0002-S

CUTANEOUS MALIGNANT MELANOMA AMONG WHITE HISPANICS AND NON- HISPANICS IN THE UNITED STATES. *J. Calvert, R. M. Merrill, N. D. Pace, and A. N. Elison (Brigham Young University, Provo, UT, 84602)

Background: To explore whether disparities exist in melanoma incidence and prognosis between white Hispanics and white non-Hispanics. Methods: Analyses are based on 42,770 patients with malignant melanoma in the United States, 2004 through 2006. Results: Hispanics were significantly less likely to be diagnosed with superficial spreading melanoma or Hutchinson's melanotic freckle, but significantly more likely to be diagnosed with nodular melanoma or acral lentiginous melanoma. Hispanics were also significantly less likely to have multiple primary cancers and less likely to receive surgical treatment. Among those diagnosed during the study period, 12.4% (n = 142) of Hispanic patients and 8.5% (n = 3,235) of non-Hispanic patients died sometime during these years. Approximately 7.3% of Hispanic patients and 4.8% of non-Hispanic patients died specifically from melanoma. Later stage at diagnosis was the primary explanation for the difference in death from melanoma between Hispanic and non-Hispanic whites. Conclusions: Hispanic melanoma patients experience significantly poorer prognostic findings at diagnosis. The disparity in melanoma stage, tumor depth, and ulcerated tumors at diagnosis emphasizes the need for greater secondary prevention efforts among this group.

0003

EVALUATION OF A COMMUNITY-BASED INTERVENTION TO INCREASE BREAST CANCER SCREENING AND EARLY DETECTION AMONG LOW-INCOME, AFRICAN AMERICAN WOMEN. *IJ Hall, C Johnson-Turbes, N Kamalu (Centers for Disease Control and Prevention, Atlanta, GA, 30341)

Breast cancer is diagnosed at a later stage among African American women, thus timely mammography screening may be important. We evaluated a multimedia, pilot-campaign to increase awareness of breast cancer screening and utilization of no-cost mammography services provided by the National Breast and Cervical Cancer Early Detection Program (NBCCEDP) among African American women in Savannah and Macon, Georgia. Using breast cancer survivor testimonials on radio stations with wide African American listenership (Black radio), the African American Women and Mass Media (AAMM) pilot campaign was launched in July 2008 in Savannah and Macon, Georgia. Savannah fielded a community-based component as well. Columbus, Georgia was used as a control site. Following the year-long campaign, receipt of mammograms among African American women in the three sites was evaluated using routine data collected by Georgia on the number, and outcomes, of screening mammograms delivered to low-income, uninsured or underinsured women through the NBCCEDP. In Savannah, the number of mammograms/month averaged 129 in the first 7 months of the campaign among African American women and increased to an average of 176 in the final months of the study; an increase of 36%. In Macon, monthly increases were not statistically significant. No change was observed in the control site. Our findings reveal the potential value of using Black radio combined with a focused community-based print campaign to reach African American women with public health messages, affect changes in knowledge, awareness, and behavioral intent, and potentially help reduce racial/ethnic health disparities.

0004

MALE BREAST CANCER–GEOGRAPHIC VARIATION IN THE UNITED STATES. Mridhula Kumar MPH[1], Jessica B. King MPH[1], and Christie R. Eheman Ph.D[1] ([1]Cancer Surveillance Branch, Division of Cancer Prevention and Control, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia)

Incidence of male breast cancer (MBC) continues to increase but due to its rarity, it remains an understudied disease. While there have been previous descriptive analyses on MBC, most of the findings have been based on limited data sets that may not be generalizable to the entire United States population. For our analysis of geographical variation and other risk factors for MBC, we used combined NPCR and SEER incidence data from 2004-2006 representing coverage of 100% of the US population. For our analysis on histologic distribution of MBC, we used combined data from more years, 1999-2006, where data are available for 87.7% of the US population. When compared to whites, incidence and mortality rates of MBC were significantly higher among Blacks and significantly lower among Asian/Pacific Islanders. Whites were more likely to be diagnosed at an early versus late stage; however, there was no significant different between early and late stage diagnosis for Blacks and Asian/Pacific Islanders. Our study found a difference in incidence rates among the four geographical regions with rates being the highest in the South, in black men and men over the age of 80 years. Our paper presents an in-depth analysis of the demographic and geographic variation of male breast cancer incidence. Additional research should address the etiology of these geographical variations and possible reasons for differences in stage at diagnosis among racial groups. Variations in incidence rates in terms of race and stage of diagnosis support the need for increased study of male breast cancer.

0005-S

DICHLORODIPHENYLTRICHLOROETHANE (DDT) AND RISK OF HEPATOCELLULAR CARCINOMA. *EC Persson, AA. Evans, WT London, JP Weber, A LeBlanc, G Chen, WY Lin, KA McGlynn (National Cancer Institute, Bethesda, MD, 20852)

Dichlorodiphenyltrichloroethane (DDT) is an organochlorine pesticide known to cause hepatocellular carcinoma (HCC) in rodents. Whether DDT and its most persistent metabolite, dichlorodiphenyldichloroethylene (DDE), increase risk of HCC in humans is uncertain. To examine the hypothesis, we conducted a nested case-control analysis in a population at high-risk of HCC, the 90,836 person Haimen City Cohort. Serum samples and questionnaire data were collected 1992-1993. Hepatitis B viral status was determined at study enrollment by examination of hepatitis B surface antigen (HBsAg). The current study included 488 persons who developed HCC and 492 who did not. Non-cases were frequency matched to cases on gender, residential township and age. DDT/DDE levels were determined in baseline sera by mass spectrometry. Unconditional logistic regression, adjusted for age, gender, residential township and HBsAg, was used to estimate odds ratios (OR) and 95% confidence intervals (CI). The analysis found no significant association between DDT levels and HCC. Persons with DDE levels in the highest quintile, however, were at lower risk of developing HCC than persons with levels in the lowest quintile (OR=0.66, 95%CI=0.29-1.49). In men, but not in women, the relationship was statistically significant (OR=0.44, 95%CI=0.22-0.88), suggesting that there may be gender-specific differences in response to DDT/DDE exposure. Overall, these results do not support the hypothesis that DDT and DDE increase risk of HCC.

0006

SOCIAL AND CLINICAL PREDICTORS OF PROSTATE CANCER TREATMENT DECISIONS AMONG MEN IN SOUTH CAROLINA. *SE Wagner, BF Drake, K Elder, and JR Hébert (UGA, Athens, GA, 30602)

Insufficient evidence exists to recommend one prostate cancer (PrCA) treatment over another. Therefore, the decision of treatment type is usually influenced by a number of idiosyncratic factors. This cross-sectional study assessed the social and clinical influences of PrCA treatment decisions among White and Black men with PrCA in the Midlands of South Carolina (SC). We identified men diagnosed with PrCA (1996-2002) from the SC Central Cancer Registry (SCCCR), and linked data from the survey with clinical and sociodemographic factors identified in the SCCCR. The relationship between social (physician, family/friend, self) and clinical (cure, impotence, incontinence, pain) influences and treatment decision (surgery versus radiation) was modeled using logistic regression. Interaction by race was considered. A total of 435 men were evaluated. Men of both races who chose surgery were more likely to be influenced by family/friends (overall odds ratio (OR): 2.64; 95% confidence interval (CI):1.35, 5.14), and Black men who chose surgery were more likely to make independent decisions (OR: 5.35; 95% CI: 1.22, 23.60) compared to Black men who chose radiation. White men who chose surgery were more likely to be influenced by the chance of cure (OR: 2.20; 95% CI: 1.07, 4.55) and less likely to consider the side effects of impotence (OR: 0.40; 95% CI: 0.18, 0.88) and incontinence (OR: 0.27; 95% CI: 0.12, 0.63) as important decision factors; no clinical side effects significantly predicted a treatment choice among Black men. Our results suggest that both clinical and social predictors play an important role for men in choosing a PrCA treatment, but these influences may differ by race.

0007

SEDENTARY BEHAVIOR AND PHYSICAL FUNCTIONING AMONG CANCER SURVIVORS. *S.M. George, C.M. Alfano, C.E. Matthews (National Cancer Institute, Bethesda, MD 20892)

While exercise has been shown to be beneficial in improving physical functioning among cancer survivors, evidence is limited on the independent role of sedentary behavior. We examined how sedentary behavior and patterns of sedentary behavior, fitness, and moderate-vigorous physical activity are associated with physical functioning. 3.5 years after completion of chemotherapy, 56 cancer survivors were enrolled into an exercise trial designed to improve cognitive function. At baseline, we measured sedentary behavior and moderate-vigorous physical activity with the ActivPal, cardiorespiratory fitness with treadmill testing, and physical functioning with questionnaires. In multivariate models, we regressed physical functioning linearly on sedentary behavior, and joint variables reflecting % time in sedentary behavior (lower: <70; higher: ≥70), hours of physical activity (lower: <0.5; higher: ≥0.5), and max-METS of fitness (lower: <6; higher: ≥ 6). Sedentary behavior was inversely related to overall physical functioning (β=-0.41, p=0.06) and abilities to climb several flights of stairs (β= -0.02, p=0.03) and walk several hundred yards (β= -0.02, p=0.03). Compared to survivors with higher fitness and lower sedentary behavior, survivors with lower fitness and higher sedentary behavior had poorer physical functioning (p=0.02). Survivors with higher physical activity and higher sedentary behavior had worse physical functioning than survivors with higher physical activity and lower sedentary behavior (p=0.009) and survivors with lower physical activity and lower sedentary behavior (p=0.03). In this cross-sectional study of cancer survivors, certain behavioral patterns characterized by lower sedentary behavior were related to better physical functioning.

0008-S

ANATOMIC-SITE IMPACTS OF BETEL-QUID, COUPLED WITH ALCOHOL AND CIGARETTE ON DIGESTIVE TRACT CANCERS. *CL Chang, HC Tu, KW Lee, DC Wu, FM Fang, WT Lin, YC Ko, CH Lee (Kaohsiung Medical University, Kaohsiung 807, Taiwan)

Betel-quid (BQ) is the fourth-most widespread psychoactive substance in the world, and is regularly consumed by about 600 million users worldwide. Unlike in India and certain Southeast Asian countries, the various additives used in the preparation of BQ in Taiwan do not contain tobacco. BQ chewers in Taiwan often also consume cigarettes and/or alcohol. Such particular epidemiological characteristics allow us to study the independent and joint risks of these substance uses on the genesis of diverse sites of digestive tract cancer. We conducted a multicenter case-control study examining 2163 pathology-proven upper aerodigestive tract (UADT) and gastrointestinal tract (GIT) cancer patients, and compared them with 2250 control subjects. Polytomous logistic regression was employed in multivariate analyses, and the generalized additive model was applied to identify possible curvatures in the exposure-risk relationship. The cancer impacts of alcohol, BQ and cigarette use varied according to anatomic digestive tract sites, with the peak risk observed, respectively, in the esophagus (aOR=9.0), oral cavity (aOR=16.8) and larynx (aOR=5.4). Along the UADT down to GIT, a 16.8, 7.8, 2.6 and 1.9-fold significant oral, pharyngeal, esophageal (digestive tracts) and laryngeal (airway) squamous cell carcinoma risk, and a 0.9 and 1.0-fold non-significant gastric and colorectal adenocarcinoma risk were, accordingly, discerned among BQ uses. Alcohol drinking supra-additively modified the risk of chewing and smoking in determining the development of UADT-specific neoplasms. 82-89% of UADT cancers were attributable to combined exposure to the three agents, but only 16-27% for GIT cancers. In conclusions, anatomic-site gradients of digestive tract cancer risks indicate that the degree to which squamous epithelia are in direct physical contract with BQ-derived compounds discernibly affects its impact on these neoplasms.

0009-S

COFFEE AND TEA CONSUMPTION AND COLORECTAL CANCER RISK *J Mix[1], K Kasza[2], KB Moysich[2] ([1]Department of Social and Preventive Medicine, University at Buffalo, Buffalo, NY 14214; [2]Department of Cancer Prevention and Control, Roswell Park Cancer Institute, Buffalo, NY 14203)

Coffee and Tea are a major source of antioxidants which may be protective against colorectal cancer. Epidemiologic findings on this topic are inconsistent. We examined the association between consumption of coffee and tea and of colorectal cancer risk in a case control study of patients admitted to Roswell Park Cancer Institute (RPCI) in Buffalo, NY between 1982 and 1998. The study population included 1011 incident, pathologically confirmed colorectal cancer patients and 4038 controls who received medical care at RPCI for non-benign or malignant conditions. Participants completed a questionnaire as part of their admission process that included a section assessing usual intake of regular coffee, decaffeinated coffee, and black tea. Data on demographics, lifestyle factors and other potential confounders were also collected. Odds ratios (OR) and 95% confidence intervals (95%CI) were calculated using unconditional logistic regression adjusted for age, sex, decade of participation, race, body mass index, years of education, family history of colorectal cancer, red meat intake and multivitamin use. No overall associations were observed with colorectal cancer and consuming 4 or more cups of coffee (OR= 0.92; 95%CI=0.74-1.14) or decaffeinated coffee (OR=1.02; 95%CI=0.77-1.36). An increased risk was observed with consuming 4 or more cups of black tea (OR=1.36; 95%CI=1.01-1.83). After stratification by sex and tumor site, this association was limited to colon cancer risk among males (adjusted OR=1.79, 95%CI=1.12-2.88). Further research is warranted on how the chemical composition of black tea may affect colorectal cancer risk.

0010-S

BODY MASS INDEX AND RISK OF HEAD AND NECK CANCER BY RACE. *J.L. Jensen, M.M. Gaudet, and A.F. Olshan (The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599)

Most previous studies have found the risk of head and neck cancer (HNC) is increased among lean people (body mass index (BMI) <18.5 kg/m(2)) and decreased among overweight or obese people (BMI 25.0-<30.0 and ≥30 kg/m(2), respectively) compared to normal weight people (BMI 18.5-<25.0 kg/m(2)). However, many recent studies of HNC were conducted in populations of European ancestry and have not allowed assessment of the BMI-HNC relationship by race. The Carolina Head and Neck Cancer Study (CHANCE) is a racially-diverse (23% African American) case-control study of 1,340 incident HNC cases and 1,378 population-based, frequency-matched controls, conducted throughout North Carolina (2002-2006). BMI was based on self-reported adult height and weight one year prior to interview. Odds ratios (ORs) and 95% confidence intervals (CIs) were estimated for associations between BMI and HNC risk stratified by race and adjusted for matching factors (age and sex), pack-years of smoking, lifetime alcohol consumption, and education. Multiplicative interaction between BMI and race was evident (p=0.001). Compared to normal weight, ORs (95% CIs) for leanness were increased for African Americans (3.48, 0.66-18.28) and Caucasians (1.68, 0.66-4.28). The increased risk associated with leanness was greater for smokers than non-smokers and greater for men than women. For overweight and obesity, the ORs were lower, compared to normal weight, in African Americans (0.49, 0.30-0.79 and 0.42, 0.25-0.70, respectively) but not Caucasians (0.98, 0.77-1.26 and 1.22, 0.93-1.60, respectively). These data provide support that leanness increases the risk of HNC in African-Americans and Caucasians and overweight and obesity decreases the risk of HNC in African Americans.

0011-S

PERFORMANCE OF MOBILE UNITS OF THE QUEBEC BREAST CANCER SCREENING PROGRAM, 2002-2009. A.M. Fontenoy, *A. Langlois, P. Ladouceur Kègle, E. Pelletier, J. Brisson (Institut National de Santé Publique du Québec, Québec , G1V 5B3)

Background: The Quebec Breast Cancer Screening Program includes three Mobile Units (MU) since 2002. They were added to Fixed Centers (FC) to improve breast screening access. The aim of this study was to estimate the contribution of these MU to the participation rate and to assess their performance. Methods: The impact of MU on the participation rate was evaluated for 2002-2009. Performance measures include abnormal call rate, cancer detection rate and positive predictive value. The performance of MU was compared with that of FC by multivariate logistic regression models. Results: Between 2002 and 2009, 1,976,956 mammograms were performed in the program, including 37,079 (1.9%) by MU. The MU contribution to participation rate increased from 0.5% in 2002 to 2.5% in 2009. In 2009, in areas served only by MU, they accounted for 93.4% of the participation rate. In areas served by MU and FC, the abnormal call rate of MU was lower than that of FC (Odds Ratio = 0.73, 95% confidence interval [CI] 0.70-0.76). However, cancer detection rate and positive predictive value of MU were not significantly different from those observed in FC (Odds Ratio = 0.95, 95% CI 0.73-1.22 and 1.18, 95% CI 0.90-1.55 respectively). Conclusion: The contribution of MU to the participation rate in this North American program has increased since 2002 and has been essential in areas only served by MU. MU have an abnormal call rate lower than FC but their cancer detection rate and their predictive positive value were not significantly different from those of FC.

0012

RISK OF RENAL CELL CARCINOMA IN RELATION TO BLOOD LEUKOCYTE TELOMERE LENGTH IN A POPULATION-BASED CASE-CONTROL STUDY. *J.N. Hofmann, A. Baccarelli, K. Schwartz, F.G. Davis, J.J. Ruterbusch, M. Hoxha, B.J. McCarthy, S.A. Savage, S. Wacholder, N. Rothman, B.I. Graubard, J.S. Colt, W.H. Chow, M.P. Purdue (National Cancer Institute, Bethesda, MD, 20892)

Introduction: There are few known risk factors for renal cell carcinoma (RCC). Two small hospital-based case-control studies suggested an association between short leukocyte telomere length and increased risk of RCC. Methods: We conducted a large population-based case-control study in two metropolitan regions of the United States. Relative telomere length was measured by quantitative PCR in DNA derived from peripheral blood leukocytes from 891 RCC cases and 894 controls. Odds ratios and 95% confidence intervals were estimated using unconditional logistic regression. Results: Median telomere length was 0.85 for both cases and controls (p=0.4), and no consistent differences in risk of RCC by quartiles of telomere length were observed. Among controls, telomere length was inversely associated with age (p<0.001) and was significantly longer among African Americans (p<0.001) after covariate adjustment. A borderline significant association between history of hypertension and shorter telomere length was also observed (p=0.07). Conclusions: These data do not support the hypothesis that leukocyte telomere length is associated with RCC risk. Findings of shorter telomere with increasing age and history of hypertension are consistent with previous reports, which supports the validity of these data. Reported differences in telomere length by race have been inconsistent in previous studies and additional research is needed to confirm these findings. Prospective studies are needed to further evaluate the relationship between telomere length and RCC risk.

0013-S

REGIONAL VARIATION IN HISTOPATHOLOGY-SPECIFIC INCIDENCE OF INVASIVE CERVICAL CANCER AMONG PERUVIAN WOMEN. *C. Pierce Campbell, M.P. Curado, S. Harlow, and A. Soliman (University of Michigan, Ann Arbor, MI, 48109)

This study aimed to evaluate cervical cancer patterns in Peru by examining the variation in two common histopathologic types, squamous cell carcinoma (SCC) and adenocarcinoma (ADC), and analyzing differences over time. Data on invasive cervical cancer incidence was obtained from three population-based cancer registries in Peru: Lima, Arequipa, and Trujillo. A cervical cancer-specific quality assessment was performed on each registry. Crude and age-specific incidence rates per 100,000 were calculated for overall, SCC- and ADC-specific cervical cancers, and time trends analyzed. Lima and Trujillo demonstrated acceptable data quality; however, Arequipa was questionable. Incidence rates for overall cervical cancer were significantly different across registries: Arequipa (47.2), Trujillo (36.1), and Lima (18.9). Rates for SCC were significantly lower in Lima (14.0) as compared to Arequipa (29.7) and Trujillo (30.0). Rates for ADC did not differ significantly across registries. Time trend analyses showed significant declines in overall and SCC-specific rates in Trujillo. No other time trends were found. Age-specific analyses showed that young women (15-29 years) in Trujillo and Arequipa experienced significant increases in ADC-specific rates over time. Cancer registry data showed that overall and histopathology-specific cervical cancer incidence rates varied across regions of Peru, and over time. The use of cancer registry data proved to be an efficient method for evaluating cervical cancer incidence patterns in Peru. We suggest supplementing current screening methods with newer preventive methods to combat the rising incidence of ADC among young women in Peru.

