low stress (PSS ≤ 3). Individually, healthy diet, physical activity, and low stress were associated with 12-25% lower risk of GDM; however estimates were not statistically significant. Not smoking was associated with 45% reduced risk of GDM (95% CI: 0.30, 0.99). Each additional healthy lifestyle component was associated with 21% lower risk of GDM (95% CI: 0.65, 0.96). Women with 4 healthy lifestyle components had 77% lower risk of GDM (95% CI: 0.07, 0.75) compared to women with no healthy lifestyle components. Adjustment for pre-pregnancy BMI slightly attenuated associations (RR=0.83; 95% CI: 0.68, 1.01). **Conclusion:** Healthy lifestyle during early pregnancy, consisting of healthy diet, physical activity, low stress, and not smoking, is associated with reduced risk of GDM. Public health messaging and interventions promoting multiple aspects of healthy lifestyle during pregnancy should be considered for prevention of GDM.

1742- S/P

ANTENATAL EXPOSURE TO SELECTIVE SEROTONIN REUPTAKE INHIBITORS AND AUTISM: A SYSTEMATIC REVIEW AND META-ANALYSIS

Hilary Brown*, Neesha Hussain-Shamsy, Yona Lunskey, Cindy-Lee Dennis, Simone Vigod (Women's College Research Institute and University of Toronto)

The serotonin hypothesis of autism suggests that fetal exposure to high levels of serotonin could lead to the autism phenotype. However, previous studies have been unable to disentangle the role of antenatal selective serotonin reuptake inhibitor (SSRI) exposure from that of maternal mental illness (MMI). This systematic review and meta-analysis examined the relationship between antenatal SSRI exposure and child autism, with specific attention to MMI as a potential confounding factor. We searched Medline, EMBASE, PsycINFO, and CINAHL from database inception. We included published, peer-reviewed articles written in English. Two reviewers used standardized instruments for data extraction and quality assessment. We generated unadjusted and adjusted pooled estimates for studies of the same design for SSRI exposure during pregnancy (any and first trimester). Sub-analyses were conducted among studies with analyses that a) adjusted for MMI; and b) restricted to MMI. We included four case-control studies (pooled) and one retrospective cohort study (reported separately). The adjusted pooled odds ratios (aPOR) were 1.4, 95% CI 1.0-2.0 (any) and 1.7, 95% CI 1.1-2.6 (first trimester). In MMI-adjusted analyses, only first trimester exposure remained statistically significant (aPOR 1.8, 95% CI 1.1-3.1). In MMI-restricted analyses, neither exposure period was statistically significant. In the cohort study, MMI-adjusted relative risks, aRR, were 1.2, 95% CI 0.9-1.6 (any) and 1.4, 95% CI 0.99-1.9 (first trimester). The MMI-restricted aRR was 0.6, 95% CI 0.2-1.3 (any). The association between antenatal SSRI exposure in the first trimester and child autism risk cannot be completely explained by MMI or other factors. Future studies with adequate sample size and robust measurement of MMI both prior to, and during pregnancy, will help clarify its impact on autism risk in children exposed antenatally to SSRIs.

1741

GESTATIONAL WEIGHT GAIN AND THE RISK OF PREECLAMPSIA

Lisa Bodnar*, Katherine Himes, Sara Parisi, Melissa Papic Jennifer Hutcheon (University of Pittsburgh)

Our objective was to estimate the association between gestational weight gain at 22-26 weeks and the risk of preeclampsia. We conducted a case-cohort study using abstracted medical record data from singleton non-anomalous pregnancies that delivered at 20-42 weeks gestation at Magee-Womens Hospital in Pittsburgh, PA (1998-2010; n=78,999 eligible pregnancies). In each BMI category, we randomly sampled 119 to 361 preeclampsia cases and 825 to 1404 randomly selected pregnancies as a comparison subcohort. Pregnancy weight gain up to 22-26 weeks (kg) was converted to gestational age-standardized z-scores. Preeclampsia was defined as an ICD-9 code of 642.4-642.6. Multivariable log-binomial regression models were used to estimate associations between weight gain z-score and preeclampsia in each BMI category. Preeclampsia incidence in the subcohort ranged from 2.8-8.5%, increasing with higher BMI category. In the subcohort, total weight gain at 22-26 weeks decreased as pregravid BMI increased from 8.4 (3.9) kg in normal weight to 3.6 (6.7) kg in grade 3 obese women. Among normal-weight, grade 2 obese, and grade 3 obese women, the median weight gain z-score at 22-26 weeks was meaningfully higher among the preeclampsia cases than the subcohort. After adjustment for confounders, weight gain z-score $\geq +1$ standard deviation (≥ 10 kg at 24 weeks) was associated with a 70% increase in preeclampsia risk (RR 1.7 (95% CI 1.1, 2.7)) compared with weight gain < -1 SD (4.5 kg at 24 weeks) among normal weight women only. Results were similar when preeclampsia was divided into mild and severe subtypes. There was no association between weight gain and preeclampsia in the remaining BMI groups after adjusting for confounders. Preeclampsia may be among the adverse health outcomes that are associated with excessive gestational weight gain in early pregnancy. Inclusion of the risk of preeclampsia into evidence-based gestational weight gain recommendations may favor lower weight gains in normal-weight women.

1743-S/P

MATERNAL WHOLE GRAIN INTAKE AND OUTCOMES OF IN VITRO FERTILIZATION

Audrey Gaskins*, Yu-Han Chiu, Paige Williams, Myra Keller, Thomas Toth, Russ Hauser, Jorge Chavarro (Harvard T.H. Chan School of Public Health)

Background. Whole grains have been linked to reduced risk of many chronic diseases; however, less is known about their impact on reproductive health. Components of whole grains could beneficially impact fertility through support of the body's antioxidant defense system, regulation of glucose metabolism, or via hormonally active phytoestrogen compounds. Our objective was to evaluate the relationship between intake of whole grains and outcomes of in vitro fertilization (IVF). **Methods:** This analysis included 273 women (438 IVF cycles) participating in a prospective cohort study (EARTH) at the Massachusetts General Hospital Fertility Center (2007-2014). Whole grain intake was assessed with a validated food frequency questionnaire at enrollment and IVF outcomes were abstracted from medical records. Generalized linear mixed models were used to evaluate the associations of whole grain intake with IVF outcomes adjusting for age, BMI, race, dietary patterns, and calorie, folate, and alcohol intake. **Results:** Higher whole grain intake before IVF treatment was associated with higher probability of implantation and live birth (p-trend=0.02 and 0.03). The adjusted percentage of cycles resulting in live birth for women in the highest vs. lowest quartile (>52.4 vs. <21.4 g/day) of whole grain intake was 53% (95% CI 41, 65) vs. 35% (95% CI 25, 46%). This association was largely driven by intake of bran as opposed to germ. Of the intermediate IVF endpoints examined, only endometrial thickness on the day of embryo transfer was associated with whole grain intake. A 28 g/day (~ 1 serving/day) increase in whole grain intake was associated with a 0.4 mm (95% CI 0.1, 0.7mm) increase in endometrial thickness. **Conclusions:** Higher pre-treatment whole grain intake was related to a higher probability of live birth among women undergoing IVF. Higher live births may result from increased endometrial thickness on the day of embryo transfer and improved embryo receptivity.

1744

ASSOCIATION OF ANTEPARTUM SUICIDAL IDEATION DURING THE THIRD TRIMESTER INFANT BIRTH WEIGHT AND WITH GESTATIONAL AGE AT DELIVERY

Bizu Gelaye*, Fernanda Rebelo, Gloria Larrabure, Chunfang Qiu, Miguel Angel Luque Fernandez, Percy Pacora Sixto Sanchez, Michelle Williams (Harvard T. H. Chan School of Public Health)

Background: Antepartum suicidal behaviors including suicidal ideation and attempts are the leading causes of injury and maternal death worldwide. Although suicidal ideation is considered a symptom of depressive disorder, a substantial proportion of women with suicidal ideation do not meet clinical thresholds for depression. **Objective:** We evaluated the relationship of antepartum suicidal ideation with infant birth weight (BW) and gestational age at delivery (GA). **Methods:** A cohort of 1,183 Peruvian women were interviewed at 24-28 weeks of gestation. Antepartum suicidal ideation and depression were assessed using the Patient Health Questionnaire 9 (PHQ-9). GA and BW were obtained from medical records. Multivariable linear and logistic regression procedures were used to estimate adjusted measures of association (coefficients and odds ratios) and 95% confidence intervals (CI). **Results:** The prevalence of antepartum suicidal ideation was 8.7%. Women with suicidal ideation were more likely to have infants with lower BW (3267 ± 511 vs. 3417 ± 492 g; $p=0.005$) compared with women without suicidal ideation. Antepartum suicidal ideation was independently and negatively associated with infant birth weight ($= -94.2$ g, $P=0.037$) after adjusting for confounders including depression. No statistically significant association was noted between suicidal ideation and mean GA. However, women who endorsed suicidal ideation were 3.48-times as likely to deliver a small-for-gestational age (SGA) newborn (95%CI: 1.59-8.74). **Conclusion:** Antepartum suicidal ideation, even after adjusting for depression, was associated with reductions in infant BW and increased SGA risk. If corroborated, antenatal care should be tailored to screen and provide additional mental health services and care to at risk patients.

1746- S/P

THE ROLE OF ENVIRONMENTAL QUALITY IN GESTATIONAL WEIGHT GAIN AMONG U.S. PREGNANT WOMEN

Christine Gray*, Lynne Messer, Kristen Rappazzo, Shannon Grabich, Jyotsna Jagai, Yun Jian, Danelle Lobdell (University of North Carolina at Chapel Hill)

From 2000-2009, 44% of United States (US) pregnant women had gestational weight gain (GWG) above and 20% had GWG below the recommended range of 15 to 40 pounds, which depends on starting weight. GWG outside the recommended range is associated with adverse outcomes including pre-eclampsia, gestational diabetes, and preterm birth. In the US, the burden of excessive gain is of particular concern, partly due to racial disparities associated with obesity. Some studies have associated neighborhood factors with GWG, though environmental studies and studies of racial heterogeneity of effects have been limited. We sought to examine the association between cumulative environmental quality and GWG, and to explore modification by maternal race/ethnicity categories of white non-Hispanic (WNH), black non-Hispanic (BNH) and Hispanic in stratified analyses. We used the county-level Environmental Quality Index (EQI; range: 9 standard normal units; higher is worse quality), which incorporates variables from five environmental domains (air, water, land, built and sociodemographic), to estimate associations between the EQI and GWG in geocoded U.S birth records from the National Center for Health Statistics from 2000-2005 ($n=19,795,782$ births). We estimated pounds of GWG per unit increase in the EQI and 95% confidence intervals (CI) using fixed slope, random intercept linear regression models, clustered by county, and adjusted for marital status, and maternal race, education and age. Worsening environmental quality was associated with increased GWG (coefficient: 0.49; 95% CI: 0.48, 0.50). The association between worsening environmental quality and increased GWG was strongest for BNH (coefficient: 0.84; 95% CI: 0.82, 0.86), followed by WNH (coefficient: 0.50; 95% CI: 0.49, 0.51), and Hispanic (coefficient: 0.36; 95% CI: 0.34, 0.38). Poor environmental quality is associated with increased GWG, and effects vary by race/ethnicity. This abstract does not reflect EPA policy.

1745- S/P

CLINICAL FEATURES OF NEWBORNS OF TEENAGE MOTHERS VERSUS NEWBORNS OF NO TEENAGE MOTHERS, CUSCO-PERU

Pablo Grajeda*, Marisol Yuca, Luis Gonzales de la Vega, Carmen Rosa Rojas (Field Epidemiology Training Program, Peru)

Background: Teen pregnancy is a public health problem in Cusco. In 2011, at Regional Hospital of Cusco, 15.68% of deliveries were in teenagers, that brings a high risk of maternal and infant morbidity and mortality, as well as psychosocial and economic implications for the family. The aim was to determine the difference in clinical features of the newborns of teenage mothers compared to newborns of no teenage mothers, and identify associated risks. **Methods:** A retrospective cohort study was conducted at Regional Hospital, during 2007-2011. We identified 140 newborns of teenage mothers and 140 newborns of no teenage mothers (Epi-Info3.5.1.); whose deliveries were attended at the hospital and were monitored to identify their clinical characteristics and risks related. For analysis, we calculate frequencies, relative risk (R.R.), 95%CI, and "p" value. **Results:** We studied 12 characteristics related to newborns. The following risks were found in newborns of teenage mothers: Newborns less than 37 weeks ($RR=2.67$, [95%CI=1.07-6.62], $p=0.02$); weight <2500 g. ($RR=2.88$, [95%CI=1.33-6.21], $p=0.004$); small for gestational age ($RR=4.0$, [95%CI=1.37-11.67], $p=0.005$); risk of death ($RR=4.19$, [95%CI=0.89-19.71], $p=0.04$). The most common diseases in newborns of teenage mothers are hyaline membrane disease, sepsis, jaundice, and asphyxia ($p<0.05$). The hospital stay, in intensive and intermediate care unit, is higher in newborns of teenage mothers ($p<0.05$). Cesarean delivery ($RR=1.38$, [95%CI=1.00-6.62], $p=0.04$), and number of prenatal visits <6 ($RR=1.88$, [95%CI=1.51-2.33], $p=0.001$) are risks factors related to teenage mothers. **Conclusions:** Newborns of teenage mothers are more likely to be premature, have low birth weight, small for gestational age, increased risk of death, increased neonatal disease, and more hospital stay if hospitalized. These results allowed developed an intervention plan to reduce teenage pregnancy, which is under implementation. **Keywords:** Newborn, Teenage pregnancy, Risk factors.

1747- S/P

GESTATIONAL WEIGHT GAIN AND RISK OF GESTATIONAL DIABETES MELLITUS IN HISPANIC WOMEN

Megan Harvey*, Barry Braun, Karen Ertel, Glenn Markenson, Penelope Pekow, Lisa Chasan-Taber (University of Massachusetts)

Findings for the association between gestational weight gain (GWG) and risk of gestational diabetes mellitus (GDM) have been conflicting and often biased due to the inclusion of weight gain after the diagnosis of GDM. Hispanic women are more likely than other subgroups to exceed the Institute of Medicine (IOM) guidelines for GWG and are at higher risk of developing GDM, yet have been underrepresented in previous studies. Therefore, we examined this association among 1,250 pregnant Hispanic participants in Proyecto Buena Salud, a prospective cohort study conducted in Massachusetts from 2006 to 2011. Information on GWG, GDM and abnormal glucose tolerance (AGT) was abstracted from medical records and confirmed by the study obstetrician. A total of 49.8% of women exceeded IOM guidelines for GWG up to the time of GDM screen, 14.3% had AGT and 4.6% were diagnosed with GDM. Increasing education (Odds Ratio (OR) = 2.1, 95% Confidence Interval (CI) 1.1-4.1 for post high school vs. less than high school; $ptrend<0.001$), marital status (OR=2.3, 95% CI 1.1-4.7 for married vs. single), generation in the United States (OR=2.4, 95% CI 1.3-4.3 for 1st vs. 2nd generation; $ptrend<0.001$), age (OR=9.7, 95% CI 4.2-22.4 for >30 vs. 16-19 years; $ptrend<0.001$), and pre-pregnancy body mass index (BMI) (OR=1.1, 95% CI 1.05-1.13 for each one unit increase in BMI; $ptrend<0.001$) were positively associated with GDM. After adjusting for pre-pregnancy BMI, age, and obstetric history, women who exceeded IOM guidelines for GWG were not at increased risk for AGT (OR=0.95, 95% CI 0.57-1.58) or for GDM (OR=0.85, 95% CI 0.38-1.91), as compared to women who gained within IOM guidelines. Each one-pound increase in GWG in the first trimester was also not significantly associated with AGT (OR=1.00, 95% CI 0.98-1.03) or GDM (OR=1.01, 95% CI 0.97-1.05). Parity and pre-pregnancy BMI did not modify observed findings. In summary, in this population of Hispanic women, GWG was not significantly associated with GDM.

1748-S/P

FERTILITY TREATMENT AND CHILDHOOD EPILEPSY - A NATIONWIDE COHORT STUDY OF 565,166 LIVE BIRTHS

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Background The use of fertility treatment is expanding worldwide. The treatment includes mechanical and hormonal manipulation of the women, the gametes and the embryo which ultimately may influence fetal organ development including the brain. However, only few studies have assessed the association between fertility treatment and neurological disorders in childhood. **Objective** To assess the association between fertility treatment and offspring epilepsy. **Methods** This nationwide cohort included all Danish pregnancies resulting in live-born singletons, 1995-2003. Children conceived by fertility treatment and children developing epilepsy (until 2013) were identified in national Danish registries. The data were analyzed by Cox proportional hazards regression, adjusted for potential confounders. **Results** A total of 565,166 pregnancies were included, and 1.4% of the children developed epilepsy. Preliminary results showed a slightly increased risk of epilepsy for children conceived by ovulation induction (OI) or intrauterine insemination (IUI) (hazard rate ratio, 95% CI (HR) 1.16 (0.99 - 1.37)). No association was seen for in vitro fertilization or intracytoplasmic sperm injection. When separately assessing the hormones used as mono-therapy in OI or IUI treatment, the risk of epilepsy was increased for clomiphene (HR 1.35 (1.04 - 1.76)). Regarding idiopathic generalized epilepsy and focal epilepsy, the HRs for clomiphene were 1.74 (1.04 - 2.91) and 1.56 (0.94 - 2.61). The association between clomiphene and childhood epilepsy persisted in a sibling design (HR 1.91 (0.96 - 3.77)). **Conclusion** Preliminary results indicate that OI or IUI treatment with clomiphene may be associated with an increased risk of epilepsy in the offspring.

1750-S/P

PATTERNS AND FACTORS ASSOCIATED WITH SICK-LEAVE DURING PREGNANCY: A EUROPEAN MULTINATIONAL PERSPECTIVE

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Introduction: The extent of sick-leave during pregnancy may vary across countries due to several factors such as type of occupation, maternal perceptions and severity of sickness, and not least social benefits. To date, intercountry comparability between studies on sick-leave during pregnancy is difficult since most studies have been conducted on individual country level. **Methods:** This multinational web-based study was carried out in 15 countries in Europe. Via utilization of an electronic questionnaire, we collected data about timing and reason for being on sick-leave during pregnancy, maternal sociodemographics and life-style factors, pregnancy-related illnesses and maternal mental health via the Edinburgh Postnatal Depression Scale (EPDS). Countries were divided in three groups according to their social benefit profile. **Results:** Of the 8,096 women included in the study, 3717 (45.9%) reported to have been on sick-leave during pregnancy. The crude rates of sick-leave varied across countries, ranging from 60-65% in Poland, Norway and Croatia, to 30-36% in the UK, Sweden and Italy. About 28% of the women on sick-leave were so during the third trimester, with slightly lower rates in the remaining trimesters. The most common reasons for being on sick-leave were having a risky pregnancy (21%), nausea and vomiting (12%), and pelvic-girdle and back pain (11%). Factors associated with sick-leave in pregnancy were maternal mental health and factors such as age, occupation, infertility treatment, immigrant status or pregnancy-related illnesses. The proportion of women on sick-leave residing in countries with good social benefit (59.2%) was significantly higher than those observed in women residing in countries with medium (47.5%) or low (38.2%) social benefit. **Conclusions:** There are differences across European countries in the extent of sick-leave during pregnancy. Maternal mental health, sociodemographics and social benefits were important factors associated with sick-leave.

“-S/P” indicates work done while a student/postdoc

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IS CESAREAN DELIVERY PREFERABLE IN TWIN PREGNANCIES AT ≥ 36 WEEKS GESTATION?

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Objective: The optimal mode of delivery in twin pregnancies at ≥ 32 weeks remains controversial. A recent randomized trial did not find any benefit of planned cesarean vs. vaginal delivery at 32-38 weeks gestation, but the trial was not powered to detect a moderate effect. We aimed to evaluate the impact of cesarean delivery on perinatal mortality and severe neonatal morbidity in twin pregnancies at ≥ 32 weeks through a large database exploration approach with the power to detect moderate risk differences. **Methods:** This was a retrospective cohort study using the U.S. matched multiple birth dataset 1995-2000 (the available largest multiple birth dataset) for twins delivered at 32-41 weeks gestation without congenital anomalies ($n=181,810$ pregnancies). The primary outcome was a composite of perinatal death and severe neonatal morbidity. Cox regression was used to estimate the adjusted hazard ratio (aHR) controlling for the propensity to cesarean delivery, fetal characteristics (sex, birth weight, birth weight discordance, same-sex twin or not) and twin-cluster level dependence. Prospective risks were calculated using the fetuses-at-risk denominators. **Results:** The overall rates of the primary outcome were slightly lower in intended cesarean (6.20%) vs. vaginal 6.45% deliveries. The aHRs of the primary outcome were in favor of vaginal delivery at 32 (aHR=1.06, $p=0.03$) or 33 (aHR=1.22, $p<0.001$) weeks, neutral at 34-35 weeks, but in favor of cesarean delivery at 36 (aHR=0.94, $p=0.004$), 37, 38 and 39+ weeks (aHR: 0.72 to 0.78, all $p<0.001$). **Conclusion:** Cesarean delivery may be beneficial for perinatal outcomes in twin pregnancies at ≥ 36 weeks gestation.

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PREGNANCY COMPLICATIONS IN WOMEN EXPOSED AS FETUSES TO MATERNAL PRE-EXISTING CHRONIC DISEASES

Tuija Mannisto*, Mika Gissler Eero, Kajantie Hannele, Laivuori Johan Eriksson, Risto Kaaja, Anneli Pouta, Marja Vaarasmaki (Northern Finland Laboratory Centre Nordlab)

Maternal chronic diseases increase the risk of pregnancy complications. Whether women who as fetuses had been exposed to maternal chronic diseases have higher risk of pregnancy complications is unknown. The FinnGeDi study included data on all births in Finland in 2009 ($N=60,790$) from the Medical Birth Registry (MBR). Women born in 1987 or later who had a pregnancy resulting in a birth in 2009 had available data on their fetal exposures from the MBR ($N=4,461$). A woman was considered to have been exposed to maternal chronic diseases as a fetus if her mother had pre-existing diabetes, hypertension, thyroid disease, asthma, heart disease, gastrointestinal disease or renal disease while expecting her. The odds ratios (ORs) and 95% confidence intervals (CIs) of pregnancy complications were estimated using logistic regression, adjusted for covariates. Overall, 77 women (1.7%) had been exposed to maternal chronic diseases in utero. There were no significant differences in the prevalence of women requiring artificial reproductive treatment between exposed or non-exposed women. Also, no difference in the prevalence of pregnancy complications such as gestational hypertension or preeclampsia, preterm birth, placenta previa, placental abruption, or neonate requiring intensive care treatment was observed between exposed or non-exposed women. However, women with fetal exposure to maternal chronic diseases had higher odds of gestational diabetes (OR 2.30, 95% CI 1.16-4.57) than non-exposed women. Specifically, the odds were higher in women with fetal exposure to maternal diabetes or hypertension. In conclusion, women who as fetuses were exposed to pre-existing maternal chronic diseases, particularly to diabetes and hypertension, had increased odds of gestational diabetes. The findings may be due to familial predisposition to metabolic disturbances or due to fetal programming caused by the maternal condition.

1752- S/P

INFANT MORTALITY BY REDUCIBILITY CRITERIA. 2008-2012. ESTEBAN ECHEVERRÍA, BUENOS AIRES, ARGENTINA Griselda Martínez Borda*, Matías Somoza, Laura Amarilla, Andrés Burke (Municipio de Esteban Echeverría)

Analysis of infant mortality according to reducibility criteria constitutes a useful tool for perinatal health services planning. A description has been made from infants less than 1 year old death records, as notified the Ministry of Health of Argentina, according to infant mortality reducibility criteria for the period 2008-2012, for Esteban Echeverría District, Province of Buenos Aires. The infant mortality rate for the period was 12.1%, the neonatal mortality was 62% and it was male. 48% of death causes could have been reduced by means of prevention, diagnosis or treatment. For neonatal deaths, the main cause was related to short period of gestation and low birth weight, not elsewhere classified (29, 6%) and post-neonatal deaths were due to sudden death. Regarding congenital malformations, they had more incidences in the neonatal causes group. Cardiovascular system causes (40.2%) were the main causes of this pathologies group, followed by other malformations (28.3%). The national average infant mortality rate was higher than that of the municipality, i.e. 13, 36. However, the pattern of mortality causes was similar. From the results found, public health policies aimed at the mother-child pairs are suggested so as to favor adequate prenatal controls, and strengthen obstetric and neonatal networks through the integration and reorganization of resources in order to reduce infant morbidity and mortality in our community.

1754-S/P

PRECONCEPTION WEIGHT LOSS AND PREGNANCY LOSS AMONG WOMEN WITH PRIOR PREGNANCY LOSS Rose Radin*, Robert Silver, Laurie Leshner, Janet Townsend, Anne Lynch, Sunni Mumford, Chandra Swanson, Keewan Kim, Torie Plowden, Enrique Schisterman (Epidemiology Branch, Division of Intramural Population Health Research, Eunice Kennedy Shriver National Institute of Child Health and Human Development)

Excess weight has typically been associated with a higher risk of pregnancy loss, while long-term weight loss is associated with a decreased risk. However, few data address the impact on pregnancy loss from recent weight change and attempted weight loss. We prospectively examined the risk of pregnancy loss associated with a recent attempt to lose weight resulting in <5% and 5% weight loss, respectively, among 783 women who became pregnant while enrolled in a preconception trial of low-dose aspirin and live birth in the US, 2007-2011. Participants were healthy, 18-40 years old, and had a history of 1-2 pregnancy losses. At baseline, weight was measured, and data were collected by questionnaire on the past year's weight-loss attempts, weight cycling, and maximum weight. Monthly follow-up visits continued for 6 menstrual cycles preconceptionally and throughout pregnancy. There were 188 pregnancy losses (24%). Log-binomial models estimated the RR and 95% CI of pregnancy loss, adjusted for maximum body mass index in the past year, age, prior parity, number of prior losses, pregnancy loss in the past year, and the selection of pregnant women. Relative to no attempted weight change, the pregnancy loss RR=1.18 (0.87, 1.62) for a weight loss attempt resulting in <5% weight loss, and RR=0.72 (0.45, 1.15) for 5% weight loss. Among 549 women who had attempted weight loss in the past year, the RR of pregnancy loss for weight reduction 5% vs. <1% was 0.62, 95% CI 0.40-0.98. In summary, preconception weight loss 5% was suggestively associated with lower risk of pregnancy loss, while attempted weight loss with <5% change was suggestively associated with an increased risk. Further investigation in large, longitudinal studies with adjustment for initial metabolic parameters and lifestyle factors is needed to confirm these results.

1753- S/P

LEPTIN AND PREGNANCY OUTCOMES Torie Plowden*, Shvetha Zarek, Enrique Schisterman, Lindsey Sjaarda, Robert Silver, Noya Galai, Alan DeCherney, Sunni Mumford (DIPHR/PRAE, NICHD, NIH)

Background: Leptin plays a significant role in normal reproductive function in mouse and human models but an association with adverse pregnancy outcomes has not been determined. Our objective was to explore whether preconception maternal leptin levels were associated with pregnancy loss, preterm delivery, gestational diabetes or preeclampsia. **Methods:** Prospective cohort study of a randomized controlled trial (EAGeR trial) of preconception low dose aspirin or placebo in healthy, fertile women who have had 1 or 2 prior pregnancy losses (n=1228). Serum leptin levels were collected at baseline. Women were classified into low (0.007-11.3ng/ml), middle (26.3-97.4 ng/ml) and high (11.4-26.2 ng/ml) tertiles, using the middle tertile as the reference group. RR and 95% CIs for pregnancy loss, preterm delivery, gestational diabetes and preeclampsia were estimated using generalized linear models adjusted for age and the probability of confirmed pregnancy using stabilized inverse-probability-weights. **Results:** Among women who became pregnant during this study (n=776), there were 281 in the low tertile, 275 in the middle tertile and 220 in the high tertile. After adjusting for age, there was a higher risk of gestational diabetes (RR 2.62; 95% CI 1.08, 6.36), and preeclampsia (RR 2.16; 95% CI 1.18, 3.93) in women in the high tertile compared to those in the middle tertile. After adjusting for BMI, this difference was persistent for gestational diabetes (RR 3.03; 95% CI 1.06, 8.66) but was attenuated for preeclampsia (RR 1.78; 95% CI 0.81, 3.89). After adjusting for age and BMI, there were no differences in clinical pregnancy loss or preterm delivery among the groups. **Conclusion:** Leptin levels in the highest tertile were associated with an increased risk of gestational diabetes but not preeclampsia, clinical pregnancy loss or preterm delivery. Further research is necessary to confirm these findings. Support: Intramural Research Program, DIPHR, PRAE, NICHD, NIH

1755-S/P

EXPLORING THE ASSOCIATION OF ELECTIVE OBSTETRIC INTERVENTION WITH TEMPORAL TRENDS IN LATE PRETERM AND EARLY TERM BIRTH RATES ACROSS 6 HIGH-INCOME COUNTRIES IN NORTH AMERICA AND EUROPE Jennifer Richards*, Michael Kramer, Mika Gissler, Stefan Johansson, Sven Cnattingius, Laust Mortensen, Paromita Deb-Rinker, Jocelyn Rouleau, Nils-Halvdan Morken, Rolv Skjaerven, Michael Kramer (Department of Epidemiology, Rollins School of Public Health, Emory University, Atlanta, GA, USA)

Elective obstetric interventions (i.e., labour inductions and elective Cesarean sections) have been suggested as a potential driver of trends in late preterm (LPT) and early term (ET) birth rates in high-income countries. We compared recent temporal trends in LPT and ET birth rates as well as rates of obstetric interventions across 6 high-income countries in North America and Europe. Our study was conducted using national and population-based birth registry data on singleton live births from 2005-2012 in Canada, Denmark, Finland, Norway, Sweden, and the United States. LPT rates declined in the U.S. by 13% and ET birth rates declined in Norway, Sweden, and the U.S. by 12%, 14%, and 27%, respectively. Rates of obstetric intervention varied across countries, ranging from 20% in Sweden to 45% in the U.S. We estimated stratified rate ratios (RRs) for the 7-year change in LPT or ET birth rate to compare temporal trends between births with and without obstetric intervention, using negative binomial models with interaction terms between birth year and presence of any obstetric intervention. While interaction terms were generally not significant, larger declines in ET birth rates over the study period were observed among births with obstetric intervention in Norway, Sweden, and the U.S. In the U.S., for example, the estimated RR for 7-year change in ET birth rate was 0.64 (95% CI: 0.62-0.67) among births with obstetric intervention compared to 0.86 (95% CI: 0.81-0.90) among births without obstetric intervention. Comparing gestational age distributions between births with and without obstetric intervention, there were shifts in the gestational age distribution such that among births delivered after obstetric intervention in Norway, Sweden, and the U.S. the proportion delivered ET declined with a corresponding increase in later term births. Our findings suggest changes in clinical practice that push some deliveries to later term gestations, by fewer elective obstetric interventions at ET gestations.

“-S/P” indicates work done while a student/postdoc

1756-S/P

PRENATAL EXPOSURE TO POLYCHLORINATED BIPHENYLS AND FETAL GROWTH IN BRITISH GIRLS Jill Shah*, Terry Hartman, Ethel Taylor, Andreas Sjodin (Emory University, Rollins School of Public Health)

Polychlorinated biphenyls (PCBs) are synthetic chemicals that bioaccumulate in the food chain. PCBs were primarily used for industrial applications due to their insulating and fire retardant properties but were banned in the 1970s in the United States as adverse health effects following exposure were identified. Previous studies of populations with high PCB exposure have reported reduced birth weight and gestational length. Using data from the Avon Longitudinal Study of Parents and Children, we investigated the association between prenatal exposure to PCBs and fetal growth. Concentrations of three common PCB congeners, PCB-118, PCB-153 and PCB-187, were measured in maternal serum collected during pregnancy, and fetal growth was measured by birth weight and birth length. For 448 maternal samples, median (minimum-maximum) concentrations (ng/g lipids) were 14.9 (<Limit of Detection (LOD)-90.9) for PCB-118, 64.5(3.7-200.1) for PCB-153 and 11.3 (<LOD-41.6) for PCB-187. Multivariable linear regression was used to examine the associations between the PCB congeners and measurements of fetal growth, adjusting for maternal age, pre-pregnancy BMI, education and tobacco use and gestational age of infant. Preliminary results show that a 10ng/g lipids increase in PCB-118 exposure was associated with a 94.0g (95% CI: -142.1, -46.0) decrease in birth weight, corresponding to a 2.7% decrease in birth weight. Also, 10ng/g lipids increases in PCB-153 and PCB-187 were associated with 26.4g (95% CI: -42.3, -10.5) and 114.3g (95% CI: -190.5, -38.0) decreases in birth weight, respectively, corresponding to a 0.8% and 3.3% decrease in birth weight. Notable associations between prenatal PCB exposures and birth length were not seen. Our findings suggest that prenatal exposure to PCBs is inversely associated with birth weight. Future analyses will examine associations between prenatal exposure to these PCB congeners and postnatal growth to see if associations of PCB exposure persist after birth.

1758- S/P

DOES PRENATAL EXPOSURES TO POLYBROMINATED DIPHENYL ETHERS (PBDES) OR PERFLUOROALKYL SUBSTANCES (PFAS) IMPACT VISUOSPATIAL MEMORY IN CHILDREN AT 8 YEARS? Ann Vuong*, Joseph Braun, Glenys Webster, Andreas Sjodin, Antonia Calafat, Kim Dietrich, Kimberly Yoltan, Bruce Lanphear, Aimin Chen (University of Cincinnati College of Medicine)

While prenatal PBDEs have been associated with adverse neurodevelopment, studies of PFASs have yielded inconsistent findings. Animal models indicate that spatial learning and memory deficits result from prenatal exposure to PBDEs, but no human study has examined the relation between both these contaminants and visuospatial memory. We used data from the Health Outcomes and Measures of the Environment Study, a prospective birth cohort (Cincinnati, OH) that enrolled pregnant women in 2003-2006, to examine the association between maternal serum PBDE and PFAS concentrations at 16±3 weeks gestation and visuospatial memory in 195 children at 8 years. We used the Virtual Morris Water Maze (VMWM), a computerized version of the rodent MWM, to measure spatial learning and memory. Children were instructed to use a joystick to navigate around a virtual room projected on a laptop computer to locate a hidden platform in a series of trials. A 10-fold increase in maternal serum BDE-47 was not associated with longer time (=2.18 seconds, 95% CI -6.08, 1.72) nor distance traveled (=0.65, 95% CI -2.53, 1.22) to reach the platform. We observed null associations between PFAS and time and distance to the platform. However, BDE-99 and perfluorohexane sulfonate (PFHxS) and VMWM performance was modified by child sex. Increasing BDE-99 and PFHxS concentrations were associated with increased distance to reach the platform in males and decreased distance in females. In addition, increased time to reach the platform was noted among males (=3.22 seconds, 95% CI -2.69, 9.13) whose mothers had higher perfluorononanoate concentrations, but not in females (=3.26 seconds, 95% CI -7.40, 0.87). These findings suggest a lack of an overall association between prenatal PBDEs or PFASs and visuospatial memory using the VMWM. However, the associations between prenatal PBDEs and PFASs and visuospatial memory may be sexually dimorphic, with male children being more sensitive.

“-S/P” indicates work done while a student/postdoc

1757

DISPARITIES BY RACE/ETHNICITY AND PAYMENT METHOD IN U.S. INFANT MORTALITY ATTRIBUTABLE TO BIRTH DEFECTS Sarah Tinker*, Lynn Almli, Emily Petersen, Janet Cragan, Jennita Reefhuis (Centers for Disease Control and Prevention)

We used linked birth and infant death data for U.S. residents from the National Center for Health Statistics to assess the rate of infant mortality attributable to birth defects (IMBD). We used data for live births between January 2011 and December 2013. Birth defects were considered collectively and separately for congenital heart defects, as well as defects of the central nervous system, and chromosomal abnormalities. Neonatal death, occurring within 30 days of birth, and post-neonatal death, occurring >30 days but <1 year after birth, were considered separately. Poisson regression was used to estimate adjusted rate ratios comparing mothers who used private insurance and mothers who used Medicaid to pay for their delivery hospitalization, controlling for maternal age and education, stratified by race-ethnicity and gestational age category. Nineteen percent of infant deaths had a birth defect listed as the underlying cause. For all racial-ethnic groups, neonatal IMBD rates were higher than post-neonatal mortality rates. IMBD rates among non-Hispanic black and Hispanic women were higher than those for non-Hispanic white women (neonatal: 8.7, 8.8, 7.7/10,000 live births; post-neonatal: 4.9, 3.8, 3.0/10,000 live births, respectively). Congenital heart defects accounted for almost half of post-neonatal IMBD rates for all racial-ethnic groups; neonatal IMBD was more widely distributed across multiple defect categories. Among term births (≥37 weeks gestation), Medicaid payment status was associated with higher neonatal IMBD rates compared to private insurance status for all racial-ethnic groups; adjusted rate ratios ranged from 1.21 to 1.43. These results show disparities in IMBD rates in the U.S. based on both race-ethnicity and payment status. The underlying mechanisms for these disparities will be important to understand so that interventions can be targeted to improve survival of all infants born with a birth defect.