0014-S

ASSOCIATION BETWEEN DIABETES AND COLORECTAL CANCER RISK IN A HOMOGENEOUS CANADIAN POPULATION. *Lin Liu, Jinhui Zhao, Yun Zhu, Barbara Roebothan and Peizhong Wang (Memorial University of Newfoundland, St. John's, Newfoundland, A1B 3V6)

The great similarity in lifestyle and environmental risk factors for the development of CRC and diabetes mellitus HAS led to the hypothesis that diabetes may increase the risk of colorectal cancer. While most epidemiological studies have shown a positive association between diabetes and CRC, findings around the strength of the association and possible sex-diabetes interaction on CRC –have been inconclusive. This study used the data collected from a population based case-control study conducted in NL based on 673 cases diagnosed between 1999 and 2003 and 718 controls. CRC patients were identified through the Newfoundland Cancer Registry. Controls were recruited through random-digit dialing.Cases and controls were frequency-matched by age and sex. Diabetes was based self-reporting. ORs and the corresponding 95% CIs were derived from multivariate logistic regression analyses, including age, sex, and so on. Results show a statistically significant association between diabetes and CRC with an adjusted OR of 1.67 (95% CI: 1.23 - 2.26). Other significant predictors include: education attainment, income level and marital status. Sex-stratified logistic regression analyses suggest the association between diabetes and CRC seems to be greater in men than in women. However, the SEX difference was not significant. The preliminary results show a significant increased risk of colorectal cancer among those who had diabetes compared with those who did not after controlling for other potential risk factors. The findings do not support results from previous studies that females with diabetes have a greater risk of CRC than their male counterparts.

0015-S

TP53 GENE POLYMORPHISMS, GENE-GENE AND GENE–ENVIRONMENT INTERACTIONS AND COLORECTAL CANCER RISK IN A CHINESE POPULATION. *Yin-yin Wu, Ming-juan Jin, Shan-chun Zhang, Kun Chen (Department of Epidemiology & Health Statistics, School of Public Health, Zhejiang University, Hangzhou, Zhejiang 310058, China)

The tumor protein 53 gene (TP53) encodes a transcription factor which exerts multiple anti-proliferative functions. Genetic variations in TP53 gene are common in many cancers and may be associated to the etiology and molecular pathogenesis of some human cancer. We examined whether the single nucleotide polymorphisms (SNPs) within TP53 gene affect the risk of colorectal cancer (CRC) and whether there are gene-gene or gene-environment interactions. Eight SNPs of the TP53 gene (rs12951053, rs9895829, rs1042522, rs2078486, rs8064946, rs17884306, rs12947788 and rs1642785) were assessed in a population-based case-control study which enrolled 504 cases and 845 controls from China. Gene-gene and gene-environment interactions were further investigated by classification and regression tree (CART) and logistic regression (LR) models. None of the investigated polymorphisms were significantly associated with CRC risk. However, the haplotype analyses showed that the haplotype ATCTCCCC was associated with a significantly decreased risk of CRC when compared with the most common haplotype ATCTGCCC (OR = 0.7; 95% CI = 0.5-0.9). Additionally, both CART and LR analyses indicated a gene-gene interaction between rs1042522 and rs1642785 polymorphism and the ORinteraction was 3.1 (95% CI = 1.6-5.8) obtained from the LR model. Besides, both CART and LR analyses indicated gene-environment interactions between reference age and rs1642785 as well as rs12951053 polymorphism, and the ORsinteraction were 1.9 (95% CI = 1.2-3.2) and 2.3 (95% CI = 1.0-5.2), respectively. Our findings indicated that the polymorphisms in the TP53 gene might have a joint effect to the susceptibility of CRC, and the gene-age interactions also play important roles in the susceptibility to CRC. Keywords: TP53; Single nucleotide polymorphism; Colorectal cancer; Molecular epidemiology

0016-S

JOINT EFFECTS OF ALCOHOL INTAKE AND OBESITY ON COLORECTAL CANCER – RESULTS FROM A POPULATION BASED CASE-CONTROL STUDY IN NEWFOUNDLAND AND LABRADOR. *Yun Zhu, Jinhui Zhao, Lin Liu¸ Peter Campbell, and Peizhong Wang(Memorial University of Newfoundland, St John's, Newfoundland, A1B 3V6)

Background: While the effects of alcohol intake and obesity on colorectal cancer have been extensively examined, no studies have investigated the joint effects of the two factors. The objective of this study is to assess the relationship between alcohol intake and CRC, and the joint effects of alcohol intake with obesity. Methods: Newly diagnosed CRC cases identified between 1999 and 2003 were frequency-matched by age and sex with controls selected from the residents of Newfoundland and Labrador through random digit dialing (RDD). A total of 702 cases and 717 controls consented to participate in the study and completed a set of self-administered questionnaires. Measures of alcohol intake include types of beverage, years of drinking, and drinks daily. Odds ratios for drinking were estimated by obesity in order to investigate the modifying effects of obesity on the association between alcohol intake and CRC. The joint effects of drinking years and drinks daily, and drinking and smoking on CRC were analyzed by obesity. Results: There was a 1.89 times increased risk of CRC for alcoholic drinkers compared to non-drinkers among the obese (BMI≥30). Drinkers who drank two or more types of beverage had 2.24 times increased risk of CRC compared to non-drinkers among the obese. The risk of CRC increased with drinking years and drinks daily among the obese. Conclusion: A synergistic interaction effect on CRC was found between alcohol drinking and obesity. The risk of alcohol drinking on CRC was significantly higher among obese people than that in non-obese people.

0017

TOP 10 CANCERS IN I.R.IRAN 2005-2009. *Modirian M. (MD, DrPH),Partovipour E.(MS),Ramezani R.(Internist MD),Etemad K. (MD) (NonCommunicable Diseases Center,Tehran,I.R.IRAN)

In Iran cancer is the third cause of mortality after injuries and cardiovascular diseases 1. National cancer registry system in Iran is established from 2002. Every year there is about 80000 cases.Every cancerous tissue separated by surgical or non surgical procedure based on International Classification of Diseases for Oncology(ICDO third edition)collect from pathologic laboratories in all provinces and some population cancer registry data,after checking data transfer via soft ware to Communicable Diseases Centers for final correction, data analysis and annual national cancer report establish and disseminate. Reports includes age specific incidence rates of primary tumor sites according to sex, age groups, provinces and topographic sites of tumor based on ICDO3.Assessment of Iran annual national cancer reports determines that the 10 top cancers are: skin, stomach, breast, colorectal, bladder, esophagus, hematopoietic system, prostate, lymph nodes and lungs with differences in ranking based on incidence in males and females during 2005 until 2009. the first cancer is breast cancer in females but skin in males and colorectal cancer in males is the fifth but in females the third one during the years above and lung cancer isn't in top 5 cancers. REFRENCES:1. National cancer report of I.R.IRAN/2011

0018

RACIAL/ETHNIC DIFFERENCES IN UPPER-TRACT UROTHELIAL CANCER. Monawar Hosain; Myrna Khan; Gilad Amiel; Seth Lerner; David Latini; John Chen (Baylor College of Medicine, Houston, TX)

Introduction and Objective: Racial/ethnic differences in demographics, cancer stage, treatment and outcome have been observed for bladder and many other cancer sites. However, data on upper-tract urothelial carcinomas (UTUCs) involving the renal pelvis and ureter are scarce. Methods: We used a population-based Surveillance, Epidemiology, and End Results (SEER) database from 1988-2007 in the analysis. Race/ethnicity was classified as white, African American (AA) Hispanics. The study subjects diagnosed with UTUCs were ascertained by ICD-9 codes. We compared racial/ethnic differences in UTUC by gender, age at diagnosis, tumor size, disease stage, lymph node-related data and survival. Kaplan-Meier model and Cox proportional-hazards model was used for disease-specific survival and hazard ratio respectively. Results: We identified 17,074 UTUC cases in the SEER database from1988-2007. AA patients were diagnosed at a younger age than whites and Hispanics (p=.004). Whites were less likely to be diagnosed with distant-stage disease (p<.001), whereas Hispanics were more likely to be diagnosed with larger tumor size (<.0001). No racial/ethnic differences were observed either in lymph-node removal or in finding a positive node. A higher mean number of lymph nodes were removed from Hispanics (6.0) compared to whites (4.8) and AAs (5.3), and it was marginally significant (p=0.07). Cox proportional-hazard model revealed that Hispanics and AAs had a higher risk of dying (HR=1.26, 95% CI=1.12-1.43, p=.0002 and HR=1.10, 95% CI=0.93-1.27, p=.27, respectively) from UTUC than whites. Conclusions: We observed racial/ethnic differences in UTUC cancer-stage distribution and survival. While no differences were observed for lymph node dissection/examination, we observed that only a small proportion of patients received lymph node dissection across all racial/ethnic groups.

0019-S

BREAST CANCER DETECTION AND SURVIVAL AMONG WOMEN WITH COSMETIC BREAST IMPLANTS: A SYSTEMATIC REVIEW AND META-ANALYSIS. *Eric Lavigne, Jacques Brisson, Sai Yi Pan, Eric Holowaty, Kenneth C. Johnson and Howard Morrison (URESP, Laval University, Quebec, QC, Canada)

Cosmetic breast implants impair visualization of breast tissue at mammography and, consequently, may delay detection of breast cancer. The aims of our two meta-analyses were to assess the relation of breast implants to delayed detection of breast cancer, and the relation of implants to survival after diagnosis. Studies were identified through a systematic search of the literature. Delayed detection of breast cancer was defined as breast tumors with positive lymph nodes. Survival was evaluated in terms of breast cancer-specific mortality. Summary odds ratio (OR) for delayed detection of breast cancer, and summary hazard ratio (HR) for survival following diagnosis, along with 95 % confidence intervals (CI) were computed via random effects models. Our first meta-analysis using a pooled effect of 11 studies showed that cosmetic breast implants are associated with a delayed detection of breast cancer (Overall OR: 1.38, 95 % CI: 1.15, 1.66). Our second meta-analysis of 4 studies suggests that breast implants may by associated with a slight increase in breast cancer-specific mortality after diagnosis but the observed effect is not statistically significant (Overall HR: 1.26, 95 % confidence interval (CI): 0.87, 1.82). Accumulating evidence indicates that cosmetic breast implants are associated with a delayed detection of breast cancer. Further studies are warranted regarding survival following breast cancer diagnosis among augmented women.

0020

RACIAL VARIATION IN BREAST CANCER TREATMENT AMONG DEPARTMENT OF DEFENSE BENEFICIARIES *L. Enewold, J. Zhou, K.A. McGlynn, W. Anderson, C.D. Shriver, J.F. Potter, S.H. Zahm, K. Zhu (United States Military Cancer Institute, WRAMC, 6900 Georgia Ave NW, Washington, DC 20307)

Although the overall age-adjusted incidence rates for female breast cancer are higher among whites than blacks, mortality rates are higher among blacks. Many attribute this discrepancy to disparities in healthcare access and to blacks presenting with later stage disease. The aim of this study was to determine if female breast cancer treatment varied by race in the Defense (DoD) Military Health System, which is an equal access system. The study data were drawn from the DoD cancer registry and medical claims databases. Study subjects included 2,308 white and 391 black female beneficiaries diagnosed with breast cancer between 1998 and 2000. Multivariate logistic regression analyses that controlled for demographic factors, tumor characteristics, and comorbidities were used to assess racial differences in the receipt of surgery, chemotherapy and hormonal therapy. There was no significant difference in surgery type, particularly when mastectomy was compared to breast conserving surgery plus radiation [blacks vs. whites: odds ratio (OR)=1.1; 95% confidence interval (CI)=0.8-1.5]. Among those with local stage tumors, blacks were as likely as whites to receive chemotherapy (OR=1.2; 95% CI=0.9-1.8) and hormonal therapy (OR=1.0; 95% CI=0.7-1.4). Among those with regional stage tumors, blacks were significantly less likely than whites to receive chemotherapy (OR=0.4; 95% CI=0.2-0.7) and hormonal therapy (OR=0.5; 95% CI=0.3-0.8). Even within an equal access healthcare system, stage-related racial variations in breast cancer treatment are evident. Studies that identify driving factors behind these within-stage racial disparities are warranted.

0021

PRE-DIAGNOSTIC PLASMA VITAMIN C AND RISK OF ESOPHAGEAL AND GASTRIC CANCERS IN THE GENERAL POPULATION NUTRITION INTERVENTION TRIAL COHORT. TK Lam*, ND Freedman, J-H Fan, Y-L Qiao, SM Dawsey, PR Taylor, CC Abnet (Division of Cancer Epidemiology and Genetics,National Cancer Institute, Rockville, MD 20852)

Background: Esophageal and gastric cancers represent the 6th and 2nd most common causes of cancer death worldwide. Plasma vitamin C possesses antioxidant, anticarcinogenic, and anti-H.pylori properties that may prevent these cancers. These relationships, however, have not been fully evaluated. Methods: We used a case-cohort study nested in a large prospective cohort from Linxian, China to examine the relationship between plasma vitamin C and risk of incident esophageal squamous cell carcinoma (n=618) and gastric adenocarcinoma (cardia = 350; non-cardia = 139). Cox proportional hazards models were used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) over 15 years of follow-up. All estimates were adjusted for season of blood draw, age, sex, BMI, smoking status, and H. pylori seropositivity. Results: Compared to individuals with low plasma vitamin C levels (≤28 µmol/L), those with normal levels (>28 µmol/L) had a 30% reduced risk for all gastric cancers (HR: 0.70; 95% CI: 0.53-0.94). When separated by anatomic subsite, we observed inverse associations for both cardia (0.72; 0.52-0.99) and non-cardia (0.66; 0.42-1.04) gastric cancers. Similarly reduced risks were apparent using continuous or season-specific quartiles. We found no significant association between vitamin C levels and esophageal cancer. Conclusion: Our results suggest that higher plasma vitamin C is associated with reduced risk of gastric cancer across both anatomic subsites, but we saw no association with esophageal squamous cell carcinoma.

0022

IRON IN RELATION TO GASTRIC CANCER IN THE ATBC CANCER PREVENTION STUDY. MB Cook*, F Kamangar, PR Taylor, J Virtamo, D Albanes, G Petty, RJ Wood, AJ Cross, SM Dawsey (National Cancer Institute, Bethesda, MD, 20852)

Helicobacter pylori infection is associated with a reduced risk of gastric cardia cancer. A mechanistic hypothesis is that *H. pylori* infection reduces iron levels; this element can induce oxidative DNA damage via free radical generation. We assessed whether iron metrics were associated with gastric cardia and noncardia cancers in the ATBC cancer prevention study, a prospective cohort of over 29,000 men in Finland. We selected 258 incident gastric cancer cases (86 cardia, 172 noncardia), accrued during 22 years of follow-up, and 341 controls from the ATBC study. Using prediagnostic serum, we measured iron, ferritin, unsaturated iron binding capacity (UIBC), and C-reactive protein, a marker of inflammation. Total iron binding capacity (TIBC) and transferrin saturation were estimated from these metrics. Dietary iron was estimated from a food frequency questionnaire. Multivariable logistic regression was used to estimate odds ratios (OR) and 95% confidence intervals (CI) within quartiles. Serologic and dietary iron metrics were not associated with gastric cardia cancer. For gastric noncardia cancer we found suggestive inverse associations with iron (OR_{Q2}=0.55, CI:0.32-0.95; OR_{Q3}=0.33, CI:0.18-0.60; OR_{Q4}=0.59, CI:0.34-1.04), ferritin (OR_{Q2}=0.78, CI:0.46-1.34; OR_{Q3}=0.45, CI:0.25-0.82; OR_{Q4}=0.68, CI:0.39-1.18), and transferrin saturation (OR_{Q2}=0.69, CI:0.39-1.20; OR_{Q3}=0.61, CI:0.35-1.06; OR_{Q4}=0.63, CI:0.36-1.11); dietary iron, UIBC, and TIBC were null. We found no evidence to suggest that iron underlies the inverse association between *H. pylori* and gastric cardia cancer. There were suggestive inverse associations between iron metrics and gastric noncardia cancer, in a profile similar to that of anemia.

0023-S

INCIDENCE AND TRENDS FOR HPV AND NON HPV-ASSOCIATED HEAD AND NECK CANCERS IN THE U.S. BY RACE/ETHNICITY. *L. Cole, E. Peters and L. Whitaker (Louisiana State University School of Public Health, New Orleans, LA, 70112)

Incidence and survival rates of head and neck cancer (HNC) vary by demographic characteristics, with significant disparities for men and African Americans. Alcohol and tobacco exposure are established etiologic factors for HNC, but recent epidemiological and experimental data have demonstrated that infection with human papillomavirus (HPV) is a risk factor for specific HNC sub- sites. The objectives of this study are to describe the incidence and trends of HNC in the US from 1995 to 2005 and to investigate the variation of rates by HNC sub-site and potential association with HPV. Incident cases of HNC were identified using the North American Association of Central Cancer Registries Cancer in North America Deluxe Analytic Data, which is composed of US cancer registry data meeting high quality data standards. Age-adjusted incidence rates by sex, race/ethnicity, sub-site, stage, and likely HPV association were calculated. Annual percent change (APC) was estimated for HPV and non HPV-associated HNC by age and race. A total of 273,273 HNC cases were diagnosed with incident HNC from 1995 to 2005. Males and Non-Hispanic Blacks (NHB) had higher HNC incidence compared to women and other race/ethnicity groups. Among HPV-associated sites, HNC incidence significantly increased from 1995-2005 (APC=3.0%), while the reverse was observed for non HPV-associated sites (APC=-2.6%). Interestingly, HNC incidence trends for NHB decreased independent of HPV association. The current study suggests that HPV-associated tumors may have a different disease process than non HPV-associated tumors, and treatment therapies should be tailored based on HPV tumor status.

0024-S

COST-EFFECTIVENESS OF MAMMOGRAPHY SCREENING IN CANADA. *N-T Dinh, K Brand, D Coyle, W Flanagan, H Morrison, C Deri Armstrong, J Onysko (University of Ottawa, Ottawa, Ontario, K1N6N5)

Although there is general agreement that mammography is effective in reducing breast cancer mortality, the cost-effectiveness of mammography screening in Canada is uncertain. Expanding age eligibility and increasing screening frequency could result in an increase in cancers detected and decrease in breast cancer mortality. Costs and harms associated with more aggressive screening may also increase. This study evaluates the tradeoffs between the anticipated benefits and harms of potential screening program designs within the Canadian context. The analysis used the microsimulation Population Health Model (POHEM) and data from the Canadian Breast Cancer Screening Initiative. Ten screening scenarios were tested against a "no screen" option. Scenarios varied in terms of age eligibility and screening frequency. The model was run for each scenario in order to determine life expectancy, number of lifetime screens and false positives, and lifetime treatment costs. Screen costs were calculated by applying cost per screen estimates to the number of lifetime screens generated by POHEM. Results showed that any screening scenario would be considered cost-effective at a threshold of $50,000 per life-year gained (LYG) compared to no screening. Screening women ages 50-69 biennially was shown to be the most cost-effective or optimal program, costing $3,916/LYG. Screening women ages 40-79 annually would be considered the least optimal program, costing $18,996/LYG. A program that screens women ages 40-49 annually and women ages 50-79 biennially would cost $13,082/LYG. Current results are undiscounted. Further analysis will apply discounting and adjust for quality of life. Subgroup analysis will also be performed for the high-risk population.

0025

INTAKE OF LONG-CHAIN N-3 FATTY ACIDS AND MAMMOGRAPHIC BREAST DENSITY. *C. Diorio, S. Bérubé, and J. Brisson (URESP at Centre de recherche FRSQ du CHA universitaire de Québec, Université Laval, Québec, Qc G1S 4L8)

Epidemiological and laboratory studies suggest that long-chain n-3 (omega 3) fatty acids may be associated with a reduction in breast cancer risk. This study reports on the association of long-chain n-3 fatty acids intake with mammographic breast density, one of the strongest breast cancer risk indicators. Among 1560 women aged 31 to 81 years, mammographic breast density from screening mammograms was evaluated using a computer-assisted method and intake of long-chain n-3 fatty acids from food and supplement by a semiquantitative food frequency questionnaire. Mean breast density and p-value for the linear trend across quartiles of long-chain n-3 fatty acids intake were estimated by linear regression adjusting for multiple covariates including age and body mass index. For increasing quartiles of total long-chain n-3 fatty acids intake (<0.11, 0.11-0.20, 0.21-0.32 and >0.32 g/day), adjusted-mean breast density was 29, 29, 27 and 25%, respectively (p=0.005). A similar association was observed between quartiles of dietary long-chain n-3 fatty acids intake (<0.11, 0.11-0.20, 0.21-0.31 and >0.31 g/day) and breast density (29, 28, 27 and 26%, respectively; p=0.01). Our data show that increases in long-chain n-3 fatty acids intake was associated with lower breast density. These results support the notion that intake of long-chain n-3 fatty acids should be evaluated for breast cancer prevention.