1759

PHYSICAL ACTIVITY, BODY SIZE, AND MALE FECUNDITY IN A NORTH AMERICAN PRECONCEPTION COHORT STUDY Lauren Wise*, Kenneth Rothman, Ellen Mikkelsen, Amelia Weselink, Kristen Hahn, Craig McKinnon, Elizabeth Hatch (Boston University School of Public Health)

Some studies indicate that physical activity (PA) has a deleterious effect on semen quality. Bicycling, in particular, has been associated with lower semen quality, though the mechanisms of action may be different from that of PA in general. The literature on male obesity and fecundity is also mixed. We assessed the association between male PA, body size, and fecundability among couples participating in the Pregnancy Study Online (PRESTO), a North American web-based preconception cohort study. At baseline, men reported data on medical history, lifestyle, behavioral, and anthropometric factors (e.g., BMI and waist circumference), and PA type (e.g., running, bicycling, walking) and frequency (average hours/week) in the last year. Male and female data were linked, and pregnancy status was updated every 8 weeks for up to 12 months or until reported pregnancy. Fecundability ratios (FR) and 95% confidence intervals (CI) were estimated using proportional probabilities regression, controlling for female and male age, education, smoking, multivitamin use, sleep duration, intercourse frequency, and male and female BMI. Analyses were restricted to 588 couples (78%) who had been trying to conceive for ≥6 cycles at study entry. FRs for 1-2, 3-4, 5-6, and ≥7 vs. <1 hour(s)/week of vigorous PA were 0.99 (CI=0.78-1.26), 0.80 (CI=0.61-1.05), 0.89 (CI=0.66-1.21), and 0.82 (CI=0.60-1.21), respectively. The FR for ≥60 vs. <20 MET-hours/week of total PA was 0.80 (CI=0.61-1.05). The FRs for bicycling 1, 2, and 3 vs. 0 hour(s)/week were 0.72 (CI=0.52-0.99), 0.80 (CI=0.61-1.01), and 0.78 (CI=0.50-1.21), respectively. Neither male BMI nor waist circumference was appreciably associated with fecundability. In sum, vigorous PA, total METs of PA, and bicycling tended to show inverse associations with male fecundity. There was, however, little evidence of a dose-response relation, and given the weak associations, the extent to which PA and bicycling influence fecundity remains unclear.

1770

PREVALENCE OF LANGUAGE AND HEARING DISORDERS IN CHILDREN AND ADOLESCENTS Margarita B-Cabral*, Elvira Villagra De Cerna, Gissel J. Benítez, Jazmín Ramírez, Tania Talavera, Flora Colmán, Lourdes Cabrera Marecos (Universidad Católica, Asunción)

Objective: to establish the prevalence institutional alterations in hearing and language in children and adolescents attending the schoolhouse in Asunción-Paraguay, in 2014. **Methodology:** We performed a cross-sectional study in sample of 119 children and adolescents who attended, during the months of September and November 2014. Were evaluated by Fonoaudiología, who applied Alfa and Gamma test to assess language and tone audiometry to assess hearing. **Results:** It has found 15% of students with a high proportion of unilateral or bilateral conductive hearing loss. The type of hearing loss is conductive in 14% of cases while the remaining 1% has a type of sensorineural acusia hiccups. The prevalence of abnormal speech and language was 9%. Speech in children and adolescents has articulatory difficulties in the garden students, preschool and first grade. For these students, the hearing loss is present in high proportion. **Conclusions:** the high prevalence of alterations in speech and hearing in children found to initiate processes that are more complex as the acquisition of reading and writing. The importance of these assessments in children and adolescents in order to provide guidance for treatment in a multidisciplinary, favoring therefore the quality of life for themselves, so it will could trigger negative consequences such as poor school performance and even drop-outs. **Keywords:** child and adolescents development, hearing and language.

1772

RISK OF BLOOD BORNE TRANSMISSION OF CLASSIC FORMS OF CREUTZFELDT-JAKOB DISEASE: A TWENTY-YEAR LOOKBACK STUDY Lauren Crowder*, Whitney Steele, Roger Dodd, Lawrence Schonberger (American Red Cross)

Background: Creutzfeldt-Jakob disease (CJD) is a fatal neurodegenerative disease caused by abnormal prions, with 300-400 cases occurring in the US annually. The majority of cases occur sporadically with familial and iatrogenic types causing <15% of cases. These forms of CJD are referred to as classic CJD to distinguish them from variant CJD associated with bovine spongiform encephalopathy. Unlike variant CJD it is not known if classic CJD can be transfusion-transmissible. In 1995, the American Red Cross and CDC initiated a lookback study of blood recipients to assess the risk of classic CJD transfusion transmission. **Methods:** Blood donors later diagnosed with confirmed CJD and 1 blood recipient are enrolled. Hospitals receiving components linked to the donor are asked to provide information on the recipients, who are followed annually through the National Death Index to determine their vital status and cause of death. **Results:** As of November 2015 there were 62 CJD donors and 774 recipients enrolled. Of the 774 recipients (3399 person-years of post-transfusion observation), 577 are deceased (1664 PY), 173 are alive (1644 PY) and 24 (91 PY) are lost-to-follow up (LTF). Recipients who have survived for 5 or more years post-transfusion are classified as long-term survivors. These individuals are important due to the potentially long incubation of CJD. Of the 229 long-term survivors, 120 are deceased, 102 are alive with 7 LTF (total sum of 2889 PY). Of these recipients, 123 received a component donated by a CJD donor 60 months prior to the donor's CJD diagnosis. None of the deceased recipients have CJD listed as their primary or contributing cause of death, providing no evidence of transfusion-transmission of classic CJD. **Conclusions:** To date, there is a lack of evidence that classic CJD is transfusion-transmitted. Therefore the risk, if any, remains small and theoretical. To verify these findings, enrollment of CJD blood donors and their recipients is ongoing.

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BREAST CANCER SCREENING INITIATION AFTER TURNING 40 YEARS OF AGE WITHIN THE PROSPR CONSORTIUM Elisabeth Beaber*, Chyke Doubeni, Jennifer Haas, Anne Marie McCarthy, Virginia Quinn, Celette Skinner, Brian Sprague, Anna Tosteson, Donald Weaver, Ann Zauber, William Barlow (Fred Hutchinson Cancer Research Center, Seattle, WA, USA)

Little is known about when United States women begin breast cancer screening and factors influencing initiation. To further characterize screening initiation and subsequent abnormal mammograms, we evaluated data from the National Cancer Institute-funded PROSPR (Population-based Research Optimizing Screening through Personalized Regimens) consortium. PROSPR breast cancer screening centers (University of Pennsylvania, University of Vermont, and Geisel School of Medicine at Dartmouth (DH) with Brigham and Women's Hospital (BW)) include a healthcare delivery system, statewide breast cancer surveillance system, and primary care networks. We identified women on their 40th birthday during 2011-2013 who had no prior breast imaging or breast cancer at DH and BW (n=3,413). Cumulative incidence curves and Cox modeling were used to determine time from the 40th birthday to first breast cancer screening, cohort exit, or 42nd birthday. We calculated hazards ratios (HR) and 95% confidence intervals (CI). In a second analysis, we used data at all PROSPR centers to examine first screening abnormality rates (BI-RADS 0, 3, 4, or 5) among women ages 40-49. The cumulative incidence of breast cancer screening by the 42nd birthday was 62.9% at BW and 39.8% at DH. The following factors were associated with breast cancer screening in multivariable-adjusted analyses: having a recent primary care visit (HR=5.0, 95% CI=4.2-5.9), greater number of primary care visits (P for trend <0.001), zip code median income greater than \$52,000 (HR=1.3, 95% CI=1.1-1.5), Medicaid insurance (HR=0.7, 95% CI=0.6-0.9), and being uninsured (HR=0.4, 95% CI=0.3-0.6). In all PROSPR centers, 15.8-22.4% of first screening exams among women ages 40-49 were abnormal. Reasons for differences in breast cancer screening uptake after turning 40 years of age across health systems and primary care contacts require further exploration. Abnormality rates should be considered when deciding to initiate screening.

1773

THE ROLE OF SEXUAL ORIENTATION IN CERVICAL CANCER SCREENING UPTAKE AMONG CANADIAN WOMEN Geetanjali Datta*, Alexandra Blair, Lise Gauvin, Marie-Pierre Sylvestre, Marie-Helene Mayrand (Research Center of the University of Montreal Hospital Center (CRCHUM))

Background: Early detection is critical to decreasing mortality from cervical cancer. Several reports from the American literature document inequalities in cervical cancer screening according to sexual orientation. **Objective:** We assess the stability of this association across context by conducting analyses in a sample of Canadian women. **Methods:** Two waves of data from the population-based Canadian Community Health Survey (2008 and 2012; weighted N=16,190,190) were utilized to estimate cervical cancer screening prevalence ratios (PR) via Poisson regression. Two outcomes were assessed, 1) no lifetime screening, and 2) non-recent screening (NRS), defined as screening 3 or more years previous to the survey among women screened in their lifetime. Sexual orientation was ascertained via self-report. Models were adjusted for age, migrant status, income, education, marital status, and access to a primary care physician. Confidence intervals (CI) were constructed using bootstrap variance weights. **Results:** The prevalence of no lifetime screening was 9.6% among heterosexual, 10.4% among homosexual, and 8.6% among bisexual women. The prevalence of NRS was 10.4% among heterosexual, 14.8% among homosexual, and 8.5% among bisexual women. In fully adjusted models, statistically significant differences in no lifetime screening were neither observed between homosexual women and heterosexual women (PR=1.3, 95% CI = 0.79 - 2.15) nor between bisexual and heterosexual women (PR= 0.6, 95% CI = 0.4 - 1.0). Statistically significant differences were also not observed for NRS for homosexual (PR=1.5, 95% CI = 0.96 - 2.36) and bisexual (PR=1.0, 95% CI = 0.63 - 1.69) women in comparison to heterosexual women. **Conclusion:** Overall, inequalities in cervical cancer screening according to sexual orientation were not observed. Further assessment of the combined role of sexual orientation and other risk factors could identify sub-groups at risk.

1774-S/P

PREDICTORS OF COMPLIANCE TO COLONOSCOPY AFTER A POSITIVE SCREENING TEST IN THE DANISH COLORECTAL CANCER SCREENING PROGRAM Mette K Ottosen*, Ellen Margrethe, Sisse Helle Njor (Department of Clinical Epidemiology)

In 2014, a population based colorectal cancer screening program (CRCP) was initialized in Denmark for everyone aged 50 to 74 years. The program consists of screening with faecal occult blood test (iFOBT) followed by colonoscopy for individuals with a positive screening test. We aimed to determine predictors for compliance to colonoscopy after a positive iFOBT, for participants invited during the first six months of the Danish national CRCP. Potential predictors evaluated were: sex, age, geographical region, Charlson Comorbidity Index and hospital admissions within the last year. The study population included 8373 individuals, who were invited to screening between March 3 and August 31, 2014, and who had stool samples positive for blood. 261 individuals were excluded because they had had a colonoscopy within the past year, or died before a colonoscopy was performed. Individuals with a colonoscopy within two months of the positive iFOBT were considered compliant. Using a logistic regression model we estimated odds ratios (OR) with 95% confidence intervals (CI) for the association between compliance and comorbidity and demographics. Overall compliance to colonoscopy was 88.6%. Compliance was lower in individuals > 70 years compared with <70 years, OR=0.75 (95% CI: 0.65-0.87). Compared with no comorbidity, compliance decreased with higher comorbidity: Charlson score 1-2, OR=0.76 (95% CI: 0.65-0.90) and Charlson score 3, OR=0.45 (95% CI: 0.36-0.55). Similarly, compliance decreased with increasing number of hospital admissions with the past year. Compliance was lower for participants living in the Capital Region of Denmark (OR=0.45, 95% CI: 0.36-0.55) compared with living in Northern Region of Denmark. We observed no difference in compliance according to gender. In conclusion, major predictors of non-compliance were age above 70 years, Charlson Comorbidity Index of 1 or above, 1 or more in hospital-stays within the last year and living in the Capital Region of Denmark.

1775-S/P

PERINATAL HEPATITIS B SCREENING IN ONTARIO CANADA: A VALIDATION AND EVALUATION STUDY USING LINKED BIRTH REGISTRY, LABORATORY, AND HEALTH ADMINISTRATIVE DATA. Abdool Shafaaz Yasseen*, Liane MacDonald, Kamran Khan, Jeff Kwong, Natasha Crowcroft (University of Toronto)

Diagnosis of Hepatitis B virus (HBV) infection involves tests for serological markers indicating acute, chronic, recent/resolving or unspecified infection. Health administrative records include clinical and health care use information related to HBV infection and its complications, but do not include detailed test results, making assessment of diagnostic accuracy difficult. Perinatal HBV screening is important for HBV control, as without treatment vertical transmission rates can be as high as 95%. This period presents a unique opportunity to evaluate current HBV screening and prevention practices. In our proposed study, we validate ICD-10 diagnostic codes for HBV detection and classification, and evaluate perinatal screening and prevention practices in Ontario, Canada. We use Public Health Ontario Laboratory data and health administrative data held at the Institute for Clinical and Evaluative Sciences to establish a population based cohort of directly linked laboratory and clinical information on HBV testing between April 2010 and December 2012. HBV surface and core antigens and antibodies, along with follow-up information are used to identify chronic, acute, and unspecified infections, along with categories of immunity (i.e. prior infection or vaccination). We cross reference these categories with ICD-10 diagnostic codes for Hepatitis infections and complications assessing sensitivity, specificity, and positive predictive values. Using these validated codes we identify infected pregnancies within the Better Outcomes Registries & Network (BORN Ontario) birth registry, and investigate the mother-infant dyad. This also allows for investigation of whether administrative codes accurately capture interventions given to children born to infected mothers through immunization codes. We hypothesize that rates of vertical transmission will be dependent on type of infection and immunity in the mother, and delivery and timing of immunization of the infant.

1780-S/P

TRAP LAWS AND ABORTION RATES: DOES PROVIDER AVAILABILITY MATTER? Nichole Austin*, Sam Harper (McGill University, Department of Epidemiology, Biostatistics and Occupational Health)

US abortion rates have reached historic lows, but the cause of the decline is contentious, coinciding with both improved access to contraception and an unprecedented increase in state-level abortion restrictions. While existing research suggests that many restrictions do not have a meaningful impact on abortion rates, Targeted Regulation of Abortion Provider (TRAP) laws may work differently by imposing costly requirements on providers, potentially reducing service availability. However, high-quality evidence on the causal effect of TRAP laws on abortion rates is limited. Because unmeasured state characteristics and secular trends are likely to be important confounders for any analysis of TRAP laws, we will use a difference in differences (DD) approach to quantify the causal effect of these laws on abortion rates from 1991-2011. Data on state abortion rates were obtained from the Guttmacher Institute, and we are currently compiling data on TRAP laws from legal/policy documents (20 states enacted these laws over the study period). Socio-demographic data will be obtained from the US Census. A graphical investigation of state-level abortion trends from 1991-2011 showed considerable state-to-state variation and a general decline in rates, providing encouraging preliminary support for our DD strategy. A linear regression of abortion rates including state and year fixed effects yielded an r^2 value of .79, suggesting that fixed characteristics of states and state-invariant trends make important contributions to explaining temporal variation in abortion rates, but there is still important residual variation that may be plausibly explained by TRAP laws. A cross-sectional analysis of 2011 data suggested that TRAP laws are associated with a decrease in abortion rates (-4.51 per 1000 women, 95% CI: -8.70, -.33), but this estimate is likely biased. Our full analysis of policy shifts over a 20-year period will correct for this and offer timely evidence on the effects of TRAP legislation on abortion rates.

1782-S/P

SIMULATING LIFE COURSE TRAJECTORIES OF NEIGHBORHOOD SOCIOECONOMIC STATUS AND HEALTH THROUGH MARKOV CHAINS: THE ROLE OF SOCIETAL STICKINESS Usama Bilal*, Thomas A. Glass (Johns Hopkins Bloomberg School of Public Health)

Background: A flexible micro-simulation platform to investigate life course dynamics of neighborhoods and health does not exist. We developed a simulation to study how ignoring societal stickiness leads to biased estimates of the effect of adult neighborhood on health. **Methods:** We simulated life course trajectories of neighborhood and individual socioeconomic status (SES) in 5000 individuals living in 50 neighborhoods for 100 years. Class and residential mobility were modeled using Markov Chains that depended on current contextual and individual SES and the degree of societal stickiness (correlation of past and current individual/neighborhood SES). A Gaussian stock of health was affected by perinatal SES (diminishing over time), and individual and neighborhood SES. We simulated a hypothetical cohort study starting at age 50. Mobility was not permitted after "baseline". Three level mixed-effects models were used to estimate neighborhood and individual SES effects at age 50 on change in health, adjusted by neighborhood SES at birth (gold standard). This was compared to a model ignoring neighborhood SES at birth (biased model). Ten scenarios with increasing stickiness were contrasted. **Results:** Increasing stickiness was associated with rising socioeconomic segregation. Disparities in health status were small in unsticky scenarios, while disparities intensified over time in stickier contexts. In low stickiness, the bias from ignoring the causal effect of neighborhood at birth was small (bias=0.2%, 95% CI: -23.9 to 24.4%). When stickiness was high, estimates of the role of individual or contextual SES at age 50 were strongly biased by ignoring birth context (bias=53.4%, 95% CI: 38.1 to 68.8%). **Conclusion:** Increased societal stickiness amplifies the bias resulting from ignoring neighborhood conditions at birth. Given the non-ignorable degree of residential and class stickiness in the U.S., ignoring this phenomenon may lead to substantial biases in neighborhood studies.

1781

DIFFERENCES IN ACCESS AMONG AFRICAN AMERICAN AND CAUCASIAN PEDIATRIC CRANIOSYNOSTOSIS PATIENTS Amita Bey*, Zackary Brown, Christopher Bonfield, Ashly Westrick, Katherine Kelly, Kevin Kelly, John Wellons (Vanderbilt University)

Background: Disparities in surgical access and timing to care result from complex patient, social, and institutional factors. Due to the perception of delayed presentation of African American patients, this study was designed to identify and quantify these differences in access and care between African American and Caucasian pediatric patients with craniosynostosis. **Methods:** A retrospective study of 132 children from 0 – 17 years surgically treated for craniosynostosis at a tertiary pediatric care facility between 2010 and 2013 was conducted. Demographic characteristics, time to surgical consultation and surgery, and distance to primary care providers and the tertiary center were evaluated. **Results:** Of our cohort, 88% were Caucasian and 12% were African American. Median age was 5 months (IQR1: 2, IQR3: 8). African Americans had a greater time to consult compared to Caucasians, 341 (IQR1: 192, IQR3: 584) versus 137 days (IQR1: 62, IQR3: 235), respectively ($p=.0012$). After consultation, there was no significant difference in time to surgery between African American and Caucasian patients; 56 (IQR1: 36, IQR3 98) versus 64 (IQR1: 43, IQR3: 87), respectively. Distance travelled to primary care physicians and to the tertiary care facility did not significantly differ between groups. Other factors, such as parental education, insurance type, household income, and referring physician type showed no significant difference. **Conclusions:** We identified a correlation between race and time to consultation, but no association with time to surgery, distance, or family characteristics. This finding implies that delays in early health seeking behaviors and subsequent referral to surgical specialists from primary care providers are the main reason for delay among African American craniosynostosis patients. Future studies should focus on these barriers, and educational efforts should be designed for the community and the health care personnel caring for them.

1783-S/P

RACIAL DISCRIMINATION, SOCIOECONOMIC POSITION, AND ILLICIT DRUG USE AMONG U.S. BLACKS Hannah Carliner*, Erin Delker, David Fink, Katherine Keyes, Deborah Hasin (Columbia University Mailman School of Public Health)

Purpose. We assessed the relationship of self-reported racial discrimination with illicit drug use among U.S. Blacks, and whether this differed by socioeconomic position (SEP). **Methods.** Among 6,587 Black participants in Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions (2004-2005), we used multiple logistic regression models to test the association between racial discrimination (measured on the 6-item Experiences of Discrimination scale) and past-year illicit drug use, and whether this differed by SEP. **Results.** Racial discrimination was associated with past-year drug use (adjusted odds ratio [aOR]= 2.32; 95% confidence interval [CI]=1.70, 3.16) and with frequent drug use (aOR=1.91; 95% CI=1.22, 2.99). For frequent illicit drug use, this relationship was stronger among higher-SEP participants (aOR=3.55; 95% CI=2.09, 6.02; pinteraction<0.01). **Conclusions.** The stronger association between racial discrimination and frequent illicit drug use among higher-SEP Blacks suggests a complex interplay between disadvantaged and privileged statuses that merits further investigation. The finding of a significant difference by SEP highlights the importance of considering differences within heterogeneous race/ethnic groups when investigating health disparities.

1785-S/P

THE IMPACT OF SOCIAL SUPPORT ON FUNCTIONAL STATUS AMONG ELDERLY HISPANIC ADULTS Nnadozie Emechebe*, Isoken Odia, Maryam Rahji, Oluwatobi Ozoya, Oluyemisi Aderomilehin, Abimbola Michael-Asalu (University of South Florida)

Background: Social support provides resources to the elderly to help them perform basic daily tasks and activities. The objective of this study is to examine the association between instrumental or emotional social support and disability among elderly Hispanic adults. **Method:** The study was a cross-sectional analysis of data from the Hispanic Established Populations for the Epidemiologic Study of the Elderly (HEPESE) cohort, wave 6. The outcome variable was the presence of at least one disability and was measured using the Activities of Daily Living Scale (ADL). The independent variable was social support measured as the number of close relatives the respondent could count on, talk to or confide in. Other variables that could confound the association were included in the analysis such as socio-demographic characteristics, disease burden, walking for exercise, depression, smoking and alcohol usage. A multivariate logistic regression analysis was performed at an alpha level of 0.05 using SAS 9.4. **Results:** Of 1350 participants in the study population, 51% needed help conducting a daily activity. Forty percent of respondents reported not having a close relative to speak to nor confide in while 60% reported having at least one relative in their social network. There were statistically significant differences in the prevalence of disability among people who had no form of social support (65%) compared to those who reported having 1 to 2 relatives (43%) and more than 3 relatives (39%) ($p < 0.001$). The adjusted odds ratio of the presence of disability among those having 1 to 2 relatives versus those with none was 0.58 (95% CI=0.43, 0.80) and 0.65 (95% CI=0.45, 0.94) for participants who have more than 3 relatives. **Conclusion:** Within the limitations of the study, the presence of strong social support is associated with functional disability in elderly Hispanic adults. This finding strengthens previous studies that support the vital role social support plays on the health of the elderly population.

1787

BARRIERS TO PARTICIPATION: RECRUITMENT AND DISSEMINATION IN A HEALTH DISPARATE POPULATION Allison Hansell*, Leslie Phillips (SEIU Healthcare NW Health Benefits Trust)

Introduction: SEIU Healthcare NW Health Benefits Trust (HBT) provides healthcare benefits to a diverse population of unionized Home Care Aides (HCAs) in Washington State. In 2012, 85% of HCAs were female, 50% over age 55, 28% ethnic minorities, and 20% relied on public assistance programs. During recruitment for a health and safety themed photoshoot, HBT faced challenges identifying individuals able to participate. HCAs expressed interest in participating but cited family commitments, limited work coverage, demands from a second job, and transportation as barriers. **Methods:** One week into recruitment, a survey soliciting interest in upcoming health and safety program participation was disseminated by email to HCAs; respondents living in the Seattle Metro Area were included in recruitment efforts. Outreach efforts were classified as targeted at “cold” (had previously not expressed interest in program participation), “warm” (non-specific interest in participation expressed), and “hot” (interest in participation in the project). **Results:** Over four weeks of phone, text, email, and in-person recruitment approximately 360 HCAs were contacted to participate with the goal of obtaining 15-20 participants. A total of 18 HCAs participated. Cold efforts were unsuccessful ($n = 0/170$; 0%) while warm efforts ($n = 10/100$; 10%) and hot efforts ($n = 8/90$; 9%) were most successful. Weekly phone calls, text messages, emails, and reminder calls the day before increased the likelihood that participants were informed, comfortable, and ready to participate. **Conclusion:** Successful recruitment requires flexibility and capacity for continuous, open communication between potential participants and the research team. Organizational resources required for recruitment are intensive; light touch pre-recruitment efforts that facilitate the creation of “warm” and “hot” contact lists are strongly recommended to improve yield.

1786

THE CHARACTERISTICS OF COMMUNITY HEALTH NURSE ACTIVITY LED FROM FUTURE DEPRESSION PREDICTION QUESTIONNAIRE Toshiharu Eto*, Keiko Aoishi (Division of Behavioral Science & Preventive Medicine, Miyazaki Prefectural Nursing University, Japan)

The depression is a very big social problem regardless of Japan and Korea. We carried out a future depression prediction questionnaire for the purpose of leading effective community health nurse activity to the suicide prevention. We carried out the questioner survey about depression prediction to 373 adult men and women (133 men, woman 240). We performed single variable analysis by using depression prediction as a dependent variable and each questioner as an independent variable. We performed a multiplex logistic-regression analysis by extracting significantly different items. The level of significance assumed it 5%. The object number was 373 adult men and women (133 men, woman 240). As a result of questionnaire, 28.5% of men and 23.3% of women felt tendency of depression. Fifty-eight percent of man and 41.7% of woman felt that I became depressed in the future. Both men and women who got stress past one month worried about future depression ($P < 0.01$). Men felt stress in economic issue ($P < 0.05$) and employment issue ($P = 0.01$). On the other hands, woman felt stress for sense of isolation ($P < 0.05$) and anxious about the problem of caregiving. In the case of men, smoking was significantly related ($P < 0.05$) and the tendency of the depression prediction was seen to the man who did not have a consultant. From these results, there was deference in stress which causes future depression between men and women. It was suggested that measures to a characteristic of the sex for the depression prophylaxis were important.

1788

LIVING ARRANGEMENTS AND RISK OF DEPRESSION AMONG OLDER ADULTS IN JAPAN: THE EFFECT OF SOCIAL CAPITAL OF RESIDENTIAL AREA - THE JAGES LONGITUDINAL SURVEY Kaori Honjo*, Naoki Kondo, Yukako Tani, Masashige Saotoh, Katsunori Kondo (Osaka University)

Living alone is a crucial risk factor for depressive symptoms among older adults. Area-level social capital also influences mental health. However, there is little longitudinal evidence on the association between living arrangements and depressive symptoms, and no studies have examined the effect of area-level social capital on depression. The study aims were to examine the association between living arrangements and depressive symptoms among older Japanese adults and to investigate whether this association varies with area-level social capital. We used data from the JAGES survey conducted in 2010 and 2013. The study population was community residents aged 65 and older from 24 study sites in Japan. Participants were 20,193 men and 23,179 women with neither physical limitations nor depressive symptoms at baseline. Presence of depressive symptoms was assessed by the GDS. Living arrangements were categorized as: 1) with spouse only, 2) alone, 3) with spouse and parent(s)/child, or 4) others. Social capital was measured by a combination of area-level social trust, reciprocal help, and participants' attachment to residential area, and categorized as either high or low. We calculated gender-specific relative risks (RR) of living arrangements for depressive symptoms using a Poisson regression model and conducted subgroup analyses by age group and social capital level. During the 3-year follow-up period, 1,913 men and 1,676 women developed depressive symptoms. Among men, living alone was associated with increased risk of depressive symptoms compared with living with a spouse only ($RR = 1.31$, 95% CI: 1.12–1.53); no such association was identified among women. Living with spouse and parent(s)/child was associated with increased risk among men but decreased risk among women. These associations were identified only among younger age groups. We identified an increased risk of living alone only among men living in areas with low social capital level.

1789-S/P

UNEQUAL PREVALENCES OR UNEQUAL EFFECTS? DECOMPOSING THE CONTRIBUTIONS OF RISK FACTORS TO SOCIOECONOMIC INEQUALITY IN INCIDENT CARDIOVASCULAR DISEASE IN THE MULTI-ETHNIC STUDY OF ATHEROSCLEROSIS Mustafa Hussein*, Theresa Hastert, Mahasin Mujahid, Ana Baylin, Alain Bertoni, Kiarri Kershaw, Ana Diez Roux (Drexel University Dornsife School of Public Health)

Few studies have considered whether differential risk factor (RF) effects by socioeconomic position (SEP) contribute to the SEP inequality in incident CVD. Effect modification by SEP is plausible given worse social conditions and clustering of RFs in low-SEP groups. We applied econometric non-linear decomposition to MESA cohort data to parse out the contributions of different prevalences and effects of demographic, neighborhood, psychosocial, behavioral, and biomedical RFs to SEP inequality in CVD incidence. Participants ($n=5,608$) were followed up for 12.2 years until the first CVD event. Low, middle, and high SEP categories were constructed from a summary score of income, education, and wealth. We 1) estimated a separate Poisson model for each SEP group, 2) calculated the low-high and middle-high SEP differences (absolute inequalities) in predicted incidence rates, and 3) decomposed SEP inequalities into contributions of differences in covariate means (different RF prevalences) and contributions of differences in covariate associations with CVD (different effects) across SEP groups. Relative to the high-SEP, there were 4.6 and 1.9 extra CVD cases (per 1,000 person-years) in low-SEP and middle-SEP groups, respectively. A weaker protective effect of female gender and a stronger effect of white race accounted for 79.1% of the extra case load in the low relative to the high-SEP (interactions $P<0.001$). After accounting for demographics, lower neighborhood SEP and adverse social environment accounted for 33% ($P=0.31$), and higher prevalence of diabetes and hypertension accounted for 43.6% of the extra case load in the low compared to the high-SEP. Middle-High SEP inequality was primarily driven by higher prevalence of depression, un-insurance, and hypertension in the middle-SEP group. While addressing these RFs can reduce SEP inequality in incident CVD, the differential effects of gender and race/ethnicity in the low-SEP group deserve further empirical and policy attention.

1791

PATHWAYS FROM PARENTAL EDUCATIONAL ATTAINMENT TO ADOLESCENT BLOOD PRESSURE: EVIDENCE FROM A CHINESE BIRTH COHORT: CHILDREN OF 1997 Man Ki Kwok*, C Mary Schooling, Subu V Subramanian, Gabriel M Leung, Ichiro Kawachi (School of Public Health, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong Special Administrative Region, China)

Lower parental education is associated with higher adolescent blood pressure (BP). We examined the contribution of modifiable risk factors from infancy to adolescence that could potentially explain the link between parental education and BP in the offspring. In a prospective Chinese birth cohort, "Children of 1997" of 5,604 adolescents (68% follow-up), we analyzed the relation between parental educational attainment and sex-, age- and height-specific BP z-scores at ~13 years. Using mediation analysis, we examined the contribution of household income at birth (both absolute income and relative income deprivation), exposures during infancy (breastfeeding and early life second-hand smoking), lifestyles during childhood (diet, physical activity and screen-time), weight or BMI status during fetal, infancy, childhood and puberty, pubertal stage as well as parental BMI. We found that adolescent BMI, but not birth weight or infant growth or childhood BMI, mediated the inverse association of parental education with adolescent systolic BP (proportion mediated: 24%), followed by maternal BMI (proportion mediated: 18%). Factors explaining the link between parental education and diastolic BP were less clear. Absolute income, breastfeeding, childhood diet and physical activity, pubertal stage and paternal BMI did not mediate the association between parental education and adolescent BP. Low parental education is a risk factor for high BP in offspring. Important mediators of this relation include adolescent and maternal body weight.

1790

FORTY YEARS OF ECONOMIC GROWTH AND PLUMMETING MORTALITY: THE MORTALITY EXPERIENCE OF THE POORLY EDUCATED IN SOUTH KOREA Young-Ho Khang*, Jinwook Bahk, John Lynch (Department of Health Policy and Management, Seoul National University College of Medicine, and Institute of Health Policy and Management, Seoul National University Medical Research Center, Seoul, South Korea)

Background: South Korea has experienced rapid economic development and a substantial increase in life expectancy in an extremely short period. Whether this rapid development has been able to adequately address inequalities in health in South Korea may have important policy implications for other countries intending to achieve similar developmental advances. This paper explores long-term trends in inequalities in mortality related to education in South Korea between 1970 and 2010. **Methods:** We used secondary data on population size and deaths according to education levels in 1970 and 1980 from a previously published study, and census and death certificate data from Statistics Korea from 1990, 1995, 2000, 2005, and 2010. Trends in age-standardized mortality rates for men and women aged 25–64 according to education, as well as the rate ratio (RR), rate difference (RD), relative index of inequality (RII), and slope index of inequality (SII) were examined over the period 1970 - 2010. **Results:** Despite the sharp decline in overall mortality of 70-80% in the past four decades, there has been minimal decline in mortality since 1970 in South Koreans with only a primary or lower level of education. The RR and RD between tertiary education and primary or lower education increased in men and women over the study period. The RII in men tended to increase while the RII in women and the SII in both genders remained stable. **Conclusion:** The South Korean experience suggests that plummeting mortality rates among the total population may not extend to reduced mortality among those who remain poorly educated, despite massive improvements in the average education level. A country pursuing rapid economic and human development in a short period should apply a critical focus to decreasing the mortality rate among the educationally disadvantaged sections of its population.

1792- S/P

ACCULTURATION, SOCIODEMOGRAPHIC FACTORS, AND POOR SLEEP QUALITY AMONG LATINO ADULTS IN THE UNITED STATES Erlene Miller*, Mary Haan, Anissa Vines, Christian Douglas, Lydia Feinstein, Allison Aiello (Epidemiology Department, Gillings School of Public Health, University of North Carolina at Chapel Hill)

Poor sleep health is a major public health concern linked to adverse health outcomes such as cardiovascular disease and death. Latinos are disproportionately burdened by poor sleep health and shorter sleep duration. Yet few studies have characterized risk factors for poor sleep quality in Latinos, and none have examined a validated acculturation measure. Acculturation may be a key determinant of poor sleep health as assimilation to the dominant US culture is linked to increased psychosocial stressors and dietary changes. Using the validated Acculturation Rating Scale for Mexican Americans-II (ARSMA-II), we examined the association between acculturation (orientation to the Anglo-American culture in the US) and sleep quality as measured by sleep duration and sleep apnea. We analyzed a subset of participants from the NINOS Lifestyle and Diabetes Study, a prospective community-based cohort of adult Latinos in Sacramento, California, with acculturation, sleep duration, and reported sleep apnea diagnosis data ($N=374/563$). We examined the influence of acculturation on reported sleep duration (hours), sufficiency of sleep duration (<7 vs. ≥ 7 hours), and sleep apnea using linear or logistic regression as appropriate. The prevalence of insufficient sleep and sleep apnea were 42.78% and 11.80%, respectively. We adjusted for sex, age, and employment and found negligible associations between increased US cultural orientation and decreased sleep duration ($\beta = -0.0002$, 95% confidence interval [CI] = -0.1040, 0.1037), insufficient sleep (odds ratio [OR] = 0.96, 95% CI = 0.81, 1.13), and sleep apnea (OR = 0.98, 95% CI = 0.76, 1.26). Higher levels of US cultural orientation among Latinos was not a significant risk factor for poor sleep quality as measured by shorter sleep duration and sleep apnea. While acculturation does not appear to independently influence sleep among Latino adults, future research should examine whether acculturation modifies traditional risk factors for poor sleep health.

1793

SOCIAL NETWORK AND PSYCHOSOCIAL CORRELATES OF ATTRITION IN A POPULATION-BASED PANEL STUDY OF URBAN ADULTS: THE MONTREAL NEIGHBORHOOD NETWORKS AND HEALTHY AGING PANEL Spencer Moore*, Steven Stewart (University of South Carolina)

Background: Little research has examined longitudinally the relationship between social capital, social networks and health. This is due in part to the lack of cohort or panel studies with network data on the weak and strong ties of adults over time. Identifying network properties associated with attrition can lead to a better understanding the social network effects on health. Purpose: To examine how response at later waves varied according to wave one social network and psychosocial data. **Methods:** The Montreal Neighborhood Networks and Healthy Aging Study (MoNNET-HA) is a population-based panel study on neighborhood environments, social capital, and health with a sample of 2707 adults 25 years and older at wave one. Using hierarchical logistic regression, we examine whether attrition in wave two or all three waves is associated with social network or psychosocial characteristics, adjusting for socio-demographic and economic variables. **Results:** There were 2614 adults with baseline data on all study variables. Among those, 53% participated in wave two and 27% in all three waves. Adults were less likely to drop out from wave one to wave two if they participated in civic associations (OR 0.84; 95% CI: 0.75-0.95) or had higher perceived control (OR 0.83; 95% CI: 0.71-0.96). Adults who had no strong ties (OR 1.76; 95% CI: 1.12-2.76) were more likely to drop out at waves two and three. Weak ties were not shown associated with attrition. **Conclusion:** Selective attrition by strong instead of weak ties and psychosocial characteristics suggests changes in a sample's network composition over time networks and health. Panel studies should consider carefully the hypothesized social mechanisms linking networks to health, with attention to possible bias in the longitudinal relationship between social networks and health.

1795

INCOME INEQUALITY AMONG AMERICAN STATES AND THE CONDITIONAL RISK OF POST-TRAUMATIC STRESS DISORDER Roman Pabayo*, Daniel Fuller, Ichiro Kawachi, Stephen E. Gilman (University of Nevada, Reno, Department of Community Health Sciences, Harvard T.H. Chan School of Public Health Department of Social and Behavioral Sciences)

Objectives: To identify the relationship between State-level income inequality and post-traumatic disorder (PTSD) among Americans who have been exposed to trauma. **Methods:** We used data from the National Epidemiologic Survey on Alcohol and Related Conditions (n=34,653). Structured diagnostic interviews were administered at baseline (2001-2002) and follow-up (2004-2005). Weighted multi-level logistic regression was used to determine if US State-level income inequality, as measured by the Gini coefficient, was a significant predictor of you mean PTSD at follow-up, while adjusting for individual and state-level covariates. We repeated the analyses excluding those who reported a history of PTSD at baseline, in order to test whether income inequality was related to incident PTSD. **Results:** Average State-level inequality was 0.44 (SD=0.02) and ranged from 0.39 to 0.53. Of the respondents, 27,638 reported exposure to a traumatic event. Of this sample, 6.9% and 2.3% experienced recurring and incident PTSD, respectively. State-level inequality was associated with increased risk for PTSD, i.e. a standard deviation of Gini Z-score was associated with an OR=1.19 (95% CI=1.03, 1.38). When the analysis was restricted to new cases of PTSD, a similar association was observed (OR=1.30, 95% CI=1.04, 1.63). **Conclusion:** Living in a state with higher income inequality increases the risk for development of PTSD among Americans who have been exposed to trauma.