0026

RACIAL DISPARITIES IN BLADDER CANCER SURVIVAL: RESULTS FROM SEER-MEDICARE. *GD Datta, P Grosclaude, I Kawachi, B Neville, NS Datta, CC Earle (University of Montreal, Montreal, QC H3C 3J7)

Background: Black patients have lower survival rates from bladder cancer than White patients, but previous studies have not been able to explain this difference. Recent work has found that racial disparities in bladder cancer survival persist after adjusting for sex, age, and tumor characteristics. The objective of this study was to assess the association of insurance status, comorbidities, marital status, census tract (CT) SES and the receipt of radical cystectomy with disparities in bladder cancer survival. Methods: We identified 15,666 (592 Black and 15,074 White) bladder cancer cases diagnosed between 1992 and 1999 (follow-up through 2003) from the SEER-Medicare database. We constructed relative survival models to assess racial disparities in 5-year survival. Results: The relative survival ratios (RSR) for Black patients vs White patients were as follows: unadjusted, RSR=2.22 (95%CI=1.90-2.59), adjusting for year of diagnosis, registry, age, sex, stage, and grade, RSR=1.54 (95%CI=1.32-1.81); additionally adjusting for comorbidity score, marital status, and receipt of radical cystectomy, RSR=1.45 (95% CI=1.25-1.70); additionally adjusting for CT SES, RSR=1.33 (95% CI=1.12-1.57). Lower comorbidity score, being married, higher CT SES and receipt of radical cystectomy were independently associated with increased bladder cancer survival. Conclusions: Racial disparities persist after adjusting for comorbidity score, marital status, CT SES, and receipt of radical cystectomy in this insured population. As CT SES is an incomplete SES indicator and it is strongly associated with race, further studies investigating the influence of individual-level SES and its correlates may provide further explication of this disparity.

0027

THE EFFECT OF NEIGHBORHOOD DISADVANTAGE ON STAGE AT DIAGNOSIS OF EPITHELIAL OVARIAN CANCER. S. Kim*, C. Joslin, I. Chukwudozie, F. Davis (University of Illinois at Chicago, IL, 60612)

Individual and neighborhood level socioeconomic status (SES), such as education, income, race/ethnicity, and access to care are known to affect individual health outcomes. One of the ways in which race and SES affect health is by influencing one's access to resources, which confer ability to avoid or mitigate adverse outcomes. Ovarian cancer incidence rate in the US is higher for white women compared to black women. And, due to the fact that there is no effective screening tool and few early symptoms, ovarian cancer cases are often diagnosed at advanced stages. We explored whether neighborhood characteristics, such as SES, racial composition, and access to care, affect stage at diagnosis of ovarian cancer. Using the multilevel hierarchical model and geographic mapping, we examine differences in diagnosis stage among ovarian cancer cases diagnosed during 1994-1998, in Cook County, Illinois (N=704). A disadvantage measure was computed using the 2000 census data (% of living below poverty, % of less than high school education, % female headed households with children, and % of whites). 19% were black and 81% were white women. Average age at diagnosis was 53 years old. 52% of the cases were diagnosed at later stages (Stages III and IV). Despite the fact that ovarian cancer cases are often diagnosed at advanced stages due to the lack of effective screening tools, and racial disparities are less prominent compared to other cancer types, the findings suggest that women living in disadvantaged neighborhoods were more likely to be diagnosed at later stages. Marital status, education, race were not associated with stage at diagnosis. Broader neighborhood characteristics should be accounted for in explaining cancer disparities.

0028-S

NON-STEROIDAL ANTI-INFLAMMATORY DRUGS USE AND COLORECTAL CANCER: A POPULATED BASED CASE-CONTROL STUDY. *J. Zhao, Y. Zhu, L. Liu, and PP. Wang (Memorial University of Newfoundland, St John's, NL A1B3V6)

Background: Non-steroidal anti-inflammatory drugs (NSAIDs) use has been shown to prevent the occurrence of colorectal cancer (CRC) and reduce polyps and colorectal adenomas recurrence. However, few studies have been carried out in the Canadian population. This study aimed to assess the primary prevention effect of NSAIDs on the incidence of CRC in Canada. Methods: The study analyzed the data of a population based case-control study of 5421 participants (2752 cases and 2669 controls) in Ontario (ON) and Newfoundland and Labrador (NL). Information on dietary intake, family history, and lifestyles was collected using a self-administrated family history questionnaire, food frequency questionnaire and personal history questionnaire. Odds ratios (OR) and the 95% confidence interval (95%CI) were estimated by multivariate logistic regression after adjusting for potential confounding factors. Results: Overall, NSAIDs use significantly reduced the risk of CRC in both ON (OR=0.65, 95%CI 0.52-0.80) and NL (OR=0.72, 95%CI 0.53-0.98) populations. When province-sex stratified analyses were performed, similar associations were observed across all sub-groups. However, a statistically significant association was only observed in ON men (OR=0.56, 95%CI 0.41-0.77).Conclusions: Our study adds evidence corroborating the association between NSAIDs and reduced risk of CRC in the Canadian population. It also suggests a possibility that the effect of NSAIDs on CRC may vary between men and women. Funding: Jing Zhao is supported by a trainee award from the Beatrice Hunter Cancer Research Institute with funds provided by The Terry Fox Foundation Strategic Health Research Training Program in Cancer Research at CIHR.

0029-S

IRON AND COLORECTAL CANCER: A POPULATED BASED CASE-CONTROL STUDY IN CANADA. *J. Zhao, Y. Zhu, L. Liu, and PP. Wang (Memorial University of Newfoundland, St John's, NL A1B3V6)

Background: Iron can cause genomic and chromosomal instability, rearrangement and mutations through reactive action. Excessive iron intake has been considered as a potential risk factor of colorectal cancer (CRC). The objective of this study was to examine the associations between iron intake and the risk of CRC in the Canadian population. Methods: The study analyzed the data collected from the existing population based case-control study of 5421 participants (2752 cases and 2669 controls) in Ontario (ON) and Newfoundland and Labrador (NL). Information on dietary intake, family history and lifestyles was collected using self-administrated questionnaires. Multivariate logistic regression analysis was used to estimate odds ratios (OR) and the 95% confidence intervals (95%CI) after adjusting for potential confounding factors. Tests for trend were used to assess dose-response relationships. Results: The OR increases with each quintile of iron intake. A borderline significant dose-response association between total iron intake and CRC was observed in this study (In ON: men, OR=1.02, 95%CI 1.01-1.03; women, OR=1.01, 95%CI 1.00-1.01; both men and women OR=1.01, 95%CI 1.01-1.02; In NL: women, OR=1.01, 95%CI 1.00-1.02; both men and women OR=1.00, 95%CI 1.00-1.01, all $p<0.05$). Conclusions: Excess iron intake appears to increase the risk of colorectal cancer in the Canadian population. This study also raises a methodological issue around quantifying and grouping iron intake in epidemiological studies. Funding: J. Zhao is supported by a trainee award from the Beatrice Hunter Cancer Research Institute with funds provided by The Terry Fox Foundation Strategic Health Research Training Program in Cancer Research at CIHR.

0030-S

AFRICAN AMERICAN BREAST CANCER PATIENTS EXPERIENCE LONGER DELAYS IN DIAGNOSIS AND TREATMENT. *P. George, M. Azu, E. Bandera, C. Ambrosone, G. Rhoads, K. Demissie (University of Medicine and Dentistry of New Jersey, New Brunswick, New Jersey, 08901)

Delays in diagnosis and treatment may contribute to excess deaths among African-American breast cancer patients. The authors' objective was to examine racial differences in delays in diagnosis and treatment initiation for early stage breast cancer. Newly diagnosed invasive breast cancer patients during the period 2006-2010 were identified in the seven counties of eastern New Jersey through rapid case ascertainment methodology. For each African-American woman ages 18-85 years, a white woman within 5 years of age who resided in the same county was randomly selected. After obtaining patient consent, medical records were obtained from multiple providers. Delay intervals were defined as the time interval from symptom recognition to diagnosis (diagnosis delay), from symptom recognition to surgical treatment (surgical delay), from the end of the last chemotherapy cycle to initiation of radiation or from 4 weeks after last surgery to initiation of radiation (radiation delay) and from 4 weeks after last surgery to initiation of chemotherapy (chemotherapy delay). African-Americans experienced delays of ≥ 2 months more than Whites in diagnosis [odds ratio (OR)=2.4; 95% confidence intervals(CI): 1.6-3.6)], in surgical treatment initiation (OR=2.0; 95% CI: 1.4-3.1) and in radiation therapy initiation (OR=2.4; 95%CI: 1.1-5.3). No racial difference was found in chemotherapy delay. The findings suggest that African-American breast cancer patients experience longer delays in diagnosis and treatment for breast cancer; interventions to reduce delays may help narrow the racial gap in mortality between the races.

0031

BUCCAL SAMPLES AS A SURROGATE MEASURE OF GLOBAL DNA METHYLATION IN THE COLON. *J. Ashbury, W. King, Y. Tse, S. Pang and S. Vanner (Queen's University, Kingston, ON, K7L 3N6)

Global DNA hypomethylation, which refers to a genome-wide decrease in the number of cytosine bases that have been methylated to form 5-methylcytosine, is recognized as a key mechanism in the regulation of genes implicated in carcinogenesis. Further, there is substantial evidence to suggest that global DNA hypomethylation in colon tissue represents an intermediate endpoint in the early development of colorectal cancer. However, apart from specific clinical procedures (e.g. colonoscopies), it is prohibitively invasive to obtain colon tissue samples and virtually impossible to obtain samples for a true population-based study. The objective of this cross-sectional study was to determine whether buccal global DNA methylation was an appropriate proxy measure for colon tissue methylation. Ninety-one subjects (59.3% female and 40.7% male), aged 40 – 65 (mean age = 54.3, standard deviation = 5.86) undergoing a screening colonoscopy in Kingston, Ontario have been recruited. Global methylation is being quantified using high-resolution melting (HRM) profile analysis - a validated real-time florescence-based polymerase chain reaction (PCR) method. In preliminary data based on 10 subjects, the Pearson correlation coefficient between buccal and colon methylation measures was 0.95 ($p<0.0001$). Further analysis will be conducted for all 91 subjects and include consideration of blood methylation levels. Aberrant DNA methylation is suspected to be an important early step in colon cancer development. If buccal DNA methylation is shown to be an appropriate proxy measure for colon tissue methylation, this would facilitate the use of easily accessible buccal cells for the investigation of risk factors for aberrant DNA methylation patterns.

0032

CORRELATES OF MEETING PHYSICAL ACTIVITY GUIDELINES FOR CANCER PREVENTION. *FE Aparicio-Ting, CM Friedenreich, KA Kopciuk, RC Plotnikoff, HE Bryant (Alberta Health Services, Calgary, Alberta, Canada T2N 4N2)

Consistent and strong epidemiologic evidence exists that physical activity (PA) reduces the risk of several cancer sites. A cross-sectional study was undertaken in Alberta to investigate potential determinants of leisure PA behaviour at levels sufficient for cancer prevention. In 2008, 1,087 male and 1,684 female Alberta residents participating in The Tomorrow Project (a province wide cohort study) who were 35 to 64 years old completed self-administered questionnaires on PA behaviour and potential PA determinants. Applying a social ecological model, correlates of PA in the intrapersonal and social domains were examined as potential determinants of compliance with American Cancer Society and the U.S. Department of Health and Human Services PA guidelines, which recommended PA at levels thought to be sufficient for cancer risk reduction. A hierarchical backwards elimination modelling strategy with 10-fold cross validation was used to build sex-specific, logistic regression models adjusted for known confounders. Intrapersonal correlates of compliance with these PA guidelines were the following: ability to schedule and plan PA ($p<0.001$), self-efficacy ($p=0.037$), single marital status (for women only, $p=0.004$) and hypertension (for men only, $p=0.018$). Social factors that were correlates of compliance were: friend social support ($p<0.001$); and, for women only, familial social support ($p=0.021$) and companionship for PA ($p=0.033$). Both intrapersonal and social factors should be incorporated into multidimensional intervention strategies to promote sufficient levels of activity for cancer risk reduction and interventions may need to be tailored by gender to be effective at the population level.

0033-S

VALIDITY OF SELF-REPORTED MAMMOGRAPHY USE AMONG WOMEN WITH FAMILIAL HISTORY OF BREAST CANCER. *MJ Walker, AM Chiarelli, L Mirea, G Glendon, P Ritvo, IL Andrulis, JA Knight (Cancer Care Ontario & Samuel Lunenfeld Research Institute, Toronto, ON M5G 2L7)

Previous evidence suggests women may underestimate the time since last mammography; however it is unknown whether this holds true for women with familial risk of breast cancer. The purpose of this prospective study is to assess the validity of self-reported mammography use among women with varying levels of familial risk. A cohort of 1514 relatives of invasive breast cancer cases from the Ontario site of the Breast Cancer Familial Registry, were followed for three years by questionnaire. Women were Ontario residents, 18 or older and unaffected by breast cancer. Of the 1114 women responding at baseline, 847 (76%) had a recent mammogram, 578 (59%) had one at year-one follow-up and 546 (62%) had one at year-two follow-up. Ninety-seven percent (788) of requested mammogram reports have been received from imaging departments for baseline, ninety-seven percent (534) of year-one and ninety-seven percent (503) of year-two. Self-reported and abstracted dates were compared for 3- and 6-month concordance, in addition to mammogram reason. Sensitivity, specificity, positive and negative predictive values, overall percent agreement and Cohen's kappa (κ) will be examined, along with further multivariate analyses. At baseline, 63% demonstrated 3-month concordance, 86% 6-month concordance and 87% reason concordance. Preliminary analyses suggest 3-month concordance differs by familial risk (p=0.0174); women with low (N=343), moderate (N=198) and high (N=247) familial risk demonstrated 58%, 65% and 70% concordance, respectively. Understanding the validity of self-reported mammography use in women with familial risk is essential to determining screening adherence.

0034-S

ASSOCIATIONS OF PERIODONTAL DISEASE AND DENTAL CARIES WITH GASTRIC PRECANCEROUS LESIONS. *C. Salazar, F. Francois, Y. Li, R. Hays, S. Bedi, J. Sun, E. Queiroz, C. Leung, B. Wang, H. Hao, P. Corby, Z. Pei, A. Dasanayake, Y. Chen (Columbia University MSPH, NY, NY 10032; NYU College of Dentistry, NY, NY 10010; NYU School of Medicine, NY, NY 10016)

To investigate whether periodontal disease and dental caries experience are associated with an increased risk of gastric precancerous lesions, we conducted a pilot case-control study with subjects who underwent upper gastrointestinal endoscopy at Bellevue Hospital Center in New York City. Cases were diagnosed with either intestinal metaplasia or chronic atrophic gastritis. Comprehensive oral examinations were performed utilizing National Institute of Dental and Craniofacial Research criteria. Bacterial genomic DNA was isolated from saliva and plaque samples and quantitative real-time PCR was performed with species-specific primers to evaluate the colonization of 4 groups of bacteria etiologically linked with periodontal disease (*P. gingivalis*, *T. forsythensis*, *A. actinomycetemcomitans*, and *T. denticola*). Preliminary results with 17 cases and 36 controls showed a significantly higher mean proportion of decayed tooth surfaces (DS) to decayed and filled tooth surfaces (DFS) among cases than controls (%DS/DFS= 43.5% vs. 16.6%, p=0.04) after adjustment for age, sex, number of teeth evaluated, smoking, and BMI. The adjusted mean proportion of sites with bleeding on probing was higher among cases than controls (32.1% vs. 24.1%, p=0.15). The adjusted mean of bacterial load values for *A. actinomycetemcomitans* in plaque samples was higher among cases than controls (1.80 vs. 0.13, p=0.28). Our findings suggest that individuals with gastric precancerous lesions have a higher degree of active periodontal inflammation and a higher level of untreated caries.

0035

IN UTERO EXPOSURE TO BISPHENOL-A (BPA) AND ITS EFFECT ON BIRTH WEIGHT OF OFFSPRING. *Maohua Miao[2], Wei Yuan[2], De-Kun Li[1] ([1]Division of Research, Kaiser Foundation Research Institute, Kaiser Permanente, Oakland, California. [2]Department of Epidemiology and Social Science on Reproductive Health, Shanghai Institute of Planned Parenthood Research, Shanghai China)

Objective: To examine the effect of in utero exposure to BPA, a suspected endocrine disruptor with widespread human exposure, on the birth weight of offspring. Methods: A total of 587 children from families in which parent(s) did or did not have occupational exposure to BPA were examined. Their birth weights were obtained by an in-person interview of the mother. Parental BPA exposure level during the index pregnancy was determined through job-exposure matrix. Maternal exposure was considered a direct in utero exposure to fetuses while paternal exposure was considered an indirect in utero exposure. Results: After controlling for maternal age at birth, education, pre-pregnancy weight, gravidity, calendar year of birth, and family income using a linear regression model, parental exposure to BPA in the workplace during pregnancy was associated with decreased birth weight. The association was stronger for maternal exposure which is statistically significant. There was also a dose-response relationship with increased BPA exposure levels in pregnancy associated with greater magnitude of decrease of birth weight in offspring, with a statistically significant trend for the association. (p=0.003) Conclusions: Our findings provide the first epidemiologic evidence suggesting that in utero exposure to BPA during pregnancy may be associated with decreased birth weight in offspring. This finding, if confirmed by other studies, has important public health implications due to ubiquitous BPA exposure.

0036-S

ASSOCIATION BETWEEN SERUM PFOA LEVELS AND HYPERURICEMIA IN CHILDREN. *S. Geiger, A. Shankar, and A. Ducatman (West Virginia University, Morgantown, WV 26506)

Hyperuricemia in children is associated with increased future risk of diabetes, metabolic syndrome and cardiovascular disease. Serum perfluorooctanoic acid (PFOA) has been shown to be associated with hyperuricemia in adults, but the association in children remains unexplored. An advantage of examining environmental exposures in children is that observed associations are less likely to be affected by confounding due to limited cumulative lifetime exposure to chronic disease risk factors such as smoking or heavy alcohol intake. However, population-based data on serum PFOA and uric acid level are rare in children, probably because of challenges associated with parental commitment necessary for drawing blood samples. In this context, we conducted a cross-sectional study using data from the C8 Health Project (2005-2006), a large, population-based study of six Appalachian communities in Ohio and West Virginia who were exposed to high PFOA levels through contaminated drinking water. There were n=9,645 children (age<18 years) in the sample; 26.4% exhibited hyperuricemia (serum uric acid>5.5 mg/dL). We detected a significant positive association between serum PFOA and hyperuricemia in multivariable logistic regression analyses after adjusting for age, sex, and body mass index. Compared to children in quartile 1 of serum PFOA (referent category, PFOA level<12.8 ng/mL), the odds ratio (95% confidence interval) of hyperuricemia was 1.18 (1.02-1.36) in quartile 2 (PFOA level 12.9-28.2 ng/mL), 1.27 (1.10-1.47) in quartile 3 (PFOA level 28.3-65.4 ng/mL), and 1.30 (1.12-1.50) in quartile 4 (PFOA level>65.4 ng/mL); p-trend=0.002. Our results suggest that, similar to adults, higher PFOA levels are associated with hyperuricemia in children.

0037-S

POLYCHLORINATED BYPHENILS (PCBS) AND ORGANOCHLORINE PESTICIDES (OCPS) AND MENSTRUAL CYCLE LENGTH AMONG WOMEN IN THE NEW YORK STATE ANGLER PROSPECTIVE PREGNANCY STUDY. *Iglesias LI[1,2], Cooney MA[1], McLain AC[1], Lum KJ[1], Sundaram R[1], Buck Louis GM[1] ([1]Division of Epidemiology, Statistics, and Prevention Research, Eunice Kennedy Shriver National Institute of Child Health and Human Development, Department of Health and Human Services, [2]University of New Mexico, Masters in Public Health)

Background: The potential adverse effects of PCBs and OCPs on women's health are a major public health concern because they are known to be endocrine-disrupting chemicals (EDCs). The mechanisms of PCBs and OCPs on menstrual cycle patterns remain uncertain and controversial despite the importance of menses as an integral part of a woman's experience and reproductive life. Objectives: To quantify the effects of PCBs and OCPs in women's serum prior to pregnancy and observe their menstrual cycle length and variability as prospectively recorded on daily menstrual diaries among women enrolled in the New York State Angler State Prospective Pregnancy study (PPS). Methods: During 1991-1992, we collected data for eighty-three women aged 20-34 who were not pregnant, have completed PCB and OCP information as well as daily diaries regarding menstruation and lifestyle behaviors. Toxicological analyses were conducted to process 76 PCB congeners in sera specimen samples by using gas chromatography with electron capture detection. A mixture distribution model was used to indentify exposures that significantly affect menstrual cycle length, after adjusting for age and age at menarche. Results: The results from the linear regression models indicated that mean menstrual cycles were four days longer (β = 3.89, 95% CI 0.04 to 7.74) for women with estrogenic PCB levels in the highest tertile compared to those in the lowest tertile after adjustment for age and age of menarche. Conclusions: Our findings suggest that PCBs may increase or mimic estrogen activity which may produce high levels of luteinizing hormone before the luteinizing hormone peak. This may be associated with both a longer luteal phase and longer menstrual cycles.