1794

HOW PROMINENT IS RESIDENTIAL SELECTION AND IT PATTERNED BY HEALTH? UNDERSTANDING SELECTION INTO NEIGHBORHOODS OF HIGH OPPORTUNITY USING A HOUSING EXPERIMENT. Theresa Osypuk*, Nicole Schmidt (University of Minnesota School of Public Health)

Although residential selection may be one of the largest threats to the internal validity of neighborhood effects, there is weak empirical evidence documenting how common it is, or how influential it is for biasing estimates, particularly with respect to health. Here, we tested whether health or child developmental problems (in addition to housing factors) patterned residential selection. Our project uses an experimental (RCT) study of housing voucher policy (Moving to Opportunity, MTO). We constructed residential trajectories across 7 years based on neighborhood of residence, indexed by a summary validated measure of opportunity. We used latent class analysis (LCA) to identify trajectories of neighborhood opportunity across time; we applied multinomial regression to analyze baseline determinants (i.e. health, race, preferences) of being in these trajectories. We then tested whether baseline determinants (i.e. health) modified treatment effects (voucher treatment vs. control group) on neighborhood trajectories. Results: With LCA, we identified 6 distinct opportunity trajectories across time. The strongest predictors of residential selection to high opportunity areas were MTO treatment assignment and race/ethnicity ($P<.001$). Health did pattern selection ($P<.05$), but it was weaker. Lastly, families with strong residential preferences exhibited residential selection that interacted with treatment to improve opportunity. For example, treatment group families who were dissatisfied with their neighborhoods were more motivated to move and much less likely than control families to live in the worst vs. best opportunity trajectory (OR=0.12, 95%CI 0.06-0.22). This large effect was stronger than families who were satisfied (OR=0.35(0.19-0.63) P interaction=.01). However, baseline health/developmental vulnerability did not modify treatment effects. Results may inform future observational studies, and/or housing assistance programs, to better accommodate residential selection.

1796-S/P

LATINO RESIDENTIAL COMPOSITION AND PERCEIVED MENTAL HEALTH AMONG LATINAS Jesse Plascak*, Shirley Beresford, Donald Patrick, Yamile Molina, Gloria Coronado (Department of Health Services, School of Public Health, The University of Washington)

Introduction: Studies of the mental health effects of Latino residential composition among Latinos have reported mixed results, possibly due to relationships between these factors and measures of social capital and discrimination. No studies have investigated the association between Latino residential composition and mental health together with measures of social capital and discrimination among Latinas born outside the U.S.. **Methods:** Using data from a sample (N=469) of Latinas in Western Washington State, this study estimated the effects of Latino residential segregation and Latino density on mental health status, using the five-item mental health inventory (MHI-5). The effects of neighborhood social cohesion and ethnic discrimination were also investigated. **Results:** Residence in block groups of the highest (versus lowest) tertile of Latino density resulted in a 6.1 point reduction in MHI-5 ($p<.05$). This association was no longer statistically significant when neighborhood social cohesion was included in the model. Higher Latino residential segregation resulted in lower mental health, but only among Latinas residing in block groups of both the lowest and highest percent Latino residents. **Discussion:** Latino residential segregation and percent Latino might act dependently to affect mental health, underlying the importance of considering various dimensions of Latino residential composition in studies of mental health outcomes among Latinas.

1797-S/P

SCORPIONISM ANALYSIS USING TOOLS OF SOCIAL EPIDEMIOLOGY IN RIO DE JANEIRO, BRAZIL. Claudio Souza*, Rosany Bochner (Instituto Vital Brazil)

In Brazil health is a constitutional right. The scorpionism is an issue of national health policy. Although the country holds on a solid, recognized research community on poisonous animals, high quality antivenoms, free public treatment, information systems for monitoring this grievance, the scorpionism epidemiological curves shows an increase in number and areas of occurrence since 2004. The annual death records remain unchanged in the period. This scenario suggests the discussion of the paradigm of public policies based only on quantitative profile of health problems built by classical epidemiological methods that assume the existence of "middle man" and points out the need for consideration of population's characteristics, contexts and social determinants of health in the reform of environmental health surveillance addressing poisonous animals in Brazil. We analyze the scorpionism over the past 10 years using data mining methodologies for quantitative and qualitative mapping major national funding agencies datasets and scientific literature production on scorpionism, we also apply multivariate analysis model for understanding the context and social determinants of population exposed to scorpionism in Rio de Janeiro state. Our results shows massive concentration of research initiatives on biomedical aspects of the grievance, on bioecology of the etiologic agents and the characterization and bioprospecting of scorpion venom in search of patent deposit. The levels of scorpionism exposure is inversely proportional to factors such as location and living conditions, income distribution and per capita rates and education. We also found positive association between some socio-economic activity, models of land use, deforestation and scorpionism. Our findings indicate the need for efforts to deepest understanding of social and cultural population characteristics involved in scorpionism increasing and its mandatory application in new coping practices"

1799- S/P

EDUCATION AND HEALTH IN 46 COUNTRIES: MODELING THE MEDIATING ROLE OF COMPOSITIONAL FACTORS AND HEALTH BEHAVIORS Aolin Wang* (University of California, Los Angeles)

Past studies examining the pathways from socioeconomic status to health via health behaviors seldom considered multiple mediators and rarely accounted for the possible interactions between exposure and downstream behaviors. Using causal mediation analysis, this study examined the health disparities in education and the contributions of possible pathways through compositional factors and health behaviors. We analyzed data on 164,743 participants aged 25 or older from 46 countries across continents, collected by the standardized World Health Survey 2002-2004. A health score (0-100) was created based on measures from eight health state domains, using principal component method. Composite factors were residence, unemployment, and marriage. Health behaviors under examinations were smoking, alcohol use, physical inactivity, and stress. G-computation algorithm implemented using Monte Carlo simulation of generalized linear mixed models was used to estimate natural direct effect, pathway effects, and controlled direct effects, comparing lower educational attainment to high school and beyond education. Lower educational attainment had an overall negative impact on good health (b ranging from -1.06 for secondary school completed to -4.05 for no formal education), the majority of which was direct (proportion due to pathways other than through composite factors or health behaviors ranging from 70% to 76%). Pathways through only health behaviors accounted for around one tenth of the total effect of education. A substantial amount of the observed health disparities would be eliminated if everyone had healthy behaviors (proportion eliminated ranging from 48% for secondary school completed to 72% for no formal education). Discrepancy between natural and controlled direct effects highlighted the need for continuing efforts on health behavior interventions among the less educated in addition to efforts that focus on increasing education to reduce educational disparities in health.

"S/P" indicates work done while a student/postdoc

1798-S/P

ASSOCIATION OF CHRONIC STRESS WITH CRP AND IL-6: THE CORONARY ARTERY RISK DEVELOPMENT IN YOUNG ADULTS (CARDIA) STUDY Eric Stulberg*, Eric Loucks, Catarina Kiefe, Kristen George, Peter De Chavez, Kiarri Kershaw (Northwestern University Feinberg School of Medicine)

Chronically elevated basal inflammation levels are one proposed pathway linking chronic psychosocial stress to cardiovascular disease. However, few studies have examined this relationship longitudinally and none to our knowledge have assessed relationships of change in chronic stress with change in inflammation. In this study we used data from the CARDIA study (2000-2001 and 2005-2006; n=2819) to examine whether changes in chronic stress were related to changes in inflammation. Chronic stress was assessed using the chronic burden scale which asked about the presence and severity of ongoing, financial, job, relationship, or health-related problems lasting over 6 months. Log-transformed CRP and IL-6 were used as measures of inflammation. Linear mixed-effects modeling was used to assess relationships of chronic burden with change in inflammation. We tested a baseline chronic burden*time interaction to assess whether baseline stress was related to changes in inflammation. We also examined whether change in chronic burden score was associated with changes in inflammation. We estimated six models, sequentially adjusted for age, race, gender, marital status, hormone/oral contraceptive use, presence of an inflammatory condition, use of anti-inflammatory medication, education, employment status, CES-D score >16, BMI, and smoking status. There were no significant associations between baseline chronic burden of stress and change in CRP (unadjusted $\text{pstress*time}=0.66$; fully adjusted $\text{pstress*time}=0.75$) or IL-6 (unadjusted $\text{pstress*time}=0.32$; fully adjusted $\text{pstress*time}=0.89$). In addition, each unit increase in chronic burden score was associated with a 1.5% decrease in CRP (95% confidence interval (CI): -3.7%, 0.7%) and a 0.2% decrease in IL-6 (95% CI: -2.3%, 2.0%); neither relationship was significant. Our results are consistent with findings from previous longitudinal analyses, suggesting chronic stress may not impact cardiovascular disease through elevated basal inflammation.

1800-S/P

AGE-BASED PATTERNS OF NETWORK SOCIAL CAPITAL AND THE RISK OF CLINICAL DEPRESSION AMONG TAIWANESE POPULATION Yun-Hsuan Wu*, Kellee White, Bo Cai, Spencer Moore, Shing-Chia Chen, Nancy L. Fleische (University of South Carolina)

Introduction: Depression is patterned by age in Taiwan: [specify the general patterns]. Age-based differences in access and accumulation of network social capital, i.e., network-accessed resources, may translate into age-related differences in health outcomes. However, little is known about the relationship between age-based patterns of network social capital and specific health outcomes. The purpose of this study is to examine whether age-based patterns in network social capital are associated with the risk for clinical depression. **Method:** Data from the 1997 Taiwan Social Change Survey (n=2,598) were used. The 20-item Center for Epidemiological Studies Depression Scale was used to measure depressive symptoms, and scores ≥ 15 indicated depression. Network social capital was assessed by using a position generator. Based on the psychosocial development, we defined four age groups (20-34; 35-49; 50-64; and >65). Multivariable logistic regression models were used to assess the association between network social capital and depression stratified by age groups after controlling for potential confounders. Odds ratios (OR) and 95% confidence intervals (C.I.) were calculated, accounting for the complex sampling design. **Results:** The pattern of being at risk for clinical depression across four age groups is "U"-shaped, with the oldest age group (Age >65) displaying the highest prevalence. We observed that network social capital showed a slight rise during Age 20-34 and Age 35-49, and a steep decline later in life. Higher scores of network social capital was associated with lower odds of being at risk for clinical depression only among the oldest age group (Age >65) (OR = 0.70, 95% C.I. = 0.54, 0.92). **Conclusion:** The finding suggests that network social capital is a protective factor for clinical depression for older adults in Taiwan. Future interventions that focus on building elders' social networks may benefit their mental health.

1801-S/P

INDIVIDUAL- AND NEIGHBORHOOD-LEVEL SOCIAL CAPITAL AND THE RISK OF CLINICAL DEPRESSION AMONG TAIWANESE ADULTS: A MULTILEVEL ANALYSIS

Yun-Hsuan Wu*, Kellee White, Bo Cai, Spencer Moore, Shing-Chia Chen, Nancy L. Fleischer (University of South Carolina)

Introduction: This study assessed the association between individual- and neighborhood-level social capital with risk for clinical depression among Taiwanese adults. **Method:** Data from the 1997 Taiwan Social Change Survey (n=2,598) were combined with the 2000 Taiwan Population and Housing Census. The 20-item Center for Epidemiological Studies Depression Scale was used to measure depressive symptoms, and scores ≥ 15 indicated risk for clinical depression. Neighborhood was defined as a township/district, that is the smallest geographic area for which data is available. Three dimensions of neighborhood- and individual-level social capital were assessed: cognitive social capital (measured using questions on perceived neighborhood trust and reciprocity), structural social capital (measured using questions on local social participation), and network social capital (measured using a position generator). Multilevel logistic regression models were used to assess the association between individual- and neighborhood-level social capital and depression after controlling for neighborhood- and individual-level demographic and socioeconomic factors. Models for each dimension of social capital were run separately and accounted for the complex sampling design. **Results:** Higher levels of individual-level social capital, measured as network (OR = 0.90, 95% C.I. = 0.82, 0.98), cognitive (OR = 0.91, 95% C.I. = 0.82, 0.94) and structural (OR = 0.78, 95% C.I. = 0.63, 0.97) social capital were associated with a lower odds of being at risk for clinical depression. No significant associations were observed for neighborhood-level social capital and risk for clinical depression. **Conclusion:** These findings suggest that individual-level social capital, regardless of dimension, was independently associated with being a risk for clinical depression in Taiwan. Our results shed further light on the importance of individual social capital resources for improving mental health in Taiwan.

1803

MULTIDIMENSIONAL-SPATIAL TRAITS OF AN EPIDEMIOLOGICAL DISTRIBUTION OF HEALTH-RELATED INDICES IN JAPAN

Hideo Yamazaki*, Soichi Sakabe, Jian-Guo Zhang, Qing Xiao, Minako Danbara, Hikaru Yamazaki, Hiroyoshi Unno, Mayumi Ono (Tokoha University)

Introduction: The purpose of the present study was to examine the multidimensional-spatial traits of an epidemiological distribution of health-related indices in Japan. **Methods:** The authors conducted a secondary analysis. Several pieces of information on health-related indices were obtained from the nationwide survey conducted by the Ministry of Health, Labour and Welfare in Japan. Five rates as an analyzed data were the following: a rate of age-adjusted mortality of liver-related diseases (LD), subjective symptoms (SS), outpatient (OP), difficulty of daily living (DL), and a life span (LS) by prefecture in Japan. The principal component analysis (PCA) was applied to the converted data which were composed of a sample-item matrix. Each rate was transformed into a z-score which was calculated based on a formula for standardized score. The matrix consisted of 94 prefectures by gender as a row data and 5 indices as a column data. **Results:** By the PCA, three principal components were extracted based on the criterion of an eigenvalue. Each principal component had 2.42 for the first principal component, 1.20 for the second, and 0.84 for the third. LD had a maximum eigenvector in the first principal component and its range of eigenvector was about 0.80. In the second principal component, LS had the maximum eigenvector and its range was about 0.82. In the third principal component, LD had also the maximum eigenvector and the range was about 1.18. **Conclusions:** In the PCA, the first principal component was extracted as an index which distinguished LD from health-related indices. Therefore, this component was used as the synthetic LD index from an epidemiological viewpoint in the present study. Using the second and third principal components, it was suggested that the first, second, third, and fourth quadrants on the two-dimensional space, should show the traits of the relationship between LD and health-related indices in Japan from an epidemiological aspect.

1810

THE EPIDEMIOLOGY OF DSM-5 NICOTINE USE DISORDER: RESULTS FROM THE NATIONAL EPIDEMIOLOGIC SURVEY ON ALCOHOL AND RELATED CONDITIONS-III S. Patricia Chou*, Bridget Grant, Rise Goldstein (NIH/NIAAA)

Purpose: To present nationally representative information on the prevalence, correlates, psychiatric comorbidity and treatment of DSM-5 nicotine use disorder (NUD), and burden of U.S. cigarettes consumption among adults with NUD and other psychiatric disorders. **Method:** Using data from the 2012-2013 National Epidemiologic Survey on Alcohol and Related Conditions – III (NESARC-III, n=36,309), we conducted weighted cross-tabulations and multivariate logistic regression analyses to estimate prevalences and examine comorbidity of NUD. **Results:** Prevalences of 12-month and lifetime DSM-5 NUD were 20.0% and 27.9%. NUD was more frequent among men, non-Hispanic Whites, younger individuals, the previously married, those with less education and lower incomes and those residing in urban areas. Adjusting for sociodemographic characteristics and additional psychiatric comorbidity, 12-month and lifetime NUD were significantly associated with other substance use and antisocial personality disorders (ORs = 1.5-5.1, 12-month; 1.5-5.6, lifetime). Twelve-month severe NUD was generally associated with major depressive bipolar I, bipolar II, panic, generalized anxiety, posttraumatic stress, and schizotypal, borderline and antisocial personality disorders (ORs = 1.3-2.5). Individuals with current NUD with at least one psychiatric disorder comprised 11.1% of U.S. adults but smoked 53.6% of total cigarettes consumed. Treatment was utilized by 20.3% of respondents with 12-month and 18.8% with lifetime NUD. **Conclusion:** Findings underscore the need to address nicotine use in clinical settings. Recognition of psychiatrically vulnerable subpopulations may inform etiologic research, prevention, and treatment of NUD.

1812

EPIDEMIOLOGY OF DSM-5 ALCOHOL USE DISORDER: RESULTS FROM THE NATIONAL EPIDEMIOLOGIC SURVEY ON ALCOHOL AND RELATED CONDITIONS-III Bridget Grant* (NIAAA/NIH)

Purpose. The objective of this study was to present nationally representative findings on the prevalence, correlates, psychiatric comorbidity, associated disability, and treatment of DSM-5 AUD diagnoses overall and according to severity level. **Methods.** The study was based on a representative US noninstitutionalized civilian adult (18 years) sample (N=36 309), the 2012-2013 National Epidemiologic Survey on Alcohol and Related Conditions III (NESARC-III). **Results.** Twelve-month and lifetime prevalences of AUD were 13.9% and 29.1%, respectively. Prevalence was generally highest for men (17.6% and 36.0%, respectively), white (14.0% and 32.6%, respectively) and Native American (19.2% and 43.4%, respectively), respondents, and younger (26.7% and 37.0%, respectively) and previously married (11.4% and 27.1%, respectively) or never married (25.0% and 35.5%, respectively) adults. Significant disability was associated with 12-month and lifetime AUD and increased with the severity of AUD. Only 19.8% of respondents with lifetime AUD were ever treated. Significant associations were found between 12-month and lifetime AUD and other substance use disorders, major depressive and bipolar I disorders, and antisocial and borderline personality disorders across all levels of AUD severity, with odds ratios ranging from 1.2 (95% CI, 1.08-1.36) to 6.4 (95% CI, 5.76-7.22). Associations between AUD and panic disorder, specific phobia, and generalized anxiety disorder were modest (odds ratios ranged from 1.2 (95% CI, 1.01-1.43) to 1.4 (95% CI, 1.13-1.67) across most levels of AUD severity. **Conclusion.** Alcohol use disorder defined by DSM-5 criteria is a highly prevalent, highly comorbid, disabling disorder that often goes untreated in the United States. The NESARC-III data indicate an urgent need to educate the public and policy makers about AUD and its treatment alternatives, to destigmatize the disorder, and to encourage those who cannot reduce their alcohol consumption on their own, despite substantial harm to themselves and others, to seek treatment.

1811

POLYSUBSTANCE USE, ANXIETY AND DEPRESSION IN NEW ZEALAND UNIVERSITY STUDENTS Jennie Connor (Department of Preventive and Social Medicine, University of Otago)

Polysubstance use has been associated with psychiatric and physical health problems in a number of populations, particularly with psychostimulant use. There are no previous studies in university students. **Methods:** A national web-based survey of New Zealand university students was conducted in 2013, using a random sample of enrolled full time students aged 17-25 (n=2812, response level 49%). Current and ever consumption of alcohol, tobacco, cannabis was measured along with numerous less frequently used drugs. Frequency of binge drinking was also determined. Patient Health Questionnaire (PHQ) items were used to measure depression and anxiety. Risky sexual behaviour was defined as sex without a condom with a non-regular partner at last sex. Latent class analysis identified patterns of polydrug use, and associations with depression and anxiety were modelled using logistic regression. Analyses were adjusted for demographic confounders, age at first drink, and risky first sexual experience. **Results:** Three clearly distinguishable classes of drug use were identified. Relative to no polydrug use, "predominantly alcohol, tobacco and cannabis" use was associated with depression (OR = 1.52, p < .001) and risky sexual behaviour (OR = 1.90, p = .001). "Extended polydrug use" was associated with panic disorder (OR = 3.74, p < .001), other anxiety disorder (OR = 1.87, p = .029), depression (OR = 2.60 < .001) and risky sexual behaviour (OR = 4.38, p < .001). **Conclusion:** Polydrug use is not as common in university students as in some other populations that have been studied but it appears that there are substantial associated health impacts and investigation of appropriate prevention and treatment opportunities is warranted."

1813

CALIBRATING THE AUDIT-C FOR USE IN SURVEY RESEARCH OF THE ACTIVE MILITARY Richard Herrell*, Amy Adler, Nicola Fear, Neil Greenberg (Walter Reed Army Institute of Research)

The 10-item Alcohol Use Disorders Identification Test ("AUDIT) was developed under the auspices of the World Health Organization as a screen for alcohol misuse to identify patients in clinical contexts in need of counseling and treatment. A 3-item version of the AUDIT (the AUDIT-C) has been widely adopted in both clinical and survey contexts. While the full AUDIT asks questions about (a) frequency and quantity of consumption (3 items), (b) symptoms of dependence (3 items), and (c) harmful consequences (4 items), the AUDIT-C is limited to the items about consumption. The recommended cutoff for "indicators of hazardous and harmful alcohol use" in the full AUDIT is >8 of the summed score. The comparable cutoff recommended for the summed AUDIT-C is >4 for men and >3 for women. In clinical contexts, referrals based on these values can be followed up in interviews to make appropriate treatment decisions. When the AUDIT-C is used in surveys to estimate the prevalence of hazardous and harmful alcohol use, however, the recommended cutoffs may lead to excessively high prevalence estimates. We evaluated the AUDIT-C in 3 military samples: 2 British (male Army [n=305] and females in all branches of service [n=1170]) and 1 American sample (male Army [n=520]) to calibrate the brief version to most accurately reflect the original measure without overestimating the prevalence. For each sample we compared a range of values of the AUDIT-C sum to the prevalence based on the AUDIT sum >8 to find the greatest agreement. The prevalence of hazardous and harmful alcohol use based on the full AUDIT in the samples was 67.2%, 40.3%, and 36.7% respectively. For all 3 samples, the AUDIT-C score that provided greatest agreement between the 2 measurements was >=7. The agreement was 90.2%, 89.2%, and 88.1% respectively. These results suggest that the recommended cutoffs in survey research may substantially overestimate alcohol misuse."

1814

PERCEPTION, INTENTION AND ATTEMPTS TO QUIT TOBACCO SMOKING AMONG A SCHOOL-BASED SAMPLE OF ADOLESCENTS IN IRBID JORDAN: A LONGITUDINAL STUDY 2008-2011. Rana Jaber* Florida International University)

Introduction Evidence regarding adolescents' perception whether it is easy to quit smoking as well as their intention and attempt to quit smoking waterpipe in the Eastern Mediterranean Region (EMR) is not available. This study aims to measure the prevalence of the intention to quit, attempts to quit, and the perception that it is easy to quit smoking among a school-based sample of adolescent smokers from Irbid Jordan. **Methods** Participants for this study were selected from the Irbid longitudinal study of smoking behavior [ILSS] that was conducted among school adolescents in Irbid, Jordan from 2008 through 2011. A random sample of 19 schools was selected with probability proportionate to size. A total of 1781 students enrolled at baseline (participation rate = 95%) completed a self-administered questionnaire annually. For this analysis, all students who reported current waterpipe or cigarettes smoking at any time point were eligible to be included (N=945). Descriptive analysis was done using SPSS v 21. **Results** About 63% of the sample were males. Current waterpipe smoking was reported at all time points: 58.9%, 29.5%, 30.9%, and 43.6% for baseline, time 1, time 2, and time 3 respectively. The percentage of smokers in the "not currently smoking" category had increased from 29.8% at baseline to 50% at the end of follow-up. At baseline, 74.3% of the smokers reported that they wanted to quit, 64.2% tried to quit, and 68.0% think that they can quit whenever they want. Maintaining health was the main reason as to why the adolescent smokers want to quit smoking with no difference between waterpipe and cigarette smokers. **Conclusion** There was an increase in the number of students who discontinued smoking over time. The intention to quit is relatively high among this cohort. Their health concerns form a barrier for their smoking continuation. **Keywords:** Adolescents, cigarettes, Jordan, longitudinal, quit, waterpipe

1816

ARE CANADIANS REALLY THAT DIFFERENT? EXAMINING THE ASSOCIATION BETWEEN EMPLOYMENT STATUS AND ALCOHOL USE DISORDERS IN CANADA. Tyler Pirie* (Canadian Centre on Substance Abuse)

Alcohol is the most commonly used psychoactive substance in Canada and is associated with a variety of adverse health outcomes. Recent studies have indicated that unemployed individuals are more likely than employed individuals to have an alcohol use disorder; however, there is a dearth of Canadian research in this field. Understanding the prevalence and distribution of alcohol use and related disorders among these two populations in Canada is important for developing and improving prevention strategies and policies, as well as treatment services and supports. Using data from a nationally representative cross-sectional survey (N=18,996), we explored the prevalence and distribution of alcohol use in Canada and the association between employment status and alcohol use disorders. Prevalence estimates (stratified by employment status) were calculated for our outcomes of interest. Multivariate logistic regression was used to examine the relationship between employment status and alcohol use disorders, adjusting for other known covariates. Past-year alcohol use was significantly higher among employed Canadians than unemployed Canadians (84.6% vs. 58.9%). These statistically significant differences were present across age, sex, level of education, and marital status. The prevalence of alcohol use disorders in our sample was quite low (<5%). Employed Canadians had a significantly higher prevalence of alcohol use disorders than unemployed Canadians (4.0% vs. 2.3%). The odds of abusing alcohol were as little as 33%, and as much as 156%, higher for employed Canadians after controlling for age, sex, level of education, and marital status. Our findings identified significant differences in substance using behaviours between employed and unemployed Canadians which contradict some existing literature. These findings highlight the need for further research and the potential to target existing prevention efforts that reduce harmful drinking behaviours in Canada.

1815-S/P

MEDICAL MARIJUANA LAWS AND OPIOID USE AMONG NON-CULPABLE DECEASED DRIVERS FROM 1999-2013 June H. Kim* (Dept. of Epidemiology, Columbia University)

IMPORTANCE: A recent report has suggested that passage of medical marijuana laws is associated with decreases in annual state opioid overdoses rates. If confirmed, this finding may have important implications for drug control policy. **OBJECTIVE:** We explore the mechanisms behind this association by assessing the association between state medical marijuana laws (MMLs) and the prevalence of positive opioid test results among non-culpable deceased drivers who died within one hour of crashing in the United States. **DESIGN, SETTING, AND PARTICIPANTS:** An annual census of non-culpable deceased drivers across the years 1999-2013; data from 16 states that tested for alcohol and other drugs in at least 80% of drivers who died within one hour of crashing. Non-culpability was defined as the absence of driver-related factors contributing to crashing. **EXPOSURES:** Crashing in a state with an operational MML (i.e., allowances for home cultivation or active dispensaries) versus crashing in a state without a MML. **MAIN OUTCOME AND MEASURES:** Whether the deceased driver tested positive for opioids. Additional control measures include the state and year of the crash, state prescription drug monitoring programs, as well as driver age, sex, and blood alcohol content. **RESULTS:** From 1999-2013, eight states (CA, WA, HI, CO, VT, MT, RI, and NJ) had at least one year with an operational MML. Of the 18,851 non-culpable drivers studied, approximately 42% and 58% died in states with and without an operational MML, respectively. Among drivers between 21-39 years old, crashing in a state with an operational MML was associated with reduced odds of testing positive for opioids (aOR=0.56, 95% CI: 0.33-0.96). No significant associations were observed for drivers under 21 or over 40 years old. **CONCLUSIONS AND RELEVANCE:** The results of this study indicate that among non-culpable deceased drivers between 21-39 years old, MMLs are associated with reductions in the odds of opioid use.

1817-S/P

BEST WAY FOR THE GOVERNMENT TO REDUCE ALCOHOL PROBLEMS: A POPULATION PERSPECTIVE. Diana Carolina Sanchez Ramirez*, Richard Franklin, Peter Leggat, Don Voaklander (Injury Prevention Centre, School of Public Health, University of Alberta, Edmonton, Canada)

Background: The harms from the use of alcohol can be reduced if effective alcohol interventions and policies are implemented by the governments. The effectiveness of alcohol strategies have been explored mainly from objective perspectives. The population perception about alcohol harm and the best strategies to control alcohol-related problems have not been explored or compared across countries. **Objectives:** To compare alcohol perceptions between the populations of Alberta and Queensland. Furthermore, to explore the association between alcohol perceptions and sociodemographic characteristics. **Methods:** Data from the 2013 Alberta Survey and from the 2013 Queensland Social Survey was analyzed. Analyses were carried out using regression models. **Results:** Both populations studied believed that alcohol use contributes to health problems and injuries. Compared with Albertans, Queenslanders were less likely to select education programs (OR=0.68;p=0.001), media campaigns (OR=0.71;p=0.031), taxes on alcohol beverages (OR=0.58;p=0.012) and by-laws to reduce the number of liquor outlets per sq/km (OR=0.29;p<0.001) as the best strategies to reduce alcohol problems; while they were more likely to choose enforcement of alcohol sales to minors (OR=1.36;p=0.002) and implementation of bylaws to limit operation hours of alcohol outlets (OR=3.69;p<0.001). Some sociodemographic factors were associated with the preferred strategies in each population. Albertans with alcohol risk were more likely to suggest media campaigns but less likely to select taxes as the best ways to reduce alcohol-related problems. **Conclusion:** From a population perspective, our results contribute to identify the best strategies to reduce alcohol problems and the sociodemographic characteristics associated with them in Alberta and Queensland. Those, represent valuable sources of information for local health authorities and policymakers when designing suitable strategies to control alcohol-related harm.

1818- S/P

RISK BEHAVIORS ASSOCIATED WITH ALCOHOL CONSUMPTION AMONG BRAZILIAN NIGHTCLUBS' PATRONS: A LATENT CLASS ANALYSIS Adriana Sanudo*, Andreoni Solange, Zila Sanchez (UNIFESP-EPM)

Background: Alcohol consumption is a well-known cause of morbidity, mortality and social damage around the world. The recreational context of the nightclub is associated with the misuse of alcohol and contributes to increased risk behavior inside these venues. International findings show that the excessive consumption of alcohol in nightclubs is associated with violence, traffic accidents, risky sexual behaviors and higher propensity to abuse other drugs. **Aim:** To identify risk behavior profiles that occurred during or just after the departure from the nightclubs associated with alcohol consumption among patrons in São Paulo, Brazil. **Methods:** The study used a two-stage cluster sampling survey design. Data were collected by systematic sample portal survey. 2,422 patrons were interviewed at the entrance of 31 nightclubs. We used Latent Class Analysis (LCA) to identify risk behavior profiles with emphasis on drink and drive, fights, accidents, blackout, physical complications and unsafe sex. **Results:** A three-class LCA model was selected and represents "low", "medium" and "high risk" classes (which included 48%, 39% and 13% of the patrons, respectively). Compared to "low risk" class, patrons in the "medium" and "high risk" classes were more likely to be men (OR=1.6 [1.2-2.2] and OR=1.6 [1.0-2.4], respectively) and to have engaged in binge drinking (use of at least four doses of alcohol on a single occasion for women and five doses for men) in the past year (OR=4.1 [3.2-5.3] and OR=8.6 [4.1-17.9]). Patrons in the "medium risk" class were more likely to belong to a high socioeconomic status (OR=2.4 [2.4-3.7]) and to attend hip-hop music nightclubs (OR=2.0 [1.3-3.0]) compared to the low risk class. Older ages reduced the chances to belonging to the "high risk" class by 8% (p=0.04). **Conclusion:** Sociodemographic and contextual factors are associated with the categorization of risk behaviors in Brazilian nightclubs.

1819-S/P

DRUG USE AND HIV INFECTION AMONG ADULTS IN A NATIONALLY REPRESENTATIVE SAMPLE Stephanie Shiao*, Silvia S. Martins (Department of Epidemiology, Columbia University, New York, NY)

Background: Little is known about drug use among people living with HIV in comparison to an uninfected group in the general population. The aim of this study was to investigate the association between legal and illegal drug use and HIV infection in a nationally representative sample of adults in the United States. **Methods:** This study uses 9 years of data (2005-2013) from the National Survey on Drug Use and Health (NSDUH). Respondents were asked whether doctors or other medical professionals had ever told them that they had HIV/AIDS and were categorized as HIV-infected if they responded yes. Past-year use, past month use, and past year abuse/dependence of cigarettes, alcohol, marijuana, cocaine, heroin, hallucinogens, inhalants, and psychotherapeutics was assessed. After descriptive analyses, weighted logistic regression was used to generate adjusted odds ratios (aOR) to evaluate the relationship between drug use and HIV infection, adjusting for demographic characteristics. **Results:** Of 336,688 respondents age 18 and older, 472 (0.14%) were categorized as HIV-infected. A higher proportion of HIV-infected participants reported past year and past month use of cigarettes, marijuana, cocaine, heroin, hallucinogens, inhalants, and psychotherapeutics. Past month use of cigarettes (aOR 2.17), marijuana (aOR 2.95), cocaine (aOR 5.83), heroin (aOR 9.01), hallucinogens (aOR 3.15), inhalants (aOR 17.2), and psychotherapeutics (aOR 2.96) was significantly associated with HIV infection after adjustment for demographics. Past year abuse/dependence of any illicit drug use was strongly associated with HIV infection after adjustment for demographic variables (aOR 4.51, 95% CI: 3.01, 7.77). **Conclusions:** There are higher levels of drug use and abuse/dependence among the HIV-infected population compared to the HIV-uninfected population in the United States. This is of concern because drug use and abuse/dependence impede engagement in HIV care and adherence to antiretroviral therapy.

1830

LESSONS LEARNED BY EPIDEMIOLOGISTS INVOLVED IN POLICY

Olivia Carter-Pokras*, Lorna Thorpe (University of Maryland School of Public Health)

There are many ways epidemiologists can be involved in development of evidence that can be used by policymakers—from surveillance to raise awareness of issues, to evaluation research to consider the impact of policies. However, methods for evaluating and incorporating epidemiologic evidence into policy-making are not well established. To better understand the process of synthesizing epidemiologic and other evidence into a rational basis for policy, the American College of Epidemiology's Policy Committee hosted three workshops in 2009, 2011, and 2013 at Washington University in St. Louis to identify lessons learned by experts from diverse disciplines with extensive policy experience. The workshop resulted in a series of case studies and overview articles published in the *Annals of Epidemiology* (2010, 2012, 2014). These case studies cover a wide range of topics (e.g., Health disparities, HIV prevention among Latinos, Tobacco use in youth, Disaster response, Mental illness & reduction in violence & suicide and Child immunization policy). This presentation will provide an overview of lessons learned from 12 completed case studies, outline new case studies under development, and provide examples of how these case studies have and can be used for education and training of epidemiologists and other public health professionals

1833

FOUNDATIONAL VS HISTORICAL BASED METHODS FOR TEACHING EPIDEMIOLOGY: HAS ANYONE SEEN THE THEORY?

Ricardo Kuchenbecker*, Lucas Mocellin, Caroline Beck (Programa de Pós-Graduação em Epidemiologia, Universidade Federal do Rio Grande do Sul, Brazil)

Keyes, Galea and Morabia promoted a thoughtful debate about the current practices in teaching introductory epidemiology (*Am J Epidemiology* 2014). Keyes and Galea claim that epidemiology “remains a difficult subject for public health students” and that some of those difficulties rely on the existing sequence of concepts based on their historical evolution in the field”. They propose 7 “foundational” steps for implementing an epidemiological study as a teaching approach. According to Morabia, the “confrontation does not take place between a ‘foundational’ and a ‘historical’ [approaches] but between different ways of distilling the same foundational concepts”. Our experience as a teacher (RK) and doctoral candidates (CB and LM) of an epidemiology program indicates that the difficulties experienced by students in learning epidemiology go beyond the existing sequence of ‘historical’ vs. ‘foundational’ approaches. First, little evidence supports the effectiveness of current adopted teaching methods. Research is necessary to address the sequence of concepts and the most effective approaches for teaching and learning epidemiology. Secondly, epidemiologic studies usually provide narrowed and focused answers for comparatively broader public health research questions. Thirdly, probabilistic and counterfactual approaches sometimes provide non-intuitive frameworks for the process of causal inference. Fourthly, epidemiological reasoning involves inductive, deductive, cognitive and metacognitive approaches that are frequently misrepresented in teaching methods. Epidemiology has traditionally provided important evidence for public health decision making. Epidemiologic concepts and methods represent important skills for public health professionals. Paradoxically, there is a lack of theory supporting approaches for teaching epidemiologic reasoning. The debate between a theoretical and pragmatic (i.e. consequentialist) epidemiology also deserves more evidence for its teaching methods.

“-S/P” indicates work done while a student/postdoc

1832

HEALTH DATA FOR DECISION MAKING IN THE PACIFIC: EXPERIENCE AND LESSONS LEARNED.

Sameer Gopalani*, Mark Durand, Adam Roth, Thane Hancock, Haley Cash, Damian Hoy (World Health Organization (Country Liaison Office in Northern Micronesia))

Many Pacific island countries and territories (PICT) are facing a triple burden of diseases: high incidence of communicable and noncommunicable diseases, and health impacts of climate change. To better understand the extent of these diseases and to determine health priorities, reliable health data is needed. Although most PICT are rich in data, the ability to analyze it and use the information generated is limited. Thus, to address this gap in epidemiology capacity, the Data for Decision Making (DDM) program was revived and piloted in the PICT. The twin goals of the DDM program are to build capacity in basic field epidemiology of PICT health staff and to build surveillance systems of participants' health agencies. Using different pedagogical methods focused on theoretical understanding, practical exercises, and interactive sessions, the DDM program was piloted by the Pacific Public Health Surveillance Network partners. The curriculum, aligned with Health Metrics Network framework, included four one-week modules and one field epidemiology project. The DDM modules were introduction to epidemiology and field epidemiology; public health surveillance; outbreak investigations; and computing for public health practice. From August 2013 to September 2015, 11 modules were delivered and one cohort of students have completed a field epidemiology project. Overall, 20 students have finished the full continuum, and over 200 have commenced the program. Module evaluations revealed that the DDM pilot was well received by students who rated the trainings as either ‘very’ or ‘highly’ useful. Also, academic accreditation and opportunity to network with colleagues was considered extremely important. Despite achieving high levels of student involvement and collaboration between external partners, the need to further engage PICT health leaders, update the program objectives, and deliver in-country programs need to be undertaken moving forward to ensure sustainability and success of the DDM program in Pacific.