0038

PESTICIDE HEALTH PERCEPTIONS AMONG WASHINGTON DC RESIDENTS. D.F. Goldsmith*, P. Davidson, J. Paulson, (George Washington University (GWU), Washington DC, 20052 USA)

Background: There is a paucity of information about pesticide use and health effects among urban dwellers, especially among low income renters. We conducted a survey in Washington DC to assess health attitudes among a nonrandom sample of Washington DC residents. Methods: We studied 789 Washington DC residents >18 years in the summer of 2008 using a questionnaire approved by GWU's Institutional Review Board. The survey asked their perceptions of health issues related to using pesticide chemicals in their homes. The questionnaire asked how worried residents were if there were pesticide residues on surfaces, and we asked about threats to health from different groups of pesticides applied to homes. Results: For flea spray, 13% indicated these products were not very harmful, while 29% thought they were a serious threat to health. For cockroach sprays, 12% indicated these insecticides were not very harmful, but 35% thought they were a serious health threat. For room foggers/bug bombs, 7% indicated these were not very harmful, while 50% thought they were a health threat. For chemical lawn products 40% thought they would be a serious threat to health. In our sample, 46% expressed concern that residues on exposed surfaces can make people ill. We asked if skin rashes, headaches, cough/sore throat, asthma and other respiratory problems rose after residential pesticide applications; 8% reported these illnesses were made worse after pesticide products were used. Conclusion: This survey suggested that more community education would benefit residents, especially where children are concerned. Educational efforts should include pesticide safety training as well as direct means of preventing the entry of pests into residences.

0039-S

BEDBUG, MICE AND RAT COMPLAINTS AND PESTICIDE USE AMONG WASHINGTON DC RESIDENTS BY NEIGHBORHOOD: GIS ANALYSIS. *Kristin Rury and David F. Goldsmith (George Washington University (GWU) School of Public Health and Health Services, Washington, DC, 20052 USA)

Background: In 2008, the GWU Environmental and Occupational Health Department surveyed 789 DC residents to elicit attitudes towards residential pests and pesticides in an effort to highlight public health concerns about urban pests. Responses to questions relating to bedbugs, mice, and rats were analyzed by city ward. The DC survey is the largest survey of pests and pesticide use in any urban area. **Methods**: Ward-specific results were compared to all survey responses, which represent DC as a whole, using the Wilcoxon signed-rank test. Significant differences ($p<0.05$) were then displayed using Geographic Information Systems (GIS) to highlight findings for selected pest complaints and pesticide uses between individual wards and all of Washington DC. **Results**: DC Wards 1, 3, and 7 reported significantly more bedbug problems than the city as a whole. Ward 3 also reported significantly more use of bedbug spray and mattress powder/dust than DC; Ward 1 reported significantly higher use of mattress powder/dust than DC. Additionally, Wards 5 and 8 reported significantly more frequent mice problems than DC, and more frequent use of glue, sticky, and snap traps. Ward 1 also reported significantly more frequent rat problems than DC. Findings do not suggest that only lower income Wards 7 and 8 have the most pest problems/complaints. **Discussion & Conclusion**: Based on our survey, bedbug treatment and residential educational efforts should focus on Wards 1, 3 and 7. Mice and rat intervention and educational efforts should focus on Wards 5 and 8. DC residents should be resurveyed after treatment and educational efforts to test intervention success.

0040

PLASMA CONCENTRATIONS OF PERFLUORINATED COMPOUNDS AND SUBFECUNDITY IN THE NORWEGIAN MOTHER AND CHILD COHORT STUDY. KW Whitworth*, LS Haug, DD Baird, G Becher, JA Hoppin, R Skjaerven, C Thomsen, M Eggesbo, G Travlos, R Wilson, MP Longnecker (National Institute for Environmental Health Sciences, NIH, DHHS, Durham, NC 27703)

Perfluorinated compounds (PFCs) are ubiquitous pollutants and have been associated with subfecundity. The authors examined subfecundity in relation to two specific PFCs, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), with the hypothesis that the associations would differ by gravidity. This study is based in the Norwegian Mother and Child Cohort Study (MoBa). The analysis was restricted to women enrolled from 2003-2004, including 430 women with a time-to-pregnancy (TTP)>12 months and 509 randomly-selected women with a TTP≤12 months. At 17 weeks of gestation, mothers reported TTP and provided blood samples. Plasma concentrations of PFCs were analyzed using liquid chromatography-mass spectrometry. Odds ratios and 95% confidence intervals (CI) were estimated for each PFC quartile using logistic regression, adjusted for age and prepregnancy body mass index. An association between subfecundity and PFCs was seen only in gravid women. The relative odds of subfecundity for gravid women in the highest quartile of PFOS was 1.7 (CI=1.1-2.7) and for PFOA was 2.1 (1.2-3.4). For nulligravid women the respective relative odds were 0.6 (0.3-1.2) and 0.5 (0.2-1.4). Prior studies suggest that PFC levels fall during pregnancy and lactation as the contaminants are transferred to the fetus and breast milk; afterwards they rise to baseline. Among gravid women, a long TTP allows for a longer time during which levels can rise. Results from nulligravid women may be more informative regarding toxic effects of these compounds, and in these data, did not support an adverse relation.

0041

CHLORPYRIFOS EXPOSURE AND THE PREVALENCE OF WHEEZE AMONG EGYPTIAN COTTON WORKERS. *Bonner MR, Farahat F, Olson J, Rohlman D, Fenske R, Anger WK, Lein (University at Buffalo, Buffalo, NY 14214)

Pesticide exposure, including organophosphate insecticides (OP), has been associated with wheezing in agricultural settings. Chlorpyrifos (CPF), an OP, has been linked with airway hyperreactivity in experiments with guinea pigs, supporting this hypothesis. We conducted a cross-sectional study to investigate CPF exposure and the prevalence of wheeze among 159 CPF-exposed cotton workers and 122 non-agricultural workers. Male cotton workers, aged 18-55 years, were recruited from the Ministry of Agriculture field stations near Shebin El-Kom, Egypt. Male non-agricultural workers, aged 18-55 years, were recruited from Shebin El-Kom. All participants completed a questionnaire that queried demographics, occupational and medical histories, including the number of wheezing episodes in the past year. Unconditional logistic regression was used to estimate prevalence odds ratios (PORs) and 95% confidence intervals (CIs), adjusted for age, pack-years of smoking, asthma, and body mass index. Workers exposed to CPF had a 3-fold higher prevalence of wheezing (POR=3.2; 95% CI=1.2-8.4) as compared with the non-exposed. When categorized by job title, the PORs for applicators, technicians, and engineers were 4.7 (95% CI=1.5-15.4), 2.3 (95% CI=0.7-7.9), and 2.0 (95% CI=0.5-7.6), respectively. Applicators have been demonstrated to have higher occupational CPF exposure than either technicians or engineers. In summary, our results are consistent with the hypothesis that CPF exposure is positively associated with wheezing, although interpretation is complicated by the cross-sectional study design, the self-reported assessment of wheezing, and the small sample size. Supported by NIH (ES16308).

0042-S

DDT, DDT METABOLITES AND BIRTH WEIGHT. *K. Kezios, X. Liu, P. Cirillio, H. Yu, B. Cohn, O. Kalantzi, Y. Wang, M. Petreas, J-S Park, P. Factor-Litvak (Columbia University, New York, NY, 10032)

Organochlorine (OC) pesticides are persistent endocrine disruptors. In pregnant women, OC pesticides have the capacity to cross the placenta; this prenatal exposure has been associated with adverse pregnancy outcomes, although the findings are inconsistent. We used a sample of 600 infants (300 male, 300 female) drawn from the Child Health and Development Studies prospective cohort study to investigate the relationship between maternal exposure to OC pesticides and birth weight. Linear regression models were used to examine the associations between dichlorodiphenyltrichloroethane (DDT), accounting for the metabolite, dichlorodiphenyldichloroethylene (DDE) and the contaminant, ortho,para'-DDT (o,p'-DDT). We also examined whether the pathway between OC levels in maternal serum and pregnancy outcomes is mediated by maternal thyroid hormone. For each log unit increase in DDT concentration, adjusted birth weight increased by 98.36 grams (95% confidence interval (CI) 13.19, 183.53). When the effects of DDT, DDE and o,p'-DDT were considered jointly, adjusted birth weight increased by 302.48 grams (95% CI 151.41, 453.55), decreased by 191.22 grams (95% CI -332.67, -49.77) and decreased by 73.13 grams (95% CI -153.32, 7.05), respectively. A significant dose-response relationship was observed with increasing tertiles of DDT corresponding to higher adjusted mean birth weights ($p<0.05$) and this effect was substantially magnified when o,p'-DDT and DDE were considered concurrently in the model ($p<0.01$). We did not find mediation by thyroid disruption. DDT has been associated with increased risks of breast cancer and diabetes, thus, we suggest that increased birth weight may be one mediator of those associations.

0043-S

PRENATAL PCB EXPOSURE IS ASSOCIATED WITH DECREASED GESTATIONAL LENGTH. *K. Kezios, X. Liu, P. Cirillio, H. Yu, O. Kalantzi, Y. Wang, M. Petreas, J-S Park, B. Cohn. P. Factor-Litvak (Columbia University, New York, NY, 10032)

Polychlorinated biphenyls (PCBs) were used in a variety of industrial applications, but although banned in 1979, persist in the environment. PCBs are considered endocrine disruptors. Previous literature is inconsistent regarding exposure to PCBs and pregnancy outcomes. The present study uses a sample of 600 infants (300 male, 300 female) drawn from the Child Health and Development Studies prospective cohort study to investigate the associations between PCBs and gestational length. We evaluated PCBs in groups according to hypothesized biological action (1b (sum of weak phenobarbital inducers), 2b (sum of limited dioxin activity), and 3 (sum of CYP1A and CYP2b inducers)) or degree of ortho- substitution (mono, di, tri) as certain configurations may interfere with thyroid hormone function. In secondary analyses we examined total exposure and individual congeners. For each log unit increase in total PCB concentration, we found a 0.37 week decrease (95% confidence interval (CI) -0.72, 0.015) in length of gestation. We also found decreases in length of gestation for di-ortho substituted PCBs (0.33 week decrease (95% CI -0.68, 0.0076)) and group 3 PCBs (0.35 week decrease (95% CI -0.69, 0.044)). Decreased gestational length was also found for most congeners. The magnitude of decreased gestation was most pronounced comparing the highest tertile of PCB exposure to the lowest tertile of exposure. No mediation by maternal thyroid function was found. We conclude that there is an approximately 2.3 day decrease in gestational length per log unit increase in PCB exposure. While small for any individual, this may have public health implications for population exposures.

0044-S

PRENATAL ORGANOCHLORINE EXPOSURE, MATERNAL THYROID FUNCTION AND NEUROMOTOR DEVELOPMENT. *H. Yu, X. Liu, K. Kezios, O. Kalantzi, Y. Wang, M. Petreas, J-S. Park, P. Cirillio, B. Cohn, P. Factor-Litvak (Columbia University, New York, NY, 10032)

Organochlorines (OCs) are putative endocrine disruptors and have been associated with developmental deficits in young children. We investigated the associations between prenatal OC exposure, maternal thyroid levels and neurodevelopmental outcomes at age 5 in a sample of 600 mother-child pairs (300 male, 300 female) enrolled at birth into the longitudinal Child Health and Development Studies between 1960-1963. OC levels were measured from post-partum maternal sera. Neurodevelopmental outcomes of the children were assessed at age 5 using the Lincoln-Oseretsky Motor Development Scale (MDS) (mean=18.33±1.89), the Goodenough-Harris Draw-A-Man Test (DMT) (mean=9.76± 3.99), and by drawing three Gesell Figures (GF) (40% passed all 3, 31% passed 2, 29% passed one or less). Linear regression analyses were used to model MDS and DMT outcomes, and polychotomous logistic regression was used to model GF results. For MDS, we found sex specific associations between dichlorodiphenyldichloroethylene (DDE), a metabolite of dichlorodiphenyltrichloroethane (DDT) such that for each log unit increase there was an adjusted 1.18 (95% CI -1.91, -0.45) point reduction in score for girls. No associations were found between OCs and MDS in boys. We also found a small association between PCB203 and MDS in girls. No associations were found between any OC and DMT or GF, nor was any mediation via an effect of OCs by maternal thyroid function found. We conclude that few associations were found between exposure to OCs and developmental outcomes at age 5. Further, the data suggest that neurodevelopmental toxins may have different effects on the developing male and female brains.

0045

ORGANOPHOSPHATE PESTICIDE USE AND SELF-REPORTED INCIDENT UTERINE FIBROIDS IN THE AGRICULTURAL HEALTH STUDY. *SL Myers, JA Hoppin, DP Sandler, DD Baird (NIEHS, RTP, NC 27709)

Uterine fibroids, hormonally-mediated benign tumors, are the leading indication for hysterectomy in the US. Results from a cross-sectional analysis of women enrolled in the Agricultural Health Study suggested an association between organophosphate insecticide use and fibroids. To clarify the temporal relationship between pesticide use and fibroid diagnosis, we conducted a prospective analysis of incident fibroid diagnosis among white women who were less than 55 years old, premenopausal, with intact uteri, and without a previous fibroid diagnosis at baseline (778 incident cases and 10,972 non-cases). Logistic regression was used to estimate the association between pesticide use reported at baseline and self-reported fibroids diagnosed between baseline and 5-year follow-up, controlling for age and state (Iowa/North Carolina). While the cross-sectional analysis had shown a significant increase in fibroids among organophosphate users compared to never users (Odds Ratio [OR]: 1.33; 95% Confidence Interval [CI]: 1.19, 1.48), the association was attenuated in the prospective analysis (OR: 1.19; 95% CI: 0.99, 1.42). When examined individually, the OR for diazinon use was elevated (OR: 1.25, 95% CI: 0.98, 1.58), though slightly less than in the cross-sectional analysis (OR: 1.35; 95% CI: 1.17, 1.55). Users of coumaphos and parathion also had increased odds of fibroids, with ORs of about 1.3, but estimates were imprecise due to small numbers. Although the smaller sample size led to a loss of power, the general pattern of results was consistent with the cross-sectional analysis. Toxicological testing would help determine if and how organophosphates may be related to fibroid development.

0046

BISPHENOL A EXPOSURE DURING PREGNANCY AND MATERNAL AND NEONATAL THYROID HORMONE. *J. Chevrier, K. Harley, A. Bradman and B. Eskenazi. (University of California, Berkeley, CA 94704)

Background: Bisphenol A (BPA) is widely used in the manufacture of polycarbonate bottles, food packaging, can linings, and dental sealants. High detection frequencies in numerous environmental and human specimens indicate that BPA is a widespread contaminant. Animal and in vitro studies suggest that BPA may disrupt thyroid hormone (TH) but little human data are available, particularly in pregnant women and neonates. Normal thyroid function during these critical developmental periods is essential for normal brain development. Methods: We measured BPA in urine samples collected during the first and second half of pregnancy in women participating in the Center for the Health Assessment of Mothers and Children of Salinas (CHAMACOS). Free thyroxine (T4), total T4 and thyroid-stimulating hormone (TSH) was measured in 339 maternal serum samples obtained at ~27 weeks' gestation. Neonatal TSH levels were abstracted from medical records (n=371). Results: The median BPA urinary concentration was lower in CHAMACOS women (1.1 µg/L) than in the general U.S. population (2.8 µg/L). Preliminary analyses suggest that every 10-fold increase in maternal BPA urinary concentration in the second, but not the first, half of pregnancy was associated with a 0.5 µg/dL decrease in total T4 (95%CI=-1.0, -0.1) after controlling for confounders. Associations were stronger when BPA was measured closer in time to total T4. BPA urinary concentrations were not associated with maternal free T4 or TSH, or with neonatal TSH. Conclusion: Maternal exposure to BPA was inversely associated with total T4 during pregnancy. Findings may have implication for fetal brain development.

0047

IN UTERO BPA EXPOSURE AND CHILD NEURODEVELOPMENT AND BEHAVIOR AT AGE 5 YEARS. *K. Harley, R. Aguilar, M. Vedar, J. Chevrier, A. Bradman and B. Eskenazi (University of California, Berkeley, CA, 94704 and Centers for Disease Control and Prevention, Atlanta, GA, 30341)

Background: Bisphenol A (BPA) is an endocrine-disrupting compound used in the manufacture of polycarbonate bottles, food cans and packaging, dental sealants, and cash register receipts. Human exposure to BPA is nearly ubiquitous, with 93% of Americans having detectable levels of BPA in urine. Animal studies have linked BPA to sexually dimorphic alterations in brain structure and behavior but only one other study has examined prenatal BPA exposure and neurobehavior in children. Methods: We measured BPA in urine collected at two time points during pregnancy from 325 women participating in the Center for the Health Assessment of Mothers and Children of Salinas (CHAMACOS) longitudinal cohort study. Children's neurodevelopment was assessed at 5 years of age using the Weschler Intelligence Scales for Children (WISC-IV) and the Peabody Picture Vocabulary Test (PPVT). Attention deficit and hyperactivity scores were assessed using the Connor's Kiddie Continuous Performance Test (K-CPT). Results: Maternal BPA concentrations (median = 1.1 ug/L, IQR = 0.5 – 1.7) were lower than the U.S. national average (median = 2.8 ug/L, IQR = 2.5 – 3.1). In preliminary analyses, higher BPA concentration during pregnancy was associated with poorer verbal ability scores on the PPVT. Statistically significant interaction was seen by child sex, with the association being seen in boys (beta (95% CI) = -9.6 (-17.8, -1.4) for each 10-fold increase in BPA concentrations) but not girls (beta (95% CI) = -0.4 (-6.8, 6.0)). Higher prenatal BPA exposure was also associated with increased odds of attention problems in boys, but not girls.

0048-S

WOMEN'S EXPOSURE TO LOW MOLECULAR WEIGHT PHTHALATES IN RELATION TO USE OF PERSONAL CARE PRODUCTS. *L. Parlett and S. Swan (University of Rochester, Rochester, 14642)

Endocrine disrupters di-ethyl phthalate (DEP) and di-butyl phthalate (DBP), often characterized as low molecular weight (LMW), are used in personal care products (PCPs) to fix fragrance and hold color. Recent studies have found significant correlations between PCP use and urinary phthalate levels in men and minority pregnant women. Increasing concern about phthalate health effects demands better exposure characterization. We investigated how women's reported use of personal care products within the past 24 hours affected urinary levels of phthalate metabolites. Between 2002 and 2005, 337 women from California, Iowa, Minnesota, and Missouri provided single spot urine samples and answered questions regarding PCP use of thirteen hair, makeup, and body products. In multivariable analyses, age, education, and the square root of creatinine were covariates. Monoethyl phthalate (MEP), monobutyl phthalate (MBP), and mono isobutyl phthalate (MiBP) comprised the sum LMW score. In most women (87%) ≥ 8 metabolites were detected. Reported PCP use ranged from 91% using deodorant to 7% using nail polish/nail polish remover. After adjusting for age and education, women reporting use of perfume had 2.57 times higher (95% CI: 2.01-3.29) levels of sum LMW. Other PCPs that were significantly associated with sum LMW were: hair spray, "other" hair products, lipstick, nail polish, bar soap, lotion, and deodorant. Sum LMW increased with the number of reported PCPs used. In conclusion, phthalate exposure and PCP use is widespread in women of reproductive age. Use of fragrance-laden products such as perfume and lotion is predictive of LMW phthalate levels. This information provides additional understanding of phthalate exposure sources.

0049

AGE OF ONSET IN GENOME-WIDE ASSOCIATION STUDIES. *AJ Agopian, LM Eastcott, LE Mitchell (The University of Texas Health Science Center, Houston, TX)

Genome-wide association studies (GWAS) have identified many susceptibility loci for complex traits. However, GWAS findings have explained the genetic basis of some traits more than others, and overall, have not identified the majority of the genetic contribution to common diseases. We evaluated whether the success of GWAS is related to age of onset, specifically, if the magnitude of the associations detected in GWAS is generally greater for traits with early onset than for traits with onset later in life. Data were obtained from the National Human Genome Research Institute Catalog of Published Genome-Wide Association Studies. Traits in the Catalog were categorized as having an average age of onset in childhood (<18 years), early adulthood (18-54 years), or late adulthood (≥55 years). The relationship between age of onset category and magnitude of association from GWAS (i.e., between traits and single nucleotide polymorphisms (SNPs) with p<5x10-5) was assessed using logistic regression. Associations characterized by an odds ratio (OR) ≥1.5 were significantly more common in GWAS of traits with onset in childhood compared to traits with onset in early (OR: 4.3, 95% confidence interval (CI): 2.6, 7.3) or late (OR: 3.9, 95% CI: 2.2, 6.9) adulthood. Adjustment for minor allele frequency of the associated SNP, number of cases, number of GWAS publications on each trait, and trait prevalence did not have an appreciable effect on these results. Further, excluding the first GWAS publication for each condition or studies with <300 or >2,000 cases in the discovery sample also yielded similar results. Our findings suggest that, on average, genes involved in pediatric conditions have stronger effects than genes for adult-onset conditions; confirmation may guide GWAS design.