1834

VISUALIZATION OF DIAGNOSTIC STATISTICS USING SIMULATED DATA

Hayden Smith* (UnityPoint Health; University of Iowa)

Diagnostic tests are a key component in improving health care and public health. Use of statistics can provide direction in the construction and use of diagnostics as well as guide treatments and prognoses. It is important for clinicians and epidemiology learners to understand these methods in order to best engage in research and interpret findings. These statistical concepts are also used in examining systematic errors in validation and sensitivity analyses. Beyond the standard presentation of the 2x2 classification table and receiver operator characteristic (ROC) curve, few visuals are regularly provided in journal articles. However, countless methods are available to visualize diagnostic statistics, especially within teaching relevant topics. For example, threshold (cut-off) selections for continuous variables can be examined using: histograms; line charts; scatter graphs; and augmented ROC curves (e.g., likelihood ratio slopes, Youden's Index, jitters, and confidence intervals). Data dichotomization based on established cut-offs can also be presented visually using: trapezoid figures, box graphs, sample illustrations (people), Venn diagrams, and Bayesian networks. The incorporation of simulated data into these processes can assist with constructing visuals along with adaptable examples for teaching concepts (e.g., samples size influence on precision and variation as well as potential transportability of results (i.e., varied thresholds and prevalence) using: mosaics; line plots; bubble graphs; and dot plots with whiskers. Developing experiences with diagnostic statistics based on simulated data can be incorporated to assist in providing more open educational modalities. Presented will be examples of graphs and concepts for improving epidemiologic education related to diagnostic tests.

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HEALTH DATA FOR DECISION MAKING IN THE PACIFIC: EXPERIENCE AND LESSONS LEARNT. Sameer Gopalani*, Mark Durand, Adam Roth, Thane Hancock, Haley Cash, Damian Hoy (World Health Organization (Country Liaison Office in Northern Micronesia))

Many Pacific island countries and territories (PICT) are facing a triple burden of diseases: high incidence of communicable and noncommunicable diseases, and health impacts of climate change. To better understand the extent of these diseases and to determine health priorities, reliable health data is needed. Although most PICT are rich in data, the ability to analyze it and use the information generated is limited. Thus, to address this gap in epidemiology capacity, the Data for Decision Making (DDM) program was revived and piloted in the PICT. The twin goals of the DDM program are to build capacity in basic field epidemiology of PICT health staff and to build surveillance systems of participants' health agencies. Using different pedagogical methods focused on theoretical understanding, practical exercises, and interactive sessions, the DDM program was piloted by the Pacific Public Health Surveillance Network partners. The curriculum, aligned with Health Metrics Network framework, included four one-week modules and one field epidemiology project. The DDM modules were introduction to epidemiology and field epidemiology; public health surveillance; outbreak investigations; and computing for public health practice. From August 2013 to September 2015, 11 modules were delivered and one cohort of students have completed a field epidemiology project. Overall, 20 students have finished the full continuum, and over 200 have commenced the program. Module evaluations revealed that the DDM pilot was well received by students who rated the trainings as either 'very' or 'highly' useful. Also, academic accreditation and opportunity to network with colleagues was considered extremely important. Despite achieving high levels of student involvement and collaboration between external partners, the need to further engage PICT health leaders, update the program objectives, and deliver in-country programs need to be undertaken moving forward to ensure sustainability and success of the DDM program in Pacific.

1840

IMPACT OF INTERAGENCY COLLABORATION ON CORNEA DONATION BRAZIL: A 10-YEAR ANALYSIS Wildo Araujo*, Thatiane Sampaio, Isabela Rodrigues, Thuane Ribeiro, Célia Yamagushi, Daniela Pontes, Wildo Araujo, Sônia Bão (University of Brasília, Brazil)

The purpose of this study was to investigate the characteristics of cornea donors to the DF Eye Bank over a ten-year period after interagency collaboration among Eye Bank and the Secretariat of Public Security of the Federal District, Brazil. The records of eyes donated in the period from 2004-2013 were analyzed retrospectively. We had 3388 cornea donors, the majority of which were between 21 to 30 years old (17.4%), derived from violent death (84.1%, p value=0.00), and predominately male (73.5%). Among the donated corneas, 54.0% were used for optic purposes. Mechanical trauma caused by gunshot, stabbing or blunt force (23.7%) and road traffic injury (11%) were the main causes of violent death. Other common causes of death were cardiovascular disease (26.3%). Donors derived from violent death had no statistical interference on the effectiveness of corneal donation (p value >0.05). Because of the large waiting lists, and waiting times, it is advisable to implement this interagency model of collaboration in order to increase the number of available cornea donors

1841

WORK, VIOLENCE, AND OCCUPATIONAL ACCIDENTS Ricardo Cordeiro*, Verônica Luz (School of Medical Sciences - UNICAMP, Brazil)

Violent deaths are the leading cause of death among the young population in Brazil and are currently on the rise. The increase in violence impacts the labor market, contributing to the mortality profile of Brazilian workers. This study aims to describe and discuss the occurrence of some types of violent deaths as occupational accidents (OA) in a large Brazilian city, contributing to a better understanding of this phenomenon. The study was conducted in Campinas, southeastern Brazil, with an estimated population of 1,180,000 inhabitants. Data were collected through semi-structured interviews using verbal autopsy techniques. All violent deaths that occurred during work or on the route between work and home were characterized as fatal OA. The OAs were classified as crime_OA (resulting from criminal act against the worker), strict_OA (originated primarily in the execution of work activities), traffic_OA (resulting from traffic accidents), and other_OA (other occupational accidents). Between 01/07/2014 and 06/30/2015 60 fatal OA were found in Campinas, classified as follows: crime_OA: 21 (35.0%), strict_OA: 14 (23.3%), transit_OA: 22 (36.7%) and other_OA: 3 (5.0%). These numbers corresponded to an annual incidence of fatal OA equal to 7.5 per 100,000 workers. For males, the incidence was 13.5 fatal OA per 100,000 workers. Such accidents occurred mostly in streets, squares, and highways. The identified crime_OA corresponded to homicides, most of them with firearms, committed by robbers, police, co-workers or public in general. Crime_OA and traffic_OA accounted for over 70% of fatal OA in Campinas. We think these figures reflect the reality in Brazil. This finding reinforces the need to reformulate the prevention strategies of occupational accidents in Brazil. Preventive actions in the Workers' Health area need to push the boundaries of the "factory space" and contemplate this reality."

1842-S/P

ESTIMATING THE CAUSAL EFFECT OF INTIMATE PARTNER VIOLENCE ON WOMEN'S CONTRACEPTIVE USE: AN APPLICATION OF MARGINAL STRUCTURAL MODELS TO COHORT DATA FROM RAKAI, UGANDA Lauren Maxwell*, Arijit Nandi, Heena Brahmabhatt, Jennifer Wagman, Gertrude Nakigozi, Anthony Ndyanabo (McGill University)

Reproductive coercion, behaviors that directly interfere with women's contraceptive use and ability to plan their pregnancies, is an understudied form of intimate partner violence (IPV). Research indicates both that incident pregnancy is associated with IPV and that IPV affects the probability of subsequent pregnancy and childbirth. Therefore, incident pregnancy is an important time-varying confounder that is affected by prior levels of exposure to IPV. Previous studies of the association between IPV and contraceptive use have controlled for covariates on the causal pathway between IPV and contraceptive use, like pregnancy, which may attenuate the estimated effect of IPV on contraceptive use. This study uses data from the Rakai Community Cohort Study (RCCS) to build on previous work by applying marginal structural models (MSM) to cohort data with repeat measures of both IPV and contraceptive use to estimate the causal effect of physical, sexual, and emotional IPV on women's contraceptive use. We estimated inverse probability of treatment and censoring weights for each form of IPV. Relative risks were estimated using log binomial models; we applied generalized estimating equations to account for clustering. The analysis dataset includes 8,523 women interviewed between 2001 and 2010. RCCS is an open cohort; participants completed an average of three out of the seven possible visits. Women who experienced physical, sexual, or emotional IPV were less likely to report condom use at last sex (risk ratio 0.75, 95% CI: 0.71, 0.80) and less likely to report current use of a partner dependent method such as condoms, withdrawal, abstinence, or the rhythm method (RR 0.82, 95% CI: 0.77, 0.86) than women who did not. Estimates from the unweighted regression were closer to the null value which suggests that adjusting for confounders that are on the causal pathway between IPV and contraceptive use attenuates the estimated effect of IPV on women's contraceptive use.

1843-S/P

INVOLVEMENT OF BRAZILIAN STUDENTS IN FIGHTS WITH WEAPONS: A CROSS-SECTIONAL STUDY WITH DATA FROM THE NATIONAL SCHOOL-BASED HEALTH SURVEY (PENSE), 2012 Alice Cristina Medeiros Melo*, Leila Posenato Garcia (Postgraduate programs in Public Health. University of Brasília. Brasília, DF, Brazil.)

Objective: This study aims to investigate the prevalence and factors associated with involvement in fights with weapons among Brazilian students. **Methods:** Cross-sectional study with data from the National School-Based Health Survey (PeNSE), conducted in 2012, with 109,104 9th grade students who attended 2,842 public and private schools of capital and provincial cities in all 26 Brazilian states and the Federal District. The study outcomes were involvement in fights with firearms and knives or other weapons (pocket knife, stone, stick, bottle, etc) in the 30 days preceding the interview, as reported by the students. We used Poisson regression to estimate prevalence ratios (PR) and 95% confidence intervals (95%CI). **Results:** 6.4% (95%CI 6.2-6.7) of students reported involvement in a fight with a firearm, and 7.3% (95%CI 7.1-7.6) in a fight with knives or other weapons. In the adjusted analysis, male students had nearly twice the prevalence of involvement in fights with firearms (PR 1.86, 95%CI 1.72-2.00) and knives (PR 1.95, 95%CI 1.82-2.09) than females. Older age (> 15 years) was also associated with involvement in fights with firearms (PR 1.26, 95%CI 1.17-1.36) and knives (PR = 1.22, 95%CI 1.14-1.31). Other factors associated with both outcomes were: having a paid job, cigarette smoking, alcohol consumption, use of illicit drugs, not having any close friends, not living with father nor mother, missing classes without parental supervision, having suffered family violence, and insecurity on the way to school and/or in the school. The involvement in fights with knives was also associated with being victim of bullying. For both outcomes, there was no association with the type of school (public or private). **Conclusion:** Involvement in fights with both firearms and knives or other weapons was higher among male students and older ones. Health risk behaviors, family supervision, mental health and violence situations were also associated with the outcomes.

1844

PEER PRESSURE FOR SEXUAL BEHAVIOR IN ADOLESCENCE AS A PREDICTOR OF INTIMATE PARTNER VIOLENCE PERPETRATION IN YOUNG ADULTHOOD: FINDINGS FROM THE NATIONAL LONGITUDINAL STUDY OF ADOLESCENT TO ADULT HEALTH Deborah Pearlman*, Madeline Montgomery, Lindsay Orchowski, Eric Loucks (Brown University School of Public Health)

Background: Despite numerous studies documenting intimate partner violence (IPV) as a serious public health problem, the developmental mechanisms of progression to IPV perpetration are not well understood. **Objective:** The present study evaluates social norms for sexual behavior in adolescence as a predictor of IPV perpetration in young adulthood. **Methods:** Data were obtained from Waves I and III of the National Longitudinal Study of Adolescent to Adult Health (Add Health). Analyses examined social norms and other correlates of IPV perpetration by gender. **Results:** IPV perpetration (Wave III) was reported by 58.2% of men and 64.8% of women. Poisson regression analyses revealed gender differences in IPV perpetration by perpetration type (psychological, physical, or sexual). Among young men, perceived peer pressure to have sex during adolescence (Wave I) was associated with higher relative risk (IRR: 3.13, 95% CI: 1.57, 6.22) of perpetrating sexual IPV compared to men who perceived lower peer pressure to have sex. Among young women, neither agreeing nor disagreeing with the item measuring peer pressure to have sex was associated with a greater relative risk of perpetrating psychological IPV (IRR: 1.23, 95% CI: 1.01, 1.50) and perpetrating sexual IPV (IRR: 1.98, 95% CI: 1.07, 3.69) compared to no perceived peer pressure to have sex. Alcohol use in adolescence (Wave I) was associated with greater risk of perpetrating psychological, physical, and sexual IPV among young men and perpetrating physical and sexual IPV among young women. **Conclusion:** This novel prospective, development-focused approach to understanding IPV perpetration research supports conceptualizing IPV perpetration as different phenomena by perpetrator gender, lending further evidence for a feminist perspective on IPV. Interventions that mitigate harmful peer messages and promote healthy relationship literacy among adolescents are needed.

1846

ADVERSE CHILDHOOD EXPERIENCES (ACES): PREDICTORS OF INTIMATE PARTNER VIOLENCE AND SEXUAL VICTIMIZATION IN A COLLEGE AGED SAMPLE Megan Quinn*, Renice Obure, Emery Shekiri, Jill Stinson, Malendie Gaines (East Tennessee State University)

Background: This study examines the role of Adverse Childhood Experiences (ACEs) as predictors of intimate partner violence (IPV) and sexual victimization (SV) in a college aged sample in southern Appalachia. **Methods:** Data were obtained from a health behavior questionnaire administered online at a university in southern Appalachia from July-December 2014. The sample included 992 participants who self-reported on ACEs and adult experiences of IPV and SV. Descriptive statistics were completed for age, race, sex, ACEs (emotional, physical, or sexual abuse experiences as a child or witnessing IPV), IPV, and SV. Multiple logistic regression models were used to predict IPV and SV in separate models. **Results:** The sample was mostly female (69.3%), Caucasian (84.2%), and had an average age of 20 years old ($M=20.1$, $SD=4.05$). IPV was reported by 10.5% of participants and SV by 14.1%. Predictors of IPV were: female (OR: 2.85, CI: 1.44- 5.65), emotional abuse (OR: 2.06, CI: 1.14- 3.70), sexual abuse (OR: 2.52, CI: 1.40-4.53) and age (OR: 1.10, CI: 1.06-1.15). Predictors of SV were female (OR: 3.22 CI: 1.70- 6.08), emotional abuse (OR: 2.53, CI: 1.48-4.33), sexual abuse (OR: 7.45, CI: 4.40-12.60) and age (OR: 1.06, CI: 1.02-1.12). **Conclusions:** Emotional and sexual abuse experiences during childhood were the greatest predictors of IPV and SV in adulthood in this college aged sample. This illustrates that children who were victims of emotional or sexual abuse have an increased risk of further abuse and/or revictimization as adults. Females had a greater odds of experiencing IPV and SV compared to their male counterparts. Although this pilot study is limited in that looked at college students at one university, this provides a foundation for future research on predictors of IPV and SV in young adults. Further, a better understanding of ACEs and their role in adult health outcomes will allow more targeted interventions in high risk groups.

1845-S/P

PHYSICAL AND EMOTIONAL INTIMATE PARTNER VIOLENCE (IPV) EXPERIENCES OF COLLEGE STUDENTS IN SOUTHERN APPALACHIA Emery Shekiri*, Renice Obure, Malendie Gaines, Megan Quinn, Jill Stinson (East Tennessee State University: Department of Epidemiology and Biostatistics)

BACKGROUND: This study examines characteristics and correlates of physical and emotional IPV in a college sample in southern Appalachia and further explores differences in the effect of correlates on perpetration and victimization. **METHODS:** Data were obtained from a health behavior questionnaire administered online at a university in southern Appalachia from July-December 2014. Sample included 992 participants who answered five questions on physical and emotional IPV; two on perpetration and three on victimization. Descriptive statistics were completed for age, race, sex, college year, rurality/urbanicity, nine sexual risk behaviors, relationship status, sexual preference and IPV. Logistic regression models used gender, college year and sexual risk behaviors to predict IPV. **RESULTS:** The sample was mostly female (69.3%), Caucasian (84.2%), freshmen (56.9%), unmarried (94.7%) and heterosexual (92.6%) with average age 20 years ($M=20.1$, $SD=4.05$). Population involved in IPV as either victim or perpetrator was 37.3%. There was no association between rurality/urbanicity and victimization or perpetration ($\chi^2 = .13$, $p=.94$; $\chi^2 = .51$, $p=.77$ respectively). Predictors of perpetration were: female (OR: 3.01, CI: 1.61- 5.65), college junior (OR: 2.96, CI: 1.61- 5.43), early sexual debut (OR: 2.19, CI: 1.35 -3.55) and illicit drug use during sex (OR: 1.92, CI: 1.144- 3.22). IPV victims were female (OR: 1.96 CI: 1.36- 2.83) with early sexual debut (OR: 1.50, CI: 1.05-2.14) using alcohol during sex (OR: 1.50, CI: 1.04- 2.16) and whose previous partner had multiple sexual partners (OR: 1.61, CI: 1.06-2.44). **CONCLUSIONS:** The risk of IPV victimization or perpetration in this sample was significantly increased by being female and involvement in sexual risk behaviors. Seniority in college increased the risk of perpetration. IPV awareness programs should integrate sexual risk behavior modules and be conducted in the early college years to be maximally effective.

1847

SEXUAL, PHYSICAL AND VERBAL AGGRESSION IN BRAZILIAN NIGHTCLUBS: PATRON'S CHARACTERISTICS, DRUG USE AND ENVIRONMENTAL FACTORS Zila Sanchez*, Adriana Sanudo, Solange Andreoni, Claudia Carlini, Silvia Martins (Universidade Federal de São Paulo)

Background: Drinking environments have been described as hot spots for violence in developed countries. Environmental characteristics, such as music, crowding, alcohol prices and temperature, of the venues can be also associated with the episodes of violence and, in theory, when understood, could be manipulated to prevent them. **Aim:** To identify individual and environmental factors associated with patron's report of having suffered sexual, physical or verbal aggression in nightclubs in São Paulo, Brazil. **Methods:** The study used a two-stage cluster sampling survey design. Individual-level data were collected by systematic sample portal survey. 1,822 patrons were interviewed at the entrance and exit of 31 nightclubs. Observational data was collected through 307 hours of observational research using a structured guide to register environmental measures. Weighted generalized linear models investigated the association between violence suffered in the day of the survey with patrons' sociodemographic characteristics (age, sex, socioeconomic status, etc), alcohol/drug use and environmental level variables (type of music played, crowding, temperature, cleanliness, dance floors, illumination, etc). **Results:** Patrons were mainly men (60.7%); aged 25 ($SE=0.9$) y.o. Verbal violence was the most prevalent form of aggression in the venues (13.7%), followed by sexual (11.5%) and physical aggression (1.7%). Age was the only variable independently associated with the three types of violence: e.g., older ages reduced the chances of being a victim of sexual aggression by 7% ($aOR=0.93$ [0.89-0.98]). Playing "forró/zouk" (ballroom music) was inversely associated with suffering verbal ($aOR=0.20$ [0.10-0.41]) and sexual aggression ($aOR=0.41$ [0.26-0.65]) when compared to eclectic dance alone music. **Conclusion:** Nightclubs offering ballroom dance reduced the chances of suffering any type of aggression. Younger patrons are more exposed to violence in Brazilian nightclubs.