0051

FACTORS RELATED TO TYMPANOSTOMY TUBE TREATMENT AMONG CHILDREN WITH CHRONIC AND/OR RECURRENT OTITIS MEDIA. K. Daly, B. Lindgren, M. Sale, K. Walt, F. Rimell, J. Sidman, T. Lander, and R. Tibesar (University of Minnesota, Minneapolis, MN)

Otitis media (OM), a common childhood disease, has been shown to cluster in families. Potential risk factors were studied to better understand their role in the development of OM. Cases (children and young adults treated with tympanostomy tubes for chronic/recurrent OM) and controls (children and young adults without chronic/recurrent OM and tube treatment) were participants in a genetic study of OM from 2004 to 2010 at the University of Minnesota. Data for phenotyping were collected from parent-reported history, ear examination, tympanometry and medical record abstract. Associations between demographic, genetic and environmental risk factors and case status were evaluated with univariate and multivariate (logistic regression) analyses. Sample size for univariate analyses was 735 individuals; 672 were available for multivariate analyses. Factors significantly related to tube treatment for chronic/recurrent OM in univariate analyses ($p < 0.05$) were entered into multivariate models. Female gender, odds ratio (OR) 0.54, 95% confidence interval (CI) 0.39, 0.75, $p<0.001$; bottle/combination feeding, OR 1.42, 95% CI 1.00, 2.00, $p < 0.047$; daycare, OR 1.64, 95% CI 1.13, 2.37, $p=0.009$; white race OR 1.64, 95% CI 1.01, 2.64, $p<0.044$; and female gender 0.54, 95% CI 0.39, 0.75, $p<0.001$. Of six SNPs with $p<0.10$ in univariate analyses, only the rs12271647_A allele was significantly related to tube treatment in multivariate analyses: OR 1.43, 95% CI 1.03, 1.98, $p < 0.034$. This study demonstrates a significant relationship between several risk factors, a SNP allele and tympanostomy tube treatment, and provides evidence that genetics plays a role in chronic/recurrent otitis media.

0052-S

GENETIC VARIATION IN VITAMIN D RESPONSE GENES AND PULMONARY FUNCTION. *J Gilmour, T Harris, DK Houston, SB Kritchevsky, K Lohman, Y Liu, B Reardon, PA Cassano (Cornell University, Ithaca, NY, 14853)

Higher serum vitamin D is associated with better pulmonary function in cross-sectional studies. In vitro studies of epithelial tissue identified over 900 vitamin D-responsive genes, which may suggest a mechanism through which vitamin D affects lung health. We previously identified a subset of vitamin D-responsive genes that were differentially expressed in lung tissue from persons with low vs. high serum vitamin D. Variation in these genes is hypothesized to lead to changes in pulmonary function, and this question was studied in 1,502 men and women of European ancestry in the Health, Aging, and Body Composition study. 2,129 SNPs in 24 autosomal genes were analyzed for associations with lung function (forced expiratory volume in the first second, FEV1). The 16 top hits (nominal $p<0.02$, range .0186-.0029) were in 3 genes: KCNS3, FGD3, and ARHGAP10. 6 linked SNPs in the 3' region of KCNS3 had the strongest associations with FEV1; KCNS3 encodes a potassium voltage-gated channel protein, and is associated with airway hyperresponsiveness. In KCNS3, rs4832574 was associated with a 50 mL increase in FEV1 per allele copy (C allele, MAF 0.47). FGD3 and ARHGAP10 are GTPase-activating proteins with a role in signaling and cytoskeleton function. Among 7 tightly linked SNPs in FGD3, rs1933670 had the strongest effect (76 mL increase in FEV1 per allele copy [A allele, MAF 0.11]). Genetic variants in vitamin D-responsive genes are associated with pulmonary function, supporting a mechanism for the serum vitamin D - pulmonary function association. This project was supported by NIA contracts N01-AG-6-2101, N01-AG-6-2103, N01-AG-6-2106, R01-AG029364, and R01-AG032098.

0054-S

ASSOCIATIONS OF FTO AND MC4R VARIANTS WITH OBESITY TRAITS IN INDIANS AND THE ROLE OF RURAL/URBAN ENVIRONMENT AS A POSSIBLE EFFECT MODIFIER. *A.Taylor (University of Bristol, BS2 8DG, UK,), M.N.Sandeep, C.S.Janipalli,. C.Giambartolomei, D.M.Evans, M.V. Kranthi Kumar, D.G.Vinay, P.Smitha, V.Gupta, M.Aruna, S.Kinra, R.Sullivan, L. Bowen, N.J.Timpson, G.Davey-Smith, F.Dudbridge, D.Prabhakaran, Y.Ben-Shlomo, K.S.Reddy, S.Ebrahim, G.R.Chandak (School of Social and Community Medicine, Centre for Cellular and Molecular Biology, Hyderabad,500 007, India, Department of Epidemiology and Population Health, London School of Hygiene and Tropical Medicine, London, WC1E 7HT, UK, South Asia Network for Chronic Disease, Public Health Foundation of India, New Delhi,110 016, India, Centre for Chronic Disease Control, New Delhi,110 016, India)

Few studies have investigated associations between genetic variation and obesity traits in Indian populations or the role of environmental factors as modifiers of these relationships. In the context of rapid urbanisation, resulting in lifestyle changes, understanding the aetiology of obesity is important. We investigated associations of FTO and MC4R variants with obesity traits in 3390 sibling pairs from four Indian cities, most of whom were discordant for current dwelling (rural/urban). The FTO variant rs9939609 predicted increased weight (0.09 Z-scores, 95% CI:0.03,0.15) and BMI (body mass index) (0.08 Z-scores, 95%CI:0.02,0.14). The MC4R variant rs17782313 was weakly associated with weight (0.06 Z-scores, $p=0.05$) and hip circumference (0.06 Z-scores, $p=0.03$). There was some indication that the association between FTO and weight was stronger in urban than rural dwellers (p for interaction=0.03), but no evidence for effect modification by diet or physical activity. Further studies are needed to investigate ways in which urban environment may modify genetic risk of obesity.

0055

PLA2G4A MUTANTS MODIFIED PROTECTIVE EFFECT OF TEA CONSUMPTION AGAINST COLORECTAL CANCER. *Yun-Xian Yu, MD, PhD, Ming-Wu Zhang, MD, Yi-Feng Pan, MD, Ming-Juan Jin, MD, Xia Jiang, MD, Shan-Chun Zhang, MD, PhD, Yin-Yin Wu, MD, Qin Ni, MD, Kun Chen, MD (Department of Epidemiology & Health Statistics, School of Public Health, Zhejiang University, Hangzhou, Zhejiang 310058, China)

The main aim was to evaluate PLA2G4A mutants modified protective effect of tea consumption against Colorectal cancer (CRC), colon cancer and rectal cancer. All participants were recruited from Jan 2006 to April 2008. The information about tea consumption was collected by structured questionnaire. CRC patients were diagnosed based on histology. Four single nucleotide polymorphisms (SNPs) in PLA2G4A gene were selected based on HapMap and NCBI datasets and genotyped by restricted fragment length polymorphism. The joint effects between tea consumption and SNPs on CRC, colon cancer and rectal cancer were also assessed, using multiple logistic regression models. 300 patients with CRC and 296 controls were used in final analyses. The significant associations between four SNPs (rs6666834, rs10911933, rs4650708 and rs7526089) and CRC were not observed. But their CTAC haplotype was significant associated with the increased risk of CRC (Odds ratio(OR) = 3.06; 95% confidence interval(CI) = 1.52-6.19), compared with TCAC haplotype. Drinking tea was correlated with a decreased risk of CRC after adjustment for covariates (OR = 0.61; 95%CI = 0.39-0.97). Meanwhile, compared with no-tea drinker with TT/CT genotype of rs6666834, tea-drinker with TT/CT or CC had significant lower risk of CRC (OR = 0.6 and 95%CI=0.36-1.00 for TT/CT genotype; 0.38 and 0.19-0.74 for CC genotype). The joint effects between remaining three SNPs and drinking tea on CRC were observed as well. Tea consumption and haplotype of selected four SNPs in PLA2G4A gene was respectively associated with the risk of CRC. PLA2G4A mutants modified the protective effect of tea consumption against CRC in Chinese population.

0056

THE GENE-GENE INTERACTION OF H-RAS AND L-MYC ONCOGENES WITH COLORECTAL CANCER SUSCEPTIBILITY. Qin Ni, Yong-jing Zhang, Shan-chun Zhang, *Kun Chen (Department of Epidemiology & Health Statistics, School of Public Health, Zhejiang University, Hangzhou, Zhejiang 310058, China)

There is evidence showing that the ras and myc oncogenes cooperate in tumor induction in animal models. L-myc and H-ras oncogenes are representative genetic trait responsible for individuals' susceptibility to several cancers. However, there have been no reports concerning their gene-gene interaction related to colorectal cancer. We conducted a case-control study including 373 cases and 838 controls to evaluate the associations of L-myc rs3134613, H-ras rs12628 polymorphisms with colorectal cancer risk. The genotypes were determined by polymerase chain reaction-based restriction fragment length polymorphism. We used stratified analysis and logistic model to detect the gene-gene interaction. And the interaction was validated in multifactor dimensionality reduction (MDR) software. The individual single nucleotide polymorphism (SNP) model showed that the polymorphisms of H-ras and L-myc gene were not related to colorectal cancer risk (P>0.05). Stratified analysis revealed that among the L-myc LS+SS genotype carriers, those with H-ras TC+CC genotype showed significantly increased risk of rectal cancer than those with TT genotype (odds ratio (OR)=1.81, 95%confidence interval (CI)= 1.20-2.72). The Breslow-Day test showed that there was significant difference between different stratums (P=0.023). The OR of the interaction effect was 2.74(95% CI =1.14-6.59, P=0.024). This result was confirmed in the MDR model, with 54.83% testing balanced accuracy and 10/10 cross-validation consistency, and the model was still significant after the 1000 times permutation test (P=0.001). Our findings suggest that there is a synergy between H-ras and L-myc polymorphisms related to rectal cancer, and this finding needs to be validated.

0057-S

CIGARETTE SMOKING, GENETIC POLYMORPHISMS IN CARCINOGEN METABOLIZING ENZYMES, AND PANCREATIC CANCER RISK. *J.H. Jang, S.P. Cleary, M.Cotterchio, A.Borgida, S.Gallinger (Prosserman Centre for Health Research, Samuel Lunenfeld Research Institute, Toronto, Ontario, M5G 1X5)

To determine if pancreatic cancer risk associated with cigarette smoking is modified by genetic predisposition in the ability to metabolize carcinogens, we used a population-based case-control design with 455 pathology-confirmed pancreatic cancer cases and 893 controls. Smoking data (smoking status, pack-years of smoking, smoking duration) was collected with self-administered questionnaires and polymorphisms of 32 carcinogen metabolism genes were determined by mass-spectrometry. Age-, sex-adjusted odds ratio (ASOR) and multivariate-adjusted odds ratio (MVOR) estimates were obtained using multivariate logistic regression. Interactions between each polymorphism and smoking were investigated with stratified analyses and the likelihood ratio static. Current smoker status (MVOR=2.29, 95%CI:1.62,3.22), 10-27 pack-years (MVOR=1.57, 95% CI:1.13,2.18),>27 pack-years (MVOR=1.77, 95%CI:1.27,2.46), and longer durations of smoking (19-32 years: MVOR=1.46, 95%CI:1.05,2.05; >32 years: MVOR=1.78, 95%CI:1.30,2.45) were associated with increased pancreatic cancer risk. *CYP1B1*-4390-GG (ASOR=0.36, 95% CI:0.15,0.86) and *UGT1A7*-622-CT (ASOR=0.77, 95%CI:0.60,0.99) genotypes were associated with reduced risk. *NAT1*-640-GT and GG genotypes were associated with increased risk (ASOR=1.75, CI:1.00,3.05) as were *GSTM1* (rs737497)-GG (ASOR=1.41, 95% CI:1.02,1.95) and *GSTT1*-gene-deletion (ASOR=4.41, 95%CI:2.67,7.29). Interactions were observed between pack-years and *EPHX1*-415 (*p*=0.04), and smoking status and *NAT2*-857 (*p*=0.03). Our study supports the growing body of evidence that gene-environment interactions play key roles in pancreatic cancer development.

0058-S

GENES POLYMORPHISM AND ACCELERATED GROWTH INTERACTION WITH SYSTOLIC BLOOD PRESSURE IN KOREAN CHILDREN. Hye Ah Lee[a]*, Jungwon Min[a], Eun Ae Park[b], Sujin Cho[b], Young Ju Kim[c], Hwayoung Lee[d], Eun Hee Ha[a], Hyesook Park[a] ([a]Department of preventive medicine, [b]Department of pediatrics, [c]Obstetrics and Gynecology, [d]Anatomy, School of Medicine Ewha Womans University, Seoul, Korea)

High-blood pressure(BP) in childhood has a relationship with BP in adulthood. We aim to show the interaction effect of PON1 Q192R, ACE I/D polymorphisms and accelerated growth on high systolic blood pressure(SBP) in childhood. We investigated the children born at Ewha Womans University Hospital from 2001-2004. We followed up study subjects at their 3 years old. Accelerated growth is defined weight change Z score from birth to 3 years of age, when those who had above 1.52 SD score of weigh change assigned in accelerated growth. The effect of the gene polymorphism and accelerated growth has been estimated using logistic regression and Generalized Multifactor Dimensionality Reduction(n=310). The proportion of high SBP was 10.7%. Those who experienced accelerated growth had 2.5(95%CI 1.2-5.3) times more risk of high SBP than others. Moreover, those who were had QR and RR genotype of PON and ID and II genotype of ACE were higher risk to high SBP although there was no statistic significant. Interaction between PON, ACE genotypes and accelerated growth was considered to be the final best model to predict risk high SBP, resulting the highest testing accuracy of 63.0%(p=0.01 by sign test) and crossvalidation consistency of 10/10, even after adjusting for sex and height. This study shows that two major genotypes interacted with growth trajectory to high SBP. Therefore, we need to monitor growth pattern with individual genetic susceptibleness through childhood for preventing high SBP. This work was supported by National Research Foundation of Korea Grant funded by the Korean Government (2009-0064004).

0059

THE PHENX TOOLKIT: FLEXIBLE NAVIGATION USING MULTI-DOMAIN COLLECTIONS. Hammond J*, Whitehead N, Qin Y, Levy J, Huggins W, Hendershot T, Junkins H, Ramos E, Pan H, Strader L, Hamilton C. (RTI International, RTP, NC)

The PhenX (consensus measures for **Phen**otypes and e**X**posures) Toolkit offers high-quality, well-established, standard measures of phenotypes and exposures from 21 research domains for use in Genome-wide Association Studies (GWAS) and other large-scale genomic research efforts. By using the same measures across studies, data sets from multiple studies that include the same risk factor variables and disease phenotypes can be combined to increase the statistical power, thus increasing the ability to detect both more subtle and potentially complex gene associations. The Toolkit contains 291 measures with 11,388 variables. The most recent domains added to the Toolkit include Social Environments, Psychosocial, Psychiatric, Neurology, Gastrointestinal and Speech and Hearing. While measures were initially grouped by research domains, researchers are likely to use measures from multiple domains to meet their study needs. To facilitate browsing the Toolkit, Collections provide a categorical structure of related risk factors and other sets of measures. A Collection is defined as a group of measures with shared topics. Within the category of risk factors there are currently 11 Collections. They include topics such as Behaviors and Attitudes, Chemical and Physical Exposures and Medical History. Chemical and Physical Exposures includes 30 measures drawn from 10 research domains. Behaviors and Attitudes has 43 measures and Medical History includes 70. While keywords and other search techniques are utilized within the Toolkit, the development of Collections provides an alternative to browsing the Toolkit, allowing users to select groups of related measures that cut across research domains.

0060

COMMON GENETIC VARIANTS IN METABOLISM AND DETOXIFICATION PATHWAY GENES AND RISK OF PAPILLARY THYROID CANCER. Aschebrook-Kilfoy B, Neta G, Brenner AV, Pfeiffer R, Hutchinson A, Sturgis EM, Xu L, Wheeler W, Ron E, Tucker MA, Chanock SJ, *Sigurdson AJ. (Radiation Epidemiology Branch, Division of Cancer Epidemiology and Genetics, NCI, NIH, DHHS)

Several enzymes are involved in the metabolism or detoxification of exogenous and endogenous agents and hormones, but few studies have addressed these processes in thyroid cancer risk. Genetic variation in these enzymes could affect the ability to mitigate effects of various environmental exposures or impact the rate of thyroid hormone conjugation. We evaluated the association between papillary thyroid cancer (PTC) and 1,750 single nucleotide polymorphisms (SNPs) in 128 candidate gene regions involved in exogenous xenobiotic and endogenous hormone metabolism, including phase I and II, oxidative stress, and metal binding pathways. In a case-control study of 344 PTC cases and 452 controls frequency matched on age and gender, we used unconditional logistic regression models to calculate odds ratios and p-values for log-additive trends with genotype. Gene region- and pathway-level associations were evaluated using combinations of SNP trend p-values with the adaptive rank truncated product method. We found evidence of an altered risk for PTC for 40 SNPs with p-values $\leq$0.05. Seven gene regions had p-values of <0.05 (SOD1, CYP8B1, UGT2B7, MTF2, GSTT1, DHRS9, and FMO3). No significant associations at the pathway level were found. No SNPs or gene regions remained significant after correction for the false discovery rate. Our results suggest a role of some genetic variants in detoxification and hormone metabolizing enzymes in the etiology of PTC. Future studies should be conducted with greater power and by environmental exposure status to evaluate this hypothesis further.

0061-S

RISK CLASSIFICATION WITH AN ADAPTIVE NAIVE BAYES KERNEL MACHINE MODEL. *J Minnier[1], J Liu[2], and T Cai[1] ([1]Harvard School of Public Health, Boston, MA 02115, [2]Harvard University, Cambridge, MA 02138)

As genetic studies of human diseases progress, it is becoming increasingly evident that genetics often play a major and complex role in many types of diseases. Therefore, the complexity of the genetic architecture of human health and disease makes it difficult to identify genomic markers associated with disease risk or to construct accurate genetic risk prediction models. Accurate risk assessment is further complicated by the availability of a large number of markers that may be predominately unrelated to the outcome or may explain a relatively small amount of genetic variation. Standard risk prediction models often rely on additive or marginal relationships of markers and the phenotype of interest. These models perform poorly when associations involve interactions and non-linear effects. We propose a multi-stage method relating markers to disease risk by first forming gene-sets based on biological criteria. With a naive bayes kernel machine model, we estimate gene-set specific risk models that relate each gene-set to the outcome. Second, we aggregate across gene-sets by adaptively estimating weights for each set. The KM framework models the potentially non-linear effects of predictors without specifying a particular functional form. Estimation and predictive accuracy are improved with kernel PCA in the first stage and adaptive regularization in the second stage to remove non-informative regions from the final model. Prediction accuracy is assessed with bias-corrected ROC curves and AUC statistics. Numerical studies suggest that the model performs well in the presence of non-informative regions and both linear and non-linear effects.

0062-S

LOCI ASSOCIATED WITH ATRIOVENTRICULAR CONDUCTION IN A GENOME-WIDE ASSOCIATION STUDY OF SEVEN AFRICAN AMERICAN POPULATIONS GENERALIZE TO PREVIOUSLY IDENTIFIED LOCI IN EUROPEAN AND ASIAN POPULATIONS. *Anne M. Butler (University of North Carolina, Chapel Hill, NC 27514) and Jared W. Magnani (Boston University, Boston, MA 02118), (on behalf of the COGENT-CARe African American Electrocardiogram (ECG) Consortia)

PR interval duration (PR) as measured by the resting, standard 12-lead ECG reflects length of atrial / atrioventricular nodal depolarization and is a potent risk factor for atrial fibrillation, heart failure, stroke, and mortality. Substantial evidence exists for a genetic contribution to PR, including that from genome-wide association studies of its common genetic determinants in European and Asian populations. However, such studies of African Americans are uncommon. We present results from the largest genome-wide association study to date of PR in 12,395 adults of African descent from seven cohorts. We tested for association between PR (ms) and approximately 2.5 million genotyped and imputed single nucleotide polymorphisms. We performed imputation using the HapMap YRI and CEU panels. Associations were adjusted for admixture and clinical PR correlates. We meta-analyzed study-specific results using the inverse variance method. There was little evidence for inflation of genome-wide test statistics (lambda range: 1.0 – 1.1). Five loci achieved genome-wide significance ($p < 2.5x10-8$). They were located in or near MEIS1 (chromosome 2), SCN5A (chromosome 3), ARHGAP24 (chromosome 4), CAV1 (chromosome 7), and TBX5 (chromosome 12). There was modest evidence for heterogeneity of effects at each locus (Cochran's Q $p > 0.1$). These findings illustrate the generalizability across European, Asian and African-American populations of genome-wide associations between PR and its common genetic determinants.

0063

GENETIC ANCESTRY, SKIN REFLECTANCE AND PIGMENTATION GENOTYPES IN ASSOCIATION WITH SERUM VITAMIN D METABOLITE BALANCE. *RT. Wilson, A. Roff, P. Dai, T. Fortugno, J. Douds, G. Chen, G. Grove, S. Nikiforova, J. Barnholtz-Sloan, T. Frudakis, V. Chinchilli, T. Hartman, LM. Demers, MD. Shriver, KC. Cheng (Penn State, Hershey, PA 17033)

Lower serum vitamin D levels among African Americans are attributed to skin pigmentation. However, genetic influences controlling for skin melanin content have not been investigated. Purpose: Identify differences in non-summer serum vitamin D levels by pigmentation gene variants, ancestry, and skin melanin index. Healthy participants, reporting at least 1/2 African American or 1/2 Caucasian American heritage, were matched (age +/- 2 yrs, sex, and race/ethnicity) and values for genetic ancestry (via autosomal ancestry informative markers), skin melanin index (via reflectance spectroscopy), and three serum vitamin D metabolites (25(OH)D3, 25(OH)D2 and 24,25(OH)2D3 via LC-MS/MS) were determined. Results: Compared with African Americans, both 25 (OH)D3 (67.7 v. 36.1 nmol/L, $p<0.001$) and 24,25(OH)2D3 (9.8 v. 4.4 nmol/L, $p<0.001$) were significantly higher among Caucasian Americans. The percent 24,25(OH)2D3 differed between African American and Caucasian American women only (9.5 v. 13.1, respectively, $p<0.001$). Skin pigmentation genotypes remained significantly associated with vitamin D metabolites, controlling for the independent effects of tanning bed use, vitamin D/fish oil supplement use, race/ethnicity, genetic ancestry, and/or skin melanin index. These associations were not confounded by the use of glucocorticoids, or statins. Conclusion: The significantly lower percent 24,25(OH)2D3 among African American women suggests a relatively lower catabolic rate. Questions regarding the public health definition of sufficient vitamin D levels remain.

0064

COMMON GENETIC VARIANTS IN IMMUNE GENES AND RISK OF PAPILLARY THYROID CANCER. *AV Brenner, G Neta, EM Sturgis, RM Pfeiffer, A Hutchinson, L Xu, S Balasubramaniam, W Wheeler, E Ron, MA Tucker, SJ Chanock, AJ Sigurdson (NCI, Bethesda, MD 20892)

There is accumulating evidence that alterations in immune function might be implicated in the etiology of papillary thyroid cancer (PTC). To identify genetic markers in immune-related pathways, we evaluated 3,985 tag single nucleotide polymorphisms (SNPs) in 230 candidate gene regions that included genes from adhesion-extravasation-migration, arachidonic acid metabolism/eicosanoid signaling, complement and coagulation cascade, cytokine signaling, innate pathogen detection and antimicrobials, and leukocyte signaling and TNF/NF-kB signaling pathways. In a case-control study of 344 PTC cases and 452 age and gender frequency-matched controls, we used logistic regression models to estimate odds ratios and calculate P values of linear trend (Ptrend) for the association between tag SNPs and risk of PTC. To correct for multiple comparisons, we applied the false discovery rate method (FDR). Gene region- and pathway-level associations (Pgene and Ppathway) were assessed by combining individual SNP Ptrend values using the adaptive rank truncated product method. Two SNPs (rs6115, rs6112) in the SERPINA5 gene in the complement and coagulation cascade pathway were significantly associated with risk of PTC (Ptrend FDR/ Ptrend = 0.02/10-6 and Ptrend FDR/Ptrend = 0.04/10-5, respectively). At the gene region level, SERPINA5 was significantly associated with risk of PTC (Pgene = 0.0003). In addition, three other genes (HEMGN, TICAM1, and FCGR2A) each within a different pathway were significantly associated with risk of PTC at $0.001 < Pgene < 0.01$. Overall, the complement and coagulation cascade pathway was the most significant pathway (Ppathway = 0.02) associated with PTC risk largely due to the strong effect of SERPINA5. Our results require replication but suggest that the SERPINA5 gene might be a new important susceptibility locus for PTC.

0065

SINGLE NUCLEOTIDE POLYMORPHISMS(SNPS) IN DNA REPAIR GENES MAY BE ASSOCIATED WITH DECREASED BOWEL HEALTH-RELATED QUALITY OF LIFE FOLLOWING EXTERNAL BEAM RADIATION THERAPY TREATMENT FOR PROSTATE CANCER. M. Conlon*, M.Bewick, J.Bowen, R.Bissett. (Regional Cancer Program of the Hôpital régional de Sudbury Regional Hospital, Sudbury, Ontario, Canada P3E 5J1)

To investigate the association between Single Nucleotide Polymorphisms (SNPs) in candidate DNA repair genes and the development of adverse health-related quality of life (HRQOL) in men who received External Beam Radiation Therapy (EBRT) for intermediate to high-risk prostate cancer, we defined a consecutive cohort of men (n=35) who attended a regional cancer program. All men completed the Expanded Prostate Index Composite (EPIC) questionnaire prior to and at the end of treatment, and provided a saliva sample (DNA Genotek Inc, Ottawa, Can.) for genetic analyses. Logistic regression defined Odds Ratios (OR)s and 95% Confidence Intervals (95% CI)s. Overall, EPIC bowel summary scores were significantly decreased at end of treatment (mean difference -16.4, standard deviation (sd) 17.6; $p <0.001$ Wilcoxan), with evidence of inter-individual variability. Following classification into cases (largest decreases in bowel HRQOL, n=21) or controls (n=14) none of the individual variant genotypes of XRCC3 Thr241Met rs861539, Lig4 Asp568Asp rs1805386, XRCC1Arg399Gln rs25487, or ERCC1 Gln504Lys rs3212986 appeared significantly associated. When combined into an increasing number of variants score, results were significant with an OR of 10.4 (95% CI 1.62-66.9) for men with 2 variants compared to a referent group with 0 or 1 variants; and an OR of 24 (95% CI 1.74-331) for 3 or 4 variants compared to the referent, and supported by a significant test of trend, p=0.009. Interpretation was not substantively different following assessment of other covariates for potential adjustment including radiation treatment variables (% rectal volume above 6000cGY), the presence of hypertension or diabetes, or length of time between final questionnaire completion and end of treatment. This study supports an association of increasing number of SNPs in DNA repair genes with decreased bowel HRQOL following EBRT for prostate cancer.

0066-S

THE ENDOTHELIAL PROTEIN C RECEPTOR (EPCR) 4600A/G VARIANT AND RISK OF COMMON THROMBOTIC DISORDERS: A HuGE REVIEW AND META-ANALYSIS OF EVIDENCE FROM OBSERVATIONAL STUDIES. *J. Dennis, A. Adediran, C. Johnson, P. Morange, D. Tregouet, F. Gagnon (University of Toronto, Toronto, Canada, M5T 3M7)

The endothelial protein C receptor (EPCR), found primarily on the endothelium of large blood vessels, limits thrombus formation by enhancing activation of the protein C anticoagulant pathway, and therefore may play a role in the etiology of thrombotic disorders. The *EPCR* gene variant 4600A/G (rs86718) resulting in a Serine to Glycine substitution at codon 219 has been associated with increased plasma levels of soluble EPCR and reduced activation of the protein C anticoagulant pathway. However, its association with thrombosis risk remains unclear. We undertook a systematic review and meta-analysis to evaluate the evidence for an association between the *EPCR* 4600A/G variant and two common thrombotic outcomes: venous thromboembolism (VTE) and myocardial infarction (MI), which are hypothesized to share some etiologic pathways. MEDLINE, EMBASE, and HuGE Navigator were searched through November 2010 to identify relevant epidemiologic studies. Thirteen candidate gene studies (5 MI and 8 VTE) were analyzed (3645 cases, 12139 controls) and data were summarized using random-effects meta-analysis. None of the investigated genotype contrasts reached statistical significance at $p<0.05$, with the exception of a weak association with VTE for the AG + GG versus AA contrast (odds ratio = 1.23, 95% confidence interval 1.00, 1.52, based on 2069 cases and 7974 controls). The study populations were heterogeneous, and the analysis may have been underpowered to detect an association. Overall, the evidence for an association between the *EPCR* 4600A/G variant and common thrombotic disorders is weak.

0067

FAMILIAL RISK FOR NOISE-INDUCED HEARING LOSS (NIHL) AND PRESBYCUSIS: THE NORD-TRØNDELAG HEARING LOSS STUDY, 1996-1998. *H J Hoffman, G W Reed, K Tambs, E Kvestad, N Krog, B Engdahl (National Institute on Deafness and Other Communication Disorders, Bethesda, MD 20892)

To investigate risk factors for hearing loss, 50,722 adults had hearing tests and answered questions for a Health Survey in Nord-Trøndelag County, Norway. Linkage of family relationships was performed by Statistics Norway. Pure-tone, air-conduction testing was conducted in sound-treated booths (thresholds assessed at 0.5–8 kilohertz (kHz) in each ear). Presbycusis or age-related hearing loss (ARHL) is defined by a bilateral, pure-tone average of thresholds at 0.5, 1, & 2 kHz >25 decibels (dB) hearing level (HL). NIHL is defined by bilateral high frequency "notches". A notch is present if a high frequency threshold at 3, 4, or 6 kHz exceeds by 15 dB HL the average of thresholds at 0.5 and 1 kHz, and if the 8 kHz threshold is at least 5 dB HL better (lower) than the maximum threshold at 3, 4, or 6 kHz. The prevalence of NIHL was 16.7%; it increased from 7.5% for young adults (age 20–24) to 22.4% at age 55–64, and then declined to 11.8% for older adults (age 85–101). Males had more noise exposure and NIHL. A mixed-model logistic regression with random effects for family was used to analyze 4,656 male siblings (>1 per family, range 2–7). After adjusting for age and hours/week of work-related noise exposure, the within-family correlation was 0.14 ($p<0.001$). Alternative logistic regression models of familial risk used "proportion of affected siblings" as a covariate. Restricting age <55, the odds ratio (OR) = 1.61 (95% confidence interval: 1.23–2.10) for familial risk was comparable to that for tinnitus, OR=1.45 (1.15–1.83). If age ≥55, the familial risk of ARHL had an OR=3.72 (1.44–9.60) and for tinnitus the OR=3.53 (1.89, 6.61). These findings indicate familial risk contributes to NIHL susceptibility, as well as to presbycusis.

0068

GENOMIC DNA METHYLATION IN A MULTI-ETHNIC URBAN COHORT. *J Flom, K Gonzalez, Y Liao, P Tehranifar, D Reynolds, L Fulton, R Santella, MB Terry (Columbia University New York, NY 10032)

Genomic DNA demethylation is associated with diseases including cancer, and has been associated with exposures including smoke, age at menarche, and physical activity. DNA methylation changes may be a pathway through which the environment impacts disease. We investigated differences in genomic DNA methylation by race and epidemiologic factors in a multi-ethnic population of 116 cancer-free women age 40-60 in Brooklyn, New York. Participants completed an interview and provided blood samples. Satellite 2 (Sat2) methylation in DNA from monocytes (MN) and granulocytes (Gran) was measured using MethyLight. Lower methylation levels indicate greater DNA demethylation. Sat2 methylation levels in MN and Gran were correlated ($r=0.59$, $p<.001$). We used multivariable linear regression to adjust for all measures significantly associated with Sat2 methylation. In Gran, Oral Contraceptive (OC) use and smoking status were univariably associated with Sat2 methylation, but in multivariable models, only smoking status remained significant (β=-14.1, 95% Confidence Interval(CI):-24.2, -3.9; β=-5.2, 95% CI:-18.6, 8.2, for former and current smokers versus never smokers, respectively). In MN, those with 110 minutes or more of exercise per week had lower levels of Sat2 methylation compared to those who did not exercise (β=-23.3, 95% CI:-39.5, -7.1). OC users had significantly lower Sat2 methylation (β=-14.4, 95% CI:-25.0, -3.8). There were no differences in Sat2 methylation by race, age, BMI, income, education, alcohol and other reproductive factors. Overall, OC use, smoking and exercise were associated with genomic DNA demethylation. Future studies should investigate how changes in exposures impact changes in genomic DNA methylation over time.

0069

A COMPREHENSIVE ANALYSIS OF COMMON GENETIC VARIATION IN ADIPONECTIN WITH COLORECTAL CANCER AND BIOMARKERS OF INSULIN RESISTANCE: THE MULTIETHNIC COHORT. *S.M. Conroy, I. Cheng, C.P. Caberto, M. Tiirikainen, L. Kolonel, B.E. Henderson, L. Le Marchand (University of Hawaii Cancer Center, Honolulu, HI, 96813; Keck School of Medicine, University of Southern California, Los Angeles, CA, 90033)

Accumulating epidemiologic evidence supports an association between circulating levels of adiponectin and colorectal cancer risk. In this study, we investigated the association between common genetic variation in the adiponectin gene (*ADIPOQ*) and colorectal cancer risk among 2,072 colorectal cases and 2,607 controls of African American, Caucasian, Japanese American, Native Hawaiian, and Latino ancestry nested within the Multiethnic Cohort Study. To capture the common genetic variation in *ADIPOQ*, we selected and genotyped 30 tag SNPs (minor allele frequency ≥5%) from 20-kb upstream and 10-kb downstream of the gene using TaqMan OpenArrays. Unconditional logistic regression was used to examine the effect of these SNPs on colorectal cancer risk, adjusting for age, gender, and ethnicity. Analysis of covariance was used to test for differences in mean levels of biomarkers of insulin resistance by genotypes. Of the 30 SNPs tested, 5 SNPs (rs6810075, rs2036373, rs266769, rs9877202, rs7641507) were associated with colorectal cancer (p=0.001-0.05) with 1.5 associations expected by chance alone. Evidence for heterogeneity by ethnicity was observed for 2 SNPs (rs1501299, p_{het}=0.05 and rs6444175, p_{het}=0.02). Furthermore, we observed associations (p=0.01-0.03) between 3 SNPs (rs1249594, rs1403696, rs7641507) and biomarkers of IGF1, IGFBP1, IGFBP3, and/or HOMA-IR in a subset of 1,629 controls. Our results suggest that common genetic variants in *ADIPOQ* may influence colorectal cancer risk and biomarkers of insulin resistance.

0070

MEASUREMENT ERROR IN MENDELIAN RANDOMIZATION STUDIES: THE EFFECT OF SUB-OPTIMAL CALIBRATION. *Brandon L. Pierce (University of Chicago, Chicago, IL)

Mendelian randomization (MR) refers to the use of instrumental variable analysis to assess the causality of exposure-disease associations for exposures that have known genetic determinants. In MR studies, data on such a genetic determinant (i.e., an instrumental variable) is analyzed jointly with data on the exposure and the outcome. In theory, MR generates effect estimates that are not biased by unmeasured confounding or "reverse causation". In this work, we examine the effects of measurement error for a continuous exposure and a continuous outcome on bias in the MR estimates. We show that random measurement error in the genotype, the exposure, and the outcome does not bias the MR estimate. However, poor calibration of the exposure or the outcome does bias the MR estimate. Poor calibration can be conceptualized as a regression of the measured variable on the true variable, where the regression slope does not equal one. We demonstrate our results analytically and using simulations. Substantial measurement error for biomarkers can occur for a variety of reasons, including temporal variation in the exposure, limitations of the measurement method, suboptimal handling/storage of bio-specimens, errors in measurement protocol, and measurement outside of the relevant etiologic time window. In conclusion, for MR studies, random error will not bias the MR estimate, although MR studies with exposure and outcome measures prone to poor calibration should be interpreted with caution.

0071-S

UPTAKE AND ADHERENCE OF THE QUADRIVALENT HUMAN PAPILLOMAVIRUS VACCINE IN AN ONTARIO COHORT OF GRADE 8 GIRLS. *Smith LM, Brassard P, Kwong J, Deeks S, Ellis A, Lévesque LE (Queen's University, Kingston, ON, K7L 3N6)

Background: While hundreds of millions of dollars have been invested in offering the quadrivalent human papillomavirus (HPV) vaccine to young girls in Canada, there continues to be very little information about its usage. Methods: Linking administrative databases, we conducted a population-based, retrospective cohort study of girls eligible for Ontario's Grade 8 HPV vaccination program in Kingston, Frontenac, Lennox, and Addington. We determined the vaccination/uptake (≥1 dose) and adherence (3 doses) status of girls according to demographics, vaccination history, health services utilization, and medical history and used multivariable logistic regression to estimate the strength of associations between individual factors and uptake and adherence. Results: We identified a cohort of 2519 girls, 56.6% of whom were vaccinated. Among vaccinated girls, 85.3% were adherers. Vaccination history was the strongest predictor of uptake in that girls who received the measles-mumps-rubella, meningococcal C, and hepatitis B vaccines were almost five times more likely to also receive the HPV vaccine. Still, HPV vaccine uptake was ≥20% lower than uptake of these other vaccines. While uptake was not influenced by income, adherence was. In particular, girls of low income were the least likely to receive all three doses (odds ratio: 0.45, 95% confidence interval: 0.28-0.72). Interpretation: The low level of HPV vaccine use in Ontario will likely have important implications in terms of the health benefits and cost-effectiveness of its publicly funded program. We identified factors that influence uptake and adherence that should be considered in efforts to guide future HPV vaccine programming.

0072-S

HISTORY BEHIND THE IVF EGG: ARE WOMEN'S COMPREHENSIVE HISTORIES ASSOCIATED WITH THE NUMBER OF EGGS COLLECTED, OR FERTILISED NORMALLY, FROM REPEATED IVF CYCLES? *D.L. Herbert, J.C. Lucke, A.J. Dobson (University of Queensland, Brisbane, Australia)

Most studies of in vitro fertilisation (IVF) outcomes use cycle-based data and fail to account for women who use repeated IVF cycles. The objective of this study was to examine the association between the number of eggs collected (EC) and the percentage fertilised normally, and women's self-reported medical, personal and social histories. This study involved a cross-sectional survey of infertile women (aged 27-46 years) recruited from four privately-owned fertility clinics located in major cities of Australia. Regression modeling was used to estimate the mean EC and mean percentage of eggs fertilised normally: adjusted for age at EC. Appropriate statistical methods were used to take account of repeated IVF cycles by the same women. Among 121 participants who returned the survey and completed 286 IVF cycles, the mean age at EC was 35.2 years (SD 4.5). Women's age at EC was strongly associated with the number of EC: <30 years, 11.7 EC; 30.0-<35 years, 10.6 EC; 35.0-<40.0 years, 7.3 EC; 40.0+ years, 8.1 EC; p<0.0001. Prolonged use of oral contraceptives was associated with lower numbers of EC: never used, 14.6 EC; 0-2 years, 11.7 EC; 3-5 years, 8.5 EC; 6+ years, 8.2 EC; p=0.04. Polycystic ovary syndrome (PCOS) was associated with more EC: have PCOS, 11.5 EC; no, 8.3 EC; p=0.01. Occupational exposures may be detrimental to normal fertilisation: professional roles, 58.8%; trade and service roles, 51.8%; manual and other roles, 63.3%; p=0.02. In conclusion, women's age remains the most significant characteristic associated with EC but not the percentage of eggs fertilised normally.

0073

THE RISK OF HOSPITALIZATION IN THE ELDERLY – CONSIDERING MULTIPLE HEALTH DOMAINS. *Anthony V. Perruccio, Elena Losina, Elizabeth A. Wright, Jeffrey N. Katz (Brigham and Women's Hospital, Harvard Medical School, Boston, MA 02115)

Objective: To investigate the effects of several health domains on the likelihood of hospitalization among the elderly. Study Design: Medicare recipients (n=958) completed a survey 3 years post hip replacement surgery. A structural equation model with probit regressions was employed. Latent constructs: 'Predisposing' (age, sex, race, living situation, physical activity); 'Enabling' (income, education, State, urban/rural, ancillary benefits); and 'Need' (medical comorbidity, function (musculoskeletal (MSK), physical, social), mental health, geriatric functional problems, self-rated health). Health domain effects on Need and subsequently on 1-year hospitalization were investigated. A traditional approach considered all variables in a single probit regression. Results: Physical and social limitations were strong indicators of Need, and poor mental health, MSK limitations and medical comorbidity the strongest determinants. Need significantly predicted hospitalization. Predisposing and Enabling did not predict hospitalization. However, Predisposing predicted Enabling, and Enabling predicted Need. All measures were significantly associated with a latent construct. With the traditional approach, fewer than 5 measures predicted hospitalization. Conclusion: Besides medical comorbidity, poor mental health and MSK limitations have a salient role in predicting hospitalization among the elderly. Efforts aimed at delaying or minimizing hospitalizations in this population should consider a broad array of health domains for potential targeted intervention. Additionally, multiple domains should be considered when developing and implementing planning, design and evaluation policies.