EFFECTS OF SOCIOECONOMIC STATUS AND SOCIAL SUPPORT ON VIOLENCE AGAINST PREGNANT WOMEN: A STRUCTURAL EQUATION MODELING ANALYSIS

Antonio Silva*, Marizelia Ribeiro, Maria Alves, Rosangela Batista, Cecília Ribeiro, Lilia Schraiber, Viviane Cardoso, Ricardo Cavalli, Heloisa Bettiol, Marco Barbieri (Federal University of Maranhao, Brazil)

Objective. To analyze the effects of socioeconomic status and social support on violence against pregnant women. **Methods.** In a cross-sectional study, data from the Brazilian Ribeirão Preto and São Luís birth cohort study (BRISA) was used. The São Luís sample consisted of 1446 pregnant women interviewed in 2010 and 2011. In the proposed model, socioeconomic status occupied the most distal position, determining demographic factors, social support and life experiences that then determined the outcomes general violence (a second order construct composed of three dimensions: psychological, physical and sexual), pure psychological violence or pure physical and/or sexual violence, analyzed as latent variables. The models were adjusted by structural equation modeling.

Results. The proposed model had good fit for general, psychological and physical/sexual violences, according to RMSEA, CFI and TLI and was validated for the Ribeirão Preto sample ($n=1378$, RMSEA = 0.035). Socioeconomic status had no effect on general and psychological violences ($p > 0.05$), but showed a total and negative effect on physical/sexual violence (standardized coefficient = -0.133; $p = 0.026$) by an indirect pathway (standardized coefficient = -0.145; $p = 0.006$), predominantly mediated by social support (standardized coefficient = -0.076; $p < 0.001$). Total and direct effects of social support on general, psychological and physical/sexual violences were negative and highly significant ($p < 0.001$). The effect of socioeconomic status on social support was direct and positive ($p < 0.001$) for all outcomes. **Conclusion.** General and psychological violences occurred indiscriminately to pregnant women of different socioeconomic status. However, physical/sexual violence predominated in the lower social strata, and its indirect effect was mainly mediated by social support. Better social support contributed to reduction of all sorts of violence.

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1850-S/P

COMPARISON OF TREATMENT ADHERENCE BETWEEN SUPERVISED AND UNSUPERVISED PELVIC FLOOR MUSCLE TRAINING FOR THE PROMOTION OF URINARY CONTINENCE: A PRAGMATIC RANDOMIZED CLINICAL TRIAL

João Marcos Bernardes*, Liamara Cavalcante Assis, Ana Carolina Monteiro Santini, Luana Schneider, Vianna Adriano Dias (Department of Public Health, Botucatu Medical School/UNESP, Botucatu, Brazil)

Urinary incontinence is a frequent problem in women, estimates of prevalence of urinary incontinence in women vary between 25% to 45% in most studies, and pregnancy or the postnatal period may be the first time many women experience urinary incontinence. Pelvic floor muscle training, a low cost conservative treatment, is currently considered to be the first-line treatment for urinary incontinence. It has been suggested that treatment adherence will be enhanced if the pelvic floor muscle training program is supervised by a health care professional. However, the few studies on supervised and unsupervised exercise regimes for treating urinary incontinence have shown controversial results. Therefore, this study aimed to compare treatment adherence when using an illustrated home exercise guide targeting the pelvic floor muscles for promoting urinary continence during pregnancy with and without the supervision of a physiotherapist. A randomized clinical trial was performed with 58 participants, evaluated six times during pregnancy and divided into two groups: Gsup, supervised; and Gobs, not supervised. Treatment adherence was recorded daily using a self-report exercise diary and it was measured by the proportion of days on which home exercise sessions were undertaken per month. Differences between groups' adherence to the exercise program were evaluated by using two-factor repeated-measures analysis of variance; differences were determined by using Tukey's post hoc analysis. Differences between groups at the first ($p = 0.68$), second ($p = 1.0$), third ($p = 0.99$), fourth ($p = 1.0$) and fifth ($p = 0.87$) evaluation were not significant. These results imply that an unsupervised pelvic floor muscle training program may achieve similar adherence as the same intervention with supervision.

1853-S/P

A U-SHAPED RELATIONSHIP BETWEEN BODY MASS INDEX AND DYSMENORRHEA: A LONGITUDINAL STUDY

Hong Ju*, Mark Jones, Gita Mishra (University of Queensland)

Background: Both obesity and dysmenorrhea are prevalent among women. Few population-based longitudinal studies investigate the association between body mass index (BMI) and dysmenorrhea yielding mixed results, especially for obesity. This study aims to investigate the long-term association between BMI and dysmenorrhea. **Methods:** 9,688 women from a prospective population-based cohort study were followed for 13 years. Data were collected through self-reported questionnaires. The longitudinal association between dysmenorrhea and BMI or BMI change was investigated by logistic regression analysis using generalized estimating equations to account for the repeated measures. **Results:** When the women were aged 22 to 27 years, approximately 11% were obese, 7% underweight, and 25% reported dysmenorrhea. Compared to women with a normal weight, significantly higher odds of reporting dysmenorrhea were detected for both women who were underweight (odds ratio (OR) 1.34, 95% confidence interval (CI) 1.15, 1.57) and obese (OR 1.22, 95% CI 1.11, 1.35). Compared to women who remained at normal weight or overweight over time, significant risk was detected for women who: remained underweight or obese (OR 1.33, 95% CI 1.20, 1.48), were underweight despite weight gain (OR 1.33, 95% CI 1.12, 1.58), became underweight (OR 1.28, 95% CI 1.02, 1.61). However the higher risk among obese women disappeared when they lost weight (OR 1.06, 95% CI 0.85, 1.32). **Conclusions:** A U-shaped association was revealed between dysmenorrhea and BMI, revealing a higher risk of dysmenorrhea for both underweight and obese women. Maintaining a healthy weight over time may be important for women to have pain-free periods.

1852

CERVICAL CANCER SCREENING AND ASSOCIATED FACTORS AMONG TARGETED WOMEN IN BRAZIL

Mariana S Felisbino-Mendes*, Sabrina D Tiensoli, Fernanda P Matozinhos, Gustavo Velasquez-Melendez (Department of Maternal and Child Nursing and Public Health, Nursing School, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG, Brazil.)

Background: A strategic action to reduce morbimortality rates related to cervical cancer apart from vaccination is the early detection and Pap smear is the recommended method for cervical cancer screening in Brazil. **Objective:** To estimate the cervical cancer screening rates and analyze the associated factors to the non-screening among Brazilian women in the targeted population. **Methods:** Cross-sectional study with 19,989 women who answered the Surveillance System for Risk and Protective Factors for Chronic Diseases by Telephone Survey (VIGITEL), in 2013. Inclusion criteria were age 25-64 years (targeted population) and completed information in the variables of interest in this study. We analyzed the screening rates and 95% confidence intervals (95%CI) according to socio-demographic (region, marital status, schooling and health insurance), behaviors (physical activity) and health indicators (body mass index, diabetes, hypertension and self-rating of health status). We performed logistic regression analysis to estimate associations between non-screening and sociodemographic, behavior and health characteristics in the targeted population. Post-stratified sample weights were used to obtain population estimates. **Results:** We have found that 15.3% of women had not been screened once in the last three years, and these rates were higher among women residing in the Northeast region (21.8%), followed by Mid-west (18.6%) and North (16.6%). We have detected significantly higher prevalence of unscreened women among those who declared not to have a partner (20.8%), low educational level (0-8 years) (17.7%), malnutrition (24.6%), who reported diagnosis of diabetes (19.5%), self-rated her health status as negative (18.7%) and participants without health insurance (20.5%). **Conclusions:** The higher rates of unscreened Pap smear in population subgroups, highlight the uneven coverage and vulnerable populations, which may help planning public policies to control cervical cancer.

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ASSOCIATION OF PRENATAL AND EARLY LIFE EXPOSURE TO TETRACHLOROETHYLENE (PCE) AND POLYCYSTIC OVARY SYNDROME AND OTHER GYNECOLOGIC DISEASE IN THE CAPE COD HEALTH STUDY, A RETROSPECTIVE COHORT

Shruthi Mahalingaiah*, Ann Aschengrau, Michael Winter (Department of Obstetrics and Gynecology, Boston University School of Medicine)

Background: Tetrachloroethylene (PCE) is an organic lipophilic solvent. Before harmful health effects were known, PCE was used to apply a vinyl lining to asbestos-cement water distribution pipes in the Cape Cod area of Massachusetts. Deleterious reproductive, neurotoxic, and carcinogenic effects have since been reported. Polycystic Ovary Syndrome (PCOS) is a disorder affecting the neuroendocrine-ovarian axis with a complex pathophysiology. The objective of this retrospective cohort study was to determine the association of prenatal and early childhood exposure to PCE-contaminated drinking water and later onset of PCOS and other reproductive disorders including endometriosis, difficulty conceiving, and spontaneous abortion. **Methods:** Five-hundred and thirty-one exposed and 331 unexposed female participants born between 1969 and 1983 completed questionnaires that gathered information on demographic characteristics and other confounding variables, residential addresses, and health conditions including PCOS and other reproductive disorders. The location of residences from the prenatal period through five years of age were used to estimate early life PCE exposure with US EPA water modeling software (EPANET) that was modified to incorporate a leaching and transport algorithm. **Results:** There were 47 cases of self-reported PCOS. For any PCE exposure during the prenatal and early childhood window, the adjusted risk ratio was 0.9 (95% CI: 0.5-1.6). No statistically significant associations were observed for levels of PCE exposure with PCOS or other reproductive outcomes. **Conclusion:** The results of this study suggest no meaningful associations among adult women who were exposed to PCE-contaminated drinking water exposure during gestation and early childhood and PCOS and other common reproductive disorders. These findings should be confirmed in follow-up investigations of similarly exposed women with medically-confirmed diagnoses.

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SILICONE BREAST IMPLANTS AND AUTOIMMUNE DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

Andrew Monnot*, Kevin Towle, Kelley Patten (Cardno ChemRisk)

Silicone breast implants were introduced in the 1960s for augmentation or reconstructive breast surgeries. From 1992 to 2006, the FDA issued a moratorium on silicone implants to review safety and effectiveness information. Since then, breast implant procedures have increased, with an estimated 286,000 breast augmentation surgeries performed in 2014. Cohort studies have suggested a potential association between silicone implants and autoimmunity, such as an increased risk of rheumatoid arthritis, systemic lupus erythematosus, and connective tissue diseases. The purpose of this study was to synthesize and evaluate the risk of autoimmune disease following silicone breast implant procedures. Studies were identified via electronic-database searching of PUBMED, Web of Science, and EMBASE. Eligibility criteria included cohort or case-control studies that reported breast implant exposure and connective disease health outcome data. Study heterogeneity was assessed using Q and I² statistics, and a random effects meta-analysis was performed to estimate the pooled relative risk. A total of 29 studies met the inclusion criteria. Silicone breast implants were associated with a non-statistically significant decreased risk for all connective tissue diseases, meta-RR 0.87 (95% CI: 0.62-1.21), rheumatoid arthritis, meta-RR 0.75 (95% CI: 0.52-1.08), and systemic lupus erythematosus, meta-RR 0.90 (95% CI: 0.43-1.87), as well as a non-statistically significant increased risk of sclerosis, meta-RR 1.14 (0.75-1.74). Overall, these findings suggest that silicone breast implant exposure is not associated with autoimmune disease among women.

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PRE-CONCEPTIONAL HEALTH OF BRAZILIAN WOMEN

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Introduction: Health care of women of reproductive age is frequently restricted to the cycle of pregnancy, childbirth and postpartum. However, women's health before conception should be considered. **Objective:** Estimate the prevalence of pre-conceptional indicators among Brazilian women. **Methods:** A cross-sectional study which used DHS data from 2006/2007. Data analysis was performed using marital status, smoking, body mass index (BMI), waist circumference, short stature, current contraceptive method, hemoglobin, retinol, vulvovaginites in the last 30 days, sexual intercourse in the last 12 months and condom use. All analysis were performed according to age, parity and educational level. Pregnant and sterilized women were excluded. Data analysis was performed in Stata. **Results:** We studied 10,846 women. Some indicators were significantly associated with age, parity and education: the stable union (marriage) was more frequent among women 35 and over (38.5%), with 1 to 2 children (65.2%) and less educated women (0-8 years) (50.7%). Smoking was more common among women 35 years or older (44.1%), with 1 to 2 children (55.8%) and less educated (60.5%). High BMI and waist circumference (> 25 kg/m² and 88 cm, respectively) were more prevalent among women with 35 years and more (42 and 44.8%, respectively) and 1-2 children (53.9 and 55.1%, respectively). However, this BMI relation was reversed for education (48.2%). In addition, short stature (<1.51 m) was more frequent among women with 1-2 children (49.6%) and less educated (65.4%). The use of current contraception and sexual intercourse were more frequent among women with 1 to 2 children (57.3 and 55.3%, respectively) and among those with less education (42.1 and 41.0%, respectively). **Conclusion:** Women's health may negatively affect pregnancy and their offspring. Thus, there are many factors that must be addressed before a woman becomes pregnant, in order to prevent the occurrence of adverse reproductive outcomes.

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VALIDITY OF SELF-REPORTED HEIGHT AND WEIGHT IN US-BORN AND IMMIGRANT WOMEN: IMPLICATIONS FOR STUDIES OF BREAST CANCER RISK IN DIVERSE POPULATIONS

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Height and weight are commonly used exposures in studies of chronic diseases including breast cancer (BC). When physical measurement of height and weight is not possible, these data are collected through self-reports. Systematic errors (SE) in self-reports by sociodemographic factors (SDF) may lead to bias in estimates of associations in diverse populations. Using data from a multiracial/predominantly immigrant cohort of women (n=367; age 40-64 yrs.), we examined the degree, direction and predictors of error in self-reported height and weight vs. physical measures, and the impact of any error on associations with percent mammographic density (PMD), a strong risk factor for BC. Weight was overestimated by 1.5 kg and height was underestimated by 0.7 cm on average, with increasing error (i.e., difference between self-reported and physical measures) with increasing weight and decreasing height. Lower education/health literacy, Black and Hispanic race/ethnicity, and less US acculturation were associated with more error in self reported height (e.g., error for those migrating to the US at ages 30 and 20-29 yrs. vs. US-born were respectively 2.1 and 1.6 cm, p<0.05). We observed minimal SE for weight. In linear regression models, overall estimates of associations between height and PMD were smaller for self-report vs. physical measure of height, but the extent and direction of the bias in the association varied by SDF. For example, the estimate of the association between height and PMD was larger for self-reported height compared to physical measure of height in US-born women (11.0% vs. 6.5% higher PMD), but the reverse was observed in foreign-born women with a larger association for physical measure vs. self-reported height (2.9% vs. 9.8% higher PMD). These results suggest that height, but not weight, is reported with more error in women from racial minority, low SES and immigrant backgrounds, with possible attenuation of associations between height and PMD in diverse study populations.

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IDENTIFYING THE INFLUENCE OF GENDER AND VIOLENCE BELIEFS ON YOUNG ADULTS DATING PRACTICES IN MYSORE, INDIA

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Background: Research on intimate relationship formation in India has primarily focused on cultural norms discouraging non-familial sanctioned dating before marriage, particularly in regions where conservatism remain high. However, young adults are increasing engaging in independent dating interactions, despite the potential for negative social (e.g. ostracism) and physical (e.g. violence) consequences. This study identified beliefs about appropriate independent dating practices, gender roles, and violence against women (VAW) held by young adult women in Mysore, India. **Methods:** A total of 72 young adult women in Mysore, India participated in focus groups. Participants were recruited from colleges and work centers. They also completed a baseline survey to assess their gender role beliefs and VAW attitudes. The constant comparative approach was used to identify the most common dating scripting, gender role and VAW beliefs based on the beliefs generated in qualitative data collection. **Results:** Dating was occurring in participants' peer groups, although definitions of and beliefs about social boundaries around appropriate practices varied widely. Traditional familial and community expectations informed participants' reports. College participants were more likely to know someone who has dated, but women with more than two partners were viewed negatively. While they disagreed with VAW, women violating traditional gender role expectations were viewed as responsible for their victimization. Media messages was seen as influencing women to violate dating and gender role expectations. **Conclusion:** Despite broad cultural messages discouraging independent dating, practitioners must acknowledge these opposite-sex interactions are occurring among young adults in India. Programs to address VAW or other sexual health outcomes (e.g. HIV/ AIDS) reaching these populations in India should incorporate appropriate information about healthy relationship skills.

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THE ASSOCIATION BETWEEN PERCEIVED RACISM AND UTERINE LEIOMYOMATA IN AFRICAN AMERICANS

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Uterine fibroids affect the quality of life of many women and may limit their reproductive potential. Morbidity due to uterine fibroids is higher among African American women than Caucasian women, and amassing evidence suggests that stress may contribute to it. The present study examined the associations of perceived racism in everyday settings and maternal perceptions of racism with fibroids. African American women (n=476) participated in the Perceived Racism Study, an ancillary study to the NIEHS Uterine Fibroid Study that randomly selected women between the ages of 35 and 49 years from the membership rolls of a prepaid health plan. Women completed the Telephone-Administered Perceived Racism Scale, a multi-dimensional instrument with strong psychometric properties, which includes the Perceptions of Racism scale and the Concern for Children scale. Fibroid status was based on ultrasound findings. Modified Poisson regression with a robust error variance estimator was used to calculate prevalence ratios (PR) and 95% confidence intervals (CI) of fibroids associated with (1) perceived racism and (2) concern about the impact of perceived racism on their children and/or grandchildren. All final models were adjusted for known fibroid risk factors: age, parity, age of menarche, body mass index, and physical activity. The PR and 95% CI of fibroids for women who perceived moderate or high levels of racism compared to those with low perceived racism were [PR=1.12 (0.97, 1.29)] and [PR=1.10 (0.96, 1.27)], respectively. The PR for women who expressed moderate or a high level of concern for raising a child in a race-conscious society compared to those with low concern were similar, [PR =1.22 (1.04, 1.42)] and [PR=1.19 (1.00, 1.42)], respectively. Consistent with previous research that stress is associated with uterine fibroids. Further research is warranted to prospectively elucidate stress, in particular perceived racism and maternal-related concern in relation to fibroids.