0074

HEALTHY PEOPLE 2010: FINAL ASSESSMENT OF PROGRESS AND DISPARITIES. *L. Gurley (National Center for Health Statistics, CDC, Hyattsville, MD 20782)

For three decades, Healthy People has provided a comprehensive set of national 10-year health promotion and disease prevention objectives aimed at improving the health of Americans. It is grounded in the principle that establishing objectives and providing benchmarks to track and monitor progress over time can motivate, guide, and focus action. Healthy People 2010 (HP2010) continued in this tradition by identifying a wide range of public health priorities and specific, measurable objectives with targets to be reached by the end of the year 2010. It has two overarching goals: 1) increase the quality and years of healthy life and 2) eliminate health disparities. An evaluation of progress toward the HP2010 target for each objective and toward eliminating racial/ethnic (r/e) disparities among all population-based objectives was conducted. Progress was measured using the percentage of targeted change achieved. Disparities were defined as the percent difference between the r/e group with the best or most favorable rate and the rates for each of the other r/e groups. A summary index was used to describe the average percent difference from the best r/e group rate for all of the other group rates and to evaluate changes in disparity over time among all r/e groups. Preliminary results from the evaluation of progress show that 71% of the objectives with tracking data are moving towards the target(19% of these met their targets), 23% were moving away from their targets, and 6% showed no change. Preliminary results for disparities show that between the baseline and the most recent data point, the number of objectives with increasing disparities was similar to the number of objectives with decreasing disparities and there was no change in disparity for most objectives.

0075-S

PREDICTING THE RISK OF DEEP INFECTIONS FOLLOWING TOTAL KNEE REPLACEMENT: A PRAGMATIC, PROGNOSTIC RISK SCORE. *Paxton EW, Johnson ES, Platt, RW, Adams, AL, Wang JQ, Thorp ML, Bayliss EA, Ferrara A, Nakasato C, Bini SA, Namba RS (Kaiser Permanente, San Diego, CA)

Surgeons and patients need a tool to predict deep infections following total knee replacement. We developed a pragmatic, points-based risk score to predict knee deep infections for clinical decision making. Using a large health care organization's joint replacement registry, we identified deep infections associated with 38,094 primary total knees performed between 2001 and 2009. Infections were validated through chart review according to Centers for Disease Control and Prevention guidelines. Patient characteristics were extracted from the registry and our electronic health record. We observed 241 deep infections, a one-year incidence of 6.4 per 1,000 patients (95% Confidence Interval, 5.7 to 7.3). The risk score, derived from a Cox regression with stratification by region, included the following risk factors: age (less than 55 and greater than 80), male gender, race (black and white versus other), diagnosis other than osteoarthritis, diabetes with complications, and higher body mass index. Agreement (calibration) was adequate for the highest and lowest-risk deciles. Patients in the highest-risk decile were 6.7 times more likely to suffer a deep infection when compared with patients in the lowest-risk decile (2.7 per 1,000). Body mass index is one characteristic that is potentially modifiable through intervention. We believe this risk score is the first of its kind for predicting knee deep infections and may be useful for decision-making by orthopedic surgeons and patients. Additional risk scores are needed for predicting other complications and clinical outcomes in knee replacement surgery.

0076-S

RISK FACTORS ASSOCIATED WITH TOTAL KNEE REPLACEMENT FAILURE IN A LARGE COMMUNITY BASED TOTAL JOINT REPLACEMENT REGISTRY. *Inacio, Maria C.S., Paxton, Elizabeth W., Ake, Christopher, Namba, Robert S., Khatod, Monti (Kaiser Permanente/ UCSD, San Diego, CA)

Increased utilization of Total Knee Replacement (TKR) has led to the need to further indentify risk factors associated with TKR failure, defined as revision of at least one implant component. This study examined whether patient, surgeon/hospital, procedural, and implant characteristics are associated with risk of revision TKR. Sex specific risk factors were also explored. TKR patient characteristics (age, race, sex, comorbidities, BMI, and diagnosis), procedure information (bilateral, operative time, surgical approach, patellar resurfacing), surgeon/hospital (volume, training), implant characteristics (design, fixation) and subsequent revision procedures were obtained from a Total Joint Replacement Registry. Descriptive statistics were generated and survival analyses (Kaplan-Meier and multivariate proportional hazards regressions) were conducted. 47339 primary TKR cases were performed between 2001-2009. Patients (mean age=67.5, BMI=31.6kg/m2) were 63% female and had a 21.9% prevalence of diabetes. The overall revision rate was 1.9% (N=881), including 0.8% for septic revisions (N=366). The following were risk factors for aseptic revision: younger age (P<0.001), black race (P<0.001), diabetes (P=0.011), unresurfaced patella (P=0.030), and Low Contact Surface (LCS) implant designs (P<0.001). Bilateral procedures were protective (P=0.003). In females, risk factors were the same as the overall model except for diabetic status. In males, unresurfaced patellar procedures and black race were not significant risk factors and Asian race was found to be a protective factor (P=0.027). Patient risk factors dominated the overall risk profile, with younger age, race, and diabetes all being important in aseptic revisions. The surgical factors found to be associated with aseptic revision were unresurfaced patellae techniques, LCS implants, and bilateral cases. Males and females have slightly different risk profiles.

0077

DISABILITY AND ACCESS TO HEALTH CARE IN FLORIDA. Erin D. Bouldin, *Elena M. Andresen, Michael B. Cannell, Allyson G. Hall (University of Florida, Gainesville, FL 32610)

Disability may include physical, mental, cognitive, emotional, and sensory impairments that occur across the life span. We measured the prevalence of disability in Florida using data from the 2009 Behavioral Risk Factor Surveillance System (BRFSS) and several classifications of disability. We also assessed access to health care, health behaviors, and health conditions among people with and without disability. The BRFSS is a random digit-dialed cross-sectional telephone survey of non-institutionalized state residents age 18 and older. The standard BRFSS definition of disability includes people who report an activity limitation. In 2009, additional questions assessed respondents' need for routine and personal care assistance and the duration of their activity limitation. We created a measure of disability severity ranging from no disability to long-term disability (disability greater than 6 months) with personal care needs. There were 8,335 respondents with no disability and 3,374 with disability. Health insurance coverage and having a recent physical exam were similar across all respondents. Respondents with disability were significantly less likely to have visited a dentist in the past year (38% vs. 71% with no disability). Cost and transportation were significantly more likely to be barriers to health care for people with disability (54% vs. 15% and 16% vs. 3%). People with a disability were significantly less likely to engage in physical activity outside of work (61% vs. 80%) and significantly more likely to be current smokers (24% versus 16%) compared to people without a disability. For most variables, a gradient existed such that as disability severity increased, access and health measures were poorer and barriers to care were higher.

0078

REDISTRIBUTING THE U.S. HEALTH SERVICES WORKFORCE TO ADDRESS HEALTH DISPARITIES. *R. Fang, J. Umar, S. Smith (American Academy of Physician Assistants, Alexandria, VA 22314)

The United States has the highest health expenditure per capita, yet attains the poorest health outcomes among the Western nations. In 2006, the U.S. had a physician-population ratio of 242:100,000, which was well above Japan (209), Canada (215) and the WHO proposed level (100). In this study, we examined the relationship between state density of physicians and other care providers and health outcomes in the U.S. through a socio-geographic lens. Socio-geographical patterns of practicing care providers in the U.S. were examined with data from HRSA, the U.S. Census and national databases for non-physician clinicians. Health outcomes were measured by mortality rates from vital statistics. We found high disparities in physician and non-physician clinician population ratios across states, from Mississippi (174 physicians, 3 PAs and 63 NPs) to Massachusetts (405 physicians, 25 PAs and 86 NPs). Among states with higher poverty rates, a majority have densities of practicing physicians and non-physician clinicians that are well below the national average. We further found a significant shortage of both physicians and PAs in the states with the ten highest mortality rates. This study shows that the U.S. currently maintains a moderate national care provider level but maldistributed. Since poverty is strongly associated with poor health, the lower care provider numbers in these areas could population health indicating the need for policy solutions aimed at incentivizing the redistribution of these resources to address higher needs in high-poverty areas. Otherwise, merely expending national health workforce supply may further widen currently existing health disparities in the country.

0079

MATCH LENGTH: ITS' ASSOCIATION WITH TRAJECTORIES OF BEHAVIORAL AND PSYCHOLOGICAL FUNCTIONING IN CHILDREN PARTICIPATING IN CANADIAN BIG BROTHERS BIG SISTERS (BBBS) COMMUNITY MATCH PROGRAMS. *D. De Wit (Centre for Addiction & Mental Health) and E. Lipman (McMaster University)

Background: Research has shown that children matched to an adult mentor in the context of BBBS match programs experience positive behavioral and psychological outcomes compared to unmatched children. However, how long children spend in a BBBS match and its association with distinct long term trajectories of behavior is not fully understood. Objective: To determine if length of time in a BBBS match successfully discriminated between groups of children following distinct patterns of growth in psychological and behavioral outcomes. Method: Latent class growth analyses were conducted on 744 children ages 7-16 (391 boys; 353 girls) newly enrolled in 20 BBBS agencies and followed longitudinally at 6 month intervals from baseline (before match exposure) to 18 months. Outcomes included peer self-esteem, personal self-image, symptoms of depression and social anxiety, emotional problems, peer difficulties, victimization, conduct problems, and inattention-hyperactivity. Results: Match status at 18 months: 22% never matched, 17% matched 1-6 months, 19% 7-11 months, and 43% 12+ months. While the overall trend was toward improved functioning, children followed distinct patterns of growth for several outcomes (i.e., high, medium, and low variants). Matches lasting 7-11 or 12+ months were associated with an increased likelihood of group membership among children displaying high and increasing personal self-image (vs. low and increasing group) and a decreased likelihood of group membership among those displaying high and decreasing emotional problems, anxiety, and depression (vs. low and decreasing group).

0080

ACCESS TO SPECIALIST SERVICES FOR ARTHRITIS: A STUDY OF NEED AND AVAILABILITY. *M Canizares, AM Davis, EM Badley (Toronto Western Research Institute, Toronto, Ontario M5T 2S8)

Equitable adequate access to specialist care is essential to management of chronic diseases. To investigate access to specialists (orthopedic surgeons, rheumatologists) for arthritis within Ontario, Canada, taking into account need (prevalence of arthritis, age, socioeconomic status (SES), rurality) and availability of specialists. An ecologic analysis based on small areas (n=101) in Ontario. Access: person visit rate with arthritis diagnoses per 1000 population for specialist office visits or surgery. Need: prevalence of arthritis from the 2008 Canadian Community Health Survey or percent of the population aged 65+ years; SES (% low income or education); % aboriginal population; Statistics Canada index of rurality. Provision: data from surveys of orthopedic surgeons and rheumatologists ascertaining hours per week of service by location, using geographic information system analysis to derive an index of local accessibility. Analysis by Poisson regression. Orthopedic surgeon office visit access appears to align with need and provision as shown by significant associations with higher quintiles of arthritis, older age, % aboriginal population, and no gradient with specialist accessibility. However, access to surgery was higher for high SES quintiles. For rheumatology, there was no association with need (quintiles of arthritis prevalence, age or % aboriginal), access was highest for areas with higher SES quintiles, with a marginal positive association with rheumatology provision. Findings suggest there are inequities in access to rheumatologists and for orthopedic surgery in low SES areas. Access to office visits with orthopedic surgeons is more equitable.

0081

URBAN VS RURAL PATTERNS OF EMERGENCY DEPARTMENT UTILIZATION IN QUEBEC: A POPULATION STUDY, 2004. *S. Sanche, J. McCusker, R. Borges da Silva, A. Ciampi, P. Tousignant, A. Vadeboncoeur and J-F Levesque, (St. Mary's Research Center, Montreal, QC H3T1M5)

The province of Quebec has the highest rate of emergency department (ED) utilization in Canada. Our study aimed to compare rural and urban patterns of ED utilization in a sample of Quebec's adult users of the health care system (n=579,669) and to evaluate whether differences are explained by age and comorbidity. Provincial administrative data for the 2004 financial year were used with information on the physician billings and hospitalizations. The population proportion with any ED visit, the proportion of ED visits resulting in hospital admission and the proportion of total ambulatory physician visits that take place in an ED, were estimated using logistic regression with latter variance estimates corrected for the clustering of visits within users. These were examined by area of residence (metropolitan, other urban, and rural), with and without adjustment for age and comorbidity (Charlson Comorbidity Index). The estimated population percent using the ED was lowest in metropolitan areas (19.6%), intermediate in urban regions (25.6%) and highest in rural areas (33.1%). The percentage of ED visits resulting in admission was higher in metropolitan areas (11.1%), average in urban areas (10.2%) and lower in rural areas (7.9%).The percentage of ambulatory visits occurring in the ED was lower in metropolitan areas (5.3%), average in urban areas (8.5%) and higher in rural areas (14.7%). All 95% confidence intervals lengths were smaller than 0.6. Adjustment for age and comorbidity did not affect the above-mentioned relationships. These findings underline the different role of the ED in the healthcare system in urban vs rural areas.

0082

VALIDATION OF MEASURES OF EMPOWERMENT, AN IMPORTANT OUTCOME OF SUPPORT PROGRAMS IN THE EXPANDING CANCER POPULATION. *E Maunsell, S Lauzier, J Brunet, S Campbell, RH Osborne (Unité de recherche en santé des populations (URESP), Université Laval, Québec, QC, Canada)

Empowerment refers to feelings of being able to manage the disease experience, and is a desired outcome of support programs. Few validated measures of empowerment exist for evaluating services in the expanding cancer population. We evaluated the psychometrics of the Australian Health Education Impact Questionnaire (heiQ) evaluation system, developed for evaluating effects of disease self-management programs and used widely across diseases and interventions. The five scales considered conceptually relevant to empowerment in cancer were emotional wellbeing, constructive attitudes/approaches, skill/technique acquisition, social integration/support, and health services navigation. We recruited Canadians diagnosed <27 months earlier with different cancers randomly selected from the Manitoba Cancer Registry, and users of Canadian Cancer Society telephone support programs. 731 subjects completed a mailed questionnaire with the heiQ scales, related constructs and demographic questions. Traditional psychometric analyses and modern confirmatory factor analysis (CFA) were used to examine psychometric structure and construct validity. Ordinal CFA with robust maximum likelihood estimation gave very good model fit (chi square(265)=528.17, RMSEA=.04, NNFI=.99, CFI=.99, SRMR=.06). Mean factor loadings ranged from .76 to .85, Cronbach alphas from .76 to .85. A priori hypotheses about correlations of certain heiQ scales with cancer self-efficacy were supported. These results provide strong evidence that the 5 constructs conceptualized as representing empowerment perform well in cancer patients/ survivors. These scales will fill an important gap in cancer research and evaluation.

0083-S

THE RELATIONSHIP BETWEEN SHIFT-OF-ADMISSION AND SURGICAL DELAY FOR HIP FRACTURE PATIENTS: A MULTI-LEVEL MULTINOMIAL ANALYSIS . *Ogbu UC, Westert GP, Stronks K, Arah OA. (Dept of Public Health, Academic Medical Center, University of Amsterdam)

Hip fracture patients admitted during the weekend appear to achieve time-to-surgery standards at the same rate as those admitted during the weekdays. This may indicate that they do not experience the poorer quality of care typically associated with weekends. This study examines the association between time-of-admission and time-to-surgery among hip fracture patients using two definitions of time-of-admission. In this retrospective cohort study, we used data on 43,967 elderly hip fracture patients admitted to Dutch hospitals from 2003 through 2007. The data were analyzed using two-level multivariable multilevel multinomial logistic regression. Time-of-admission was defined as on/off-hours, and as the weekday/end shift of admission. Patients admitted during the off-hours had lower odds of surgical delay. Admissions during weekday or weekend day- and night-shifts were associated with decreased odds of surgical delay when compared to weekday evening-shift admissions. For instance, compared to weekday evening-shift admissions, the odds ratios for surgical delay until the 3rd day or later among those admitted during the weekend and weekday day-shifts were respectively 0.67 (95% CI: 0.54 – 0.83) and 0.75 (95% CI: 0.69 – 0.82). Similarly, the odds ratios for surgical delay until the 3rd day or later were 0.52 (95% CI: 0.38 – 0.72) and 0.53 (95% CI: 0.41 – 0.69) for weekend and weekday night-shift admissions respectively. Compared to weekday evening-shifts, admissions during the weekday day- and night-shift, and throughout the weekend were less likely to experience surgical delay. These findings could reflect the impact of resource distribution and quality standards for hip fracture patients.

0084-S

THE ASSOCIATION BETWEEN SOURCE OF REPRODUCTIVE HEALTH INFORMATION, KNOWLEDGE, AND SEXUAL RISK BEHAVIORS AMONG HIGH-END FEMALE ENTERTAINMENT CENTER WORKERS IN KUNSHAN, JIANGSU, CHINA. *Y. Encarnacion, J.E. Mantell, X. Sun, J. Zhou, T.M. Exner, S. Hoffman, F. Zhou, T.G.M. Sandfort, E.A. Kelvin (Hunter College, NY, NY 10010; HIV Center for Clinical and Behavioral Studies, NY, NY, 10032; Nanjing College for Population Program Management, Nanjing, China; Kunshan Population and Family Planning Commission, Kunshan, China)

Misinformation about HIV/STIs is common among entertainment center workers in China and might play a role in the recent increased rates of infection. We conducted a self-administered survey among 689 employees of a high-end entertainment center in Kunshan, China. We used regression to examine the association of source information about sexual/reproductive health with risk behaviors and outcomes (STIs & unintended pregnancy). Significant associations were found between receiving information from peers/sex partners and having sex with ≥1 partner in the past month (odds ratio (OR)=1.7, p=0.005), with having ≥1 casual partner in the past month (OR=1.7, p=0.007), with having ≥1 partner in the past week (OR=1.7, p=0.005), and with using a condom during most recent sex act (OR=0.6, p=0.021). Receiving information from professionals (doctors, nurses, teachers) was associated with having ≥1 unwanted pregnancy in past year (OR=1.908, p=0.007). Obtaining information from the media was associated with increased HIV knowledge (β)=0.192, p=0.001). We found no evidence that HIV knowledge was a mediator between source of information and risk behavior. HIV knowledge alone is insufficient to reduce risk behaviors in this population, possibly due to environmental social norms that encourage these behaviors.

0085

GENERAL HEALTH STATUS: TRACKING HEALTHY PEOPLE 2020 FOUNDATION HEALTH MEASURES. *D. T. Huang, R. J. Klein (National Center for Health Statistics, CDC, Hyattsville, MD 20782)

Healthy People 2020 (HP2020), the U.S. national disease prevention and health promotion agenda for the next decade, includes new broad, cross-cutting Foundation health measures which will be tracked but not have national targets. General health status measures, one of four Foundation section components, are of particular interest as national measures of overall population health. These measures consist of life expectancy, healthy life expectancy, years of potential life lost (YPLL), physical and mental unhealthy days, respondent-assessed health status, limitation of activity, and chronic disease prevalence. Estimates from the past decade were obtained based on data from the National Health Interview Survey (NHIS), National Vital Statistics System (NVSS), and Behavioral Risk Factor Surveillance System (BRFSS). SUDAAN was used to control for complex sample design, and estimates were age-specific or age-adjusted. Our analysis includes trends for the total population and disparities for selected race/ethnicity, sex, and age subgroups. Results suggest improving national health over the past decade based on these measures; however, the U.S. fares relatively poorly compared to other Organization for Economic Cooperation and Development (OECD) countries. Among subgroups, whites (race) and females (sex) generally had the most favorable levels of general health status, while results by age varied. Disparities at the most recent data point and changes in disparity over time also varied, though it is noteworthy that the most recent absolute disparity in life expectancy at birth between whites and blacks (4.8 years in 2007) was the smallest ever recorded. This work highlights the need for continued work on general health status measures.

0086-S

A COST-UTILITY ANALYSIS OF COMMON NONSURGICAL TREATMENTS FOR NECK PAIN.*O Schieir, C Hincapié, S Hogg-Johnson, M Krahn, P Coté, G van der Velde. (University of Toronto, Toronto, ON M5T 3M7; Toronto Health Economics and Technology Assessment [THETA] Collaborative, Toronto, ON M5S 3M2)

Neck pain is a common and burdensome condition resulting in high health care costs. There are several available treatments for neck pain and cost-effectiveness studies can help inform policy makers regarding optimal allocation of health services. The objective was to compare the cost-effectiveness of 5 common nonsurgical treatments for neck pain in Canada and the United States (exercise, nonsteroidal anti-inflammatory drugs, cyclooxegenase-2 selective inhibitors, mobilization, and manipulation) using a lifetime time horizon and taking a health care system perspective. We conducted a cost-utility analysis of 5 nonsurgical treatments for neck pain using a decision analytic Markov model. The primary outcome measure was the quality-adjusted life year (QALY). Model inputs included: 1) probability estimates for treatment effectiveness, gastrointestinal, cardiovascular and cerebrovascular adverse events and background risks for adverse events in the general population, obtained from a systematic literature review; 2) quality of life weights estimated from a convenience sample of 220 neck pain patients seen in general practice clinics using the standard gamble method; and, 3) direct and out-of-pocket health care costs. Cost-effectiveness was estimated with the incremental cost-utility ratio and probabilistic sensitivity analysis was performed to account for model uncertainty. At a willingness to pay threshold (WTP) of $50,000 CAD per QALY, manipulation was cost-effective. In probabilistic sensitivity analysis, NSAID was cost-effective at a WTP of <$24,000 CAD, and manipulation was cost-effective at a WTP between $24,000 and $50,000 CAD.

0087-S

CO-MORBIDITIES AND OUTCOMES IN PATIENTS WITH PARKINSON'S DISEASE IN UNITED STATES HOSPITALS, 2005 - 2008. *A.M. Parriott, O.A. Arah, & B. Ritz (Department of Epidemiology, University of California, Los Angeles School of Public Health)

Parkinson's disease (PD) is the second most common neurodegenerative disease, and results in substantial medical expenses, disability and loss of quality of life. Yet, there is little information about factors that influence hospitalization, progression and mortality. We used Nationwide Inpatient Sample to estimate the prevalence of co-morbidities, the risk of death prior to discharge, and the mean length of stay in inpatients age 55 and older with and without PD.We identified 174,123 (81,863 women and 92,260 men)admissions in patients with PD and 10,760,743 (5,968,234 women and 4,792,509 men)non-PD admissions. The risk of death in PD patients was 3.3% (95% confidence interval: 3.2 - 3.4) for women and 4.0% (95% CI 3.9 - 4.2%)for men, similar to non-PD patients with a risk of 3.4 (95% CI 3.4 - 3.4%) for women and 4.0% (95% CI 4.0 - 4.0%) for men. PD patients had lower prevalence of AIDS, alcohol and drug abuse, chronic blood loss anemia, coagulopathy, liver disease, cancer and solid tumors, obesity, peripheral vascular disease, pulmonary circulatory disorders, renal failure, and peptic ulcer disease, but higher prevalence of depression, hypothyroidism, and weight loss. The geometric mean length of stay was 4.4 days in women and 4.2 days in men with PD, compared to 3.8 days and 3.7 days in women and men without PD.These results should not be generalized to non-hospitalized populations. Smoking and other life-style related behaviors known to be less prevalent in PD patients likely contribute to the lower prevalence of many co-morbidities . These data also suggest some interesting differences in co-morbidities (such as hypothyroidism)that warrant further investigation.

0088-S

INVASIVE METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* INFECTIONS IN OBSTETRIC INPATIENTS, UNITED STATES, 2005-2008. *A.M. Parriott, J.M. Brown & O.A. Arah (Department of Epidemiology, University of California, Los Angeles)

While methicillin-resistant *Staphylococcus aureus* (MRSA) is recognized as a serious and common nosocomial infection, the epidemiology of invasive infections in obstetric patients is not well characterized. We sought to estimate the burden and predictors of invasive MRSA infection in obstetric inpatients in the United States. Using the Nationwide Inpatient Sample (2005 through 2008), we identified 3,974,825 admissions of obstetric patients and 2,150 cases of invasive MRSA infection. Of these cases, 723 women were admitted prenatally, 567 for delivery, and 739 postpartum or post-abortion. Timing of admission was unknown in 121 cases. The skin and subcutaneous tissues were the most common sites of infection in women admitted prenatally (54% of infections) and for delivery (31% of infections). The breast was the most common site in postpartum/post-abortion women (27% of infections). Compared to women without MRSA admitted for delivery, women with MRSA infection were more likely to live in low income zip codes,have Medicaid, be black, have diabetes, and be obese but less likely to live in the Northeast, have private insurance, and be white, Asian, or Hispanic. Mean age for MRSA cases was 26.5 years (95% confidence interval 26.2-26.7) vs. 27.5 (95% CI 27.5-27.5) for women without MRSA. In multivariate analysis of delivering patients MRSA was associated with Hispanic or Asian (vs. white) ethnicity,insurance type, region, diabetes, obesity, and age, but we found no associations with black ethnicity, age, and low income zip codes.We estimate that there were 2,608 cases of invasive MRSA infections per year in obstetric inpatients in the United States from 2005 to 2008.

0089

A SYSTEMATIC REVIEW OF HEPATITIS C INFECTION IN GENERAL POPULATION OF IRAN. SM. Alavian, M. Ahmadzad-Asl, K. Bagheri Lankarani, MA. Shahbabaie, A. Bahrami Ahmadi, *A. Kabir (Research Center for Gastroenterology and Liver Disease, Baqiyatallah University of Medical Sciences; Nikan Health Researchers Institute, Tehran, Iran)

Background: There is not an overall estimation of hepatitis C infection (HCV) in Iran. We reviewed all published and unpublished evidences about HCV infection in Iran in order to accurately estimate the HCV infection prevalence in Iranian general population for the subsequent health system programs. Methods: In this systematic review, all national papers, medical congresses, HCV related reports, projects of Iranian research centers and medical universities, reports of Deputy for Health affairs (published or unpublished) and online theses were included. We selected descriptive/analytic cross-sectional studies/ surveys related to prevalence of HCV infection in Iranian general population between 2001 and 2008 that have sufficiently declared objectives, proper sampling method with identical and valid measurement instruments for all study subjects and proper analysis methods regarding sampling design and demographic adjustments. We used survey data analysis method to calculate nationwide prevalence estimation. Results: Eight studies reported prevalence of HCV infection in the general population. They were from 6 (out of 30) provinces in which about 43 percent of the country population live. The HCV infection prevalence in Iran is calculated to be 0.16% (95% CI: 0% – 0.59%). Conclusions: In comparison with similar studies, prevalence of HCV infection in Iran is low. This might be related to preventive progroms in high risk groups and strict blood screening programs.

0090

EVALUATION OF THE INCIDENCE OF HERPES ZOSTER AFTER CONCOMITANT VACCINATION OF A POLYSACCHARIDE PNEUMOCOCCAL VACCINE AND A ZOSTER VACCINE. HF. Tesng*, N. Smith, LS. Sy, SJ. Jacobsen (Kaiser Permanente, Pasadena, CA, 91101)

In 2009, a revision to the zoster vaccine package insert was approved stating that the zoster vaccine and the pneumococcal vaccine should not be given concurrently because concomitant use resulted in reduced immunogenicity of the zoster vaccine. We conducted an observational study to evaluate if concomitant vaccination reduces the protective effect of the zoster vaccine. The study was conducted in Kaiser Permanente Southern California. Incidence of herpes zoster (HZ) after vaccination with a zoster vaccine in the population receiving both vaccines on the same day was compared to that in the population receiving a pneumococcal vaccine within one year to 30 days prior to zoster vaccine. Vaccinations and incident HZ cases were identified by electronic health records. The hazard ratio for incident HZ associated with concomitant vs. nonconcomitant vaccination was estimated using the Cox proportional hazard model. There were 56 incident HZ cases in the same day vaccination cohort and 58 in the different day vaccination cohort, yielding a HZ incidence of 4.54 (95% Confidence interval [CI], 3.43-5.89) and 4.51 (95% CI, 3.42-5.83) per 1,000 person-years, respectively. The hazard ratio comparing the incidence rate of HZ in the two cohorts was 1.19 (95% CI, 0.81-1.74) in the adjusted analysis. In this study, we found no evidence of an increased risk of HZ in the population receiving a zoster vaccine and a pneumococcal vaccine concomitantly. The revision of the product information needs to be carefully assessed to avoid introducing barriers to patients and providers who are interested in these two important vaccines.

0091

PREPAREDNESS FOR MALARIA PREVENTION IN RELIEF CAMPS FOR FLOOD AFFECTEES - A CROSS SECTIONAL SURVEY FROM PAKISTAN. Bilal Ahmed* Kashmira Nanji (Aga Khan University, Karachi)

The monsoon floods in Pakistan affected about 3.2 million people, including 1.4 million children and 133,000 pregnant women. 1.3 million people were internally displaced. Stagnant water forms a breeding ground for mosquitoes, poses a serious threat. A survey in the relief camps of (IDP's) to evaluate the malaria prevention preparedness was conducted. A cross sectional study was conducted during October to November 2010. Interviews were conducted with 500 eligible individuals, recruited through multi-stage cluster sampling. The study comprised of two phases. In the 1st phase the camps were visited and a complete checklist containing the information regarding the availability of bed nets, insecticidal sprays, mosquito repellents, coils were collected. Camps and its surrounding were also observed for water and sanitary conditions. In the 2nd phase of the study, the administrations of these camps were also interviewed regarding the measure taken for malaria prevention. Five hundred (13.5%) families were interviewed. Average number of children <= 5 years of age per family was 4. Pregnant women were 110. None of the family reported to receive any preventive intervention. Sanitary conditions were poor with open drainage system, surrounded by stagnant water. Accessibility to clean water was difficult. 96% individuals reported not practicing any preventive measure for malaria. Inadequate Chloroquine was available in the medical camps, arthremeter was not available. The doctors reported, visiting of 8-10 patients daily with malaria symptoms. Malaria is a major epidemic and public health concern particularly during flood catastrophe. Transparent policy making is required to design strategies for the preparedness of malaria in Pakistan.

0092

REDUCED HERPES ZOSTER-ASSOCIATED HEALTHCARE UTILIZATION IN ADULTS VACCINATED WITH SHINGLES VACCINE. *N. Smith, HF. Tseng, SJ. Jacobsen (Kaiser Permanente, Pasadena, CA, 91101)

In 2006, herpes zoster vaccine received approval for use in healthy adults aged 60 and older. Little were known as to whether the burden to healthcare was reduced among zoster vaccine recipients who developed zoster. We conducted a retrospective cohort study in Kaiser Permanente Southern California to assess the effect of zoster vaccine on reducing HZ-associated healthcare utilization (HCU). The cohort consisted of both vaccinated and unvaccinated HZ incidence cases identified during 2007-2009 with 1-year follow-up after their first diagnoses of HZ. Rate ratios (RR) for HZ associated HCU comparing vaccinated and unvaccinated cases were estimated using negative binomial regression models. There were 4197 HZ patients diagnosed in an outpatient setting, among whom 649 were previously vaccinated. Comparing vaccinated and unvaccinated patients during 1-year follow-up, there were, on average 0.59 vs 0.81 subsequent HZ associated outpatient visits and 0.01 vs 0.03 subsequent HZ associated emergency department (ER) visits. After adjustment for age, sex, race, Charlson's Comorbidity Index, and the number of outpatient visits, ER visits, and inpatient visits in 1 year prior to HZ, the adjusted RR was 0.68 (95% confidence interval [CI] 0.58-0.18) for subsequent outpatient visits and 0.28 (95% CI 0.12-0.81) for subsequent ER visits. Those cases diagnosed in an ER or inpatient setting were excluded from the analysis due to small sample size. In conclusion, HZ significantly reduced the number of subsequent outpatient and ER visits by an average of 32% and 72%, respectively. The data support the hypothesis that zoster vaccine alleviates the symptoms of HZ and reduces the HZ associated HCU.

0093-S

MOLECULAR EPIDEMIOLOGY OF BRUCELLOSIS IN IRAN: SCREENING OF HUMAN AND LIVESTOCK BLOOD SAMPLES. Majid Sohrabi, Ashraf Mohabati Mobarez, Reza Hosseini Doust*, Nima Khoramabad. ([1]Department of Bacteriology, Faculty of Medical Sciences, Tarbiat Modares University; [2]Department of Microbiology, Baqiyatallah University of Medical Sciences, Islamic Azad university, Unit of pharmacology sciences)

Brucellosis is endemic in some parts of Iran especially in western and eastern cities. In Iran, human brucellosis is occurred nearly by animals infected. Control and eradication of brucellosis requires correct relationship between human and animal brucellosis. We describe in this study epidemiology of brucellosis of the suspicious serum samples in animals. One hundred serum samples were collected from east (25%) and west (75%) of Iran. DNA extraction was performed by QIAamp DNA Mini kit (Qiagen). TaqMan Real-Time PCR assay was designed on genus -specific bcsp31 gene (brucella cell surface protein 31kDa). All assays ran in 20ml final volumes on an ABI 7500 sequence detection system (Aplied Biosystems). Our results showed that 80 samples were positive, Out of 70 (93.3%) samples which collected from west of Iran and 10 (40%) from east of Iran. Regarding to high sensitivity and specificity of Real-Time PCR, it could be shown accurate epidemiological statue of brucella infections.

0094-S

LOW SENSITIVITY OF URETHRAL SCREENING FOR CHLAMYDIA OR GONORRHEA DETECTION AMONG MEN WHO HAVE SEX WITH MEN. *Julia L. Marcus, Kyle T. Bernstein, Robert P. Kohn, Mark Pandori, and Susan S. Philip (San Francisco Department of Public Health, San Francisco, CA, 94603)

The Centers for Disease Control and Prevention recommends that men who have sex with men (MSM) with relevant exposures be screened for urethral and rectal gonorrhea and chlamydia, and for pharyngeal gonorrhea, at least annually. Although nucleic acid amplification tests (NAATs) for detection of rectal or pharyngeal chlamydia or gonorrhea have not been approved by the Food and Drug Administration, laboratories can internally validate NAATs for extragenital use. Because extragenital infections are mostly asymptomatic, urethral-only screening could leave those infections unidentified. We conducted a retrospective, cross-sectional study of asymptomatic MSM who visited San Francisco's municipal sexually transmitted disease clinic during 2008–2009 and were screened for urethral, pharyngeal, and rectal chlamydia and gonorrhea, to identify the proportion of infected persons that would be missed by different screening practices. Specimens were tested by NAAT at the San Francisco Department of Public Health Laboratory, which previously validated the test for rectal and pharyngeal use. Among 3398 MSM, 549 (16.2%) had chlamydia or gonorrhea. Prevalence of infections by anatomic site ranged from 0.4% (95% confidence interval [CI], 0.2–0.6%) for urethral gonorrhea to 7.8% (95% CI, 6.9–8.8%) for rectal chlamydia. Urethral screening would miss the most infected persons (83.8%; 95% CI, 80.4–86.8%), while screening the rectum and pharynx would miss the fewest (9.8%; 95% CI, 7.5–12.6%). Wider availability and use of NAATs for extragenital screening among MSM would identify more infections than urethral screening alone.

0095

IMPACT OF A HAND HYGIENE INTERVENTION ON THE RISK OF TRANSMITTING A POSITIVE METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS CULTURE. *B. Oloyede, J. Rohrer,and N.Rea.(Community Hospital, Durham, NC 27704)

Methicillin resistant Staphylococcus aureus (MRSA) poses a threat to patients in many hospitals. The effectiveness of hand hygiene policies in reducing pathogen counts on the hands of health care workers was unknown. The purpose of the study was to assess whether a simple environmental change could prevent MRSA from growing on the hands of health care workers. The health belief model provided the conceptual framework for this study. This was a single site study in which 4 bed-sections (80 employees) of a community based hospital were randomly assigned to the intervention group and the remaining 2 bed-sections (70 employees) served as the comparison group. Hand cleaners were placed in prominent locations inside and outside patient rooms. MRSA culture was the dependent variable (positive versus negative). Samples were obtained for culture on chocolate agar plates. The primary independent variable was the group (intervention or control). Other personal characteristics and characteristics of the work environment were included to adjust for group differences. Multiple logistic regressions were used in the analysis. The findings showed that a simple environmental change by placing hand-hygiene products inside and outside patient rooms significantly reduced MRSA infection by health care workers. The results impact social change by demonstrating that placing hand hygiene products in patient rooms could help health care workers in cleaning their hands before and after patient contacts which helps reduce the threat of spread of infection.

0096-S

THE ROLE OF SMOKING AND ORAL HYGIENE IN PREVALENCE OF HELICOBACTER PYLORI IN DENTAL PLAQUE AND STOMACH OF DYSPEPTIC PATIENTS. Karbalaei Mona[1], Mohabati Mobarez Ashraf*[1], Amini Mohsen[2], Teymournejad Omid[1] ([1]Dept of Bacteriology, Tarbiat Modares University, Faqulty of Medical Sciences. Tehran, Iran, [2]Dept of Internal Medicine, Baghyatallah University of Medical Science, Tehran, Iran)

Helicobacter pylori is major causative of gastric diseases. Lifestyle is a very important risk factor for Helicobacter pylori prevalence. One hundred patients who had dyspepsia aged 5-65 years were selected. Socio-demographic status of each subject was determined by filling up a questionnaire about age, sex, blood group, occupation, level of education, frequency of smoking, oral hygiene such as frequency of use tooth brush, dental floss, mouth wash and details about dietary such as frequency of consumption meat, vegetable, fruit, milk, yoghurt, tea, coffee, salty and fast foods. Dental plaque and gastric biopsy samples earned from every patient for isolation of Helicobacter pylori. Biopsy and dental plaque samples were evaluated with culture and PCR. Prevalence of H. pylori infection in smoker patients was higher than non smoker. One hundred percent and 67.5% of dental plaque and biopsy's smoker patients and 80.9% and 60.3% dental plaque and biopsy's non smoker patients were Helicobacter pylori positive after PCR and cultivation. Tooth brushing, dental floss and mouth wash habit result in reduction of H. pylori colonization in dental plaque. The highest infection rates (81.8 %) were seen in poor oral hygiene. We found relation between daily consumption of yoghurt and decreasing of H. pylori colonization in dental plaque and gastric biopsy.According to results of our investigation, poor oral hygiene, diet and smoking were related to high prevalence of infection and dental plaque colonization of H. pylori in Iran.

0097

ACUTE ILLNESS SYMPTOMS ASSOCIATED WITH PRIMARY HUMAN BOCAVIRUS INFECTION IN INFANTS. *E T Martin, J Kuypers, A Wald, J A Englund, D M Zerr (Wayne State Univ., Detroit, MI, 48201)

The role of human bocavirus as a causative agent of disease is not well understood. We have previously documented that this virus can shed from saliva consistently for over a year in young infants, making cross-sectional studies difficult to interpret. We analyzed banked saliva samples and symptom data from children followed from birth up to two years of age with weekly saliva collection and daily symptom diaries of signs and symptoms. Bocavirus DNA was detected by polymerase chain reaction. A case-crossover analysis using conditional logistic regression was performed to evaluate symptoms recorded during the 3 weeks surrounding primary infections, defined as initial detection of bocavirus in the saliva, compared to symptoms occurring 4 to 7 weeks prior to and following primary infection. 87 children were followed from birth for a median of 705 days (range 551 to 778 days). 80 (92%) of 87 had bocavirus detected at least once. Primary infection events lasting at least 1 week were captured in 66 children. Median age at primary infection was 11 months (interquartile range: 7 to 16 months). Acquisition of bocavirus was associated with new onset of coughing (Odds Ratio (OR): 2.35, 95% Confidence Interval (C.I.): 1.20, 4.62; p=0.01) and illness visits to the child's physician (OR: 2.63, 95% C.I.: 1.02, 6.82, p=0.05). Presence of fever was also increased, but not significantly (OR: 2.00, 95% C.I.: 0.93, 4.29, p=0.08). Vomiting, diarrhea, and rash were not associated with acquisition. These data provide the most complete longitudinal analysis of bocavirus acquisition and associated illness available to date, and support the role of primary bocavirus infection as an etiology of acute respiratory illness.

0098-S

VITAMIN D AND S. AUREUS CARRIAGE – NEW TARGET FOR PREVENTION. *K. Olsen, B.M. Falch, K. Danielsen, G.S. Simonsen, I. Thune, M. Johannessen, J.U.E. Sollid, G. Grimnes, R. Jorde, A.-S. Furberg (* University Hospital of North Norway, N-9038 Tromsø, Norway)

Staphylococcus aureus carriage is a major risk factor for S. aureus infection, yet only smoking has consistently been identified as a modifiable determinant of carriage (1). Vitamin D stimulates immune responses (2). Thus, we studied the association between serum 25-hydroxyvitamin D levels [25(OH)D; electrochemiluminescence immunoassay (Roche)] and S. aureus carriage (median time between two nasal swab cultures = 31 days; carrier = S. aureus growth in both cultures) in 1,574 female and 1,240 male participants aged 30-87 years in the 6th Tromsø Study 2007-08, a population-based health survey including clinical examinations and questionnaires on health and lifestyle. Logistic regression analysis stratified by sex and smoking and adjusted for potential confounders was used. In non-smoking men (n = 1,017; 33.7% carriers; mean 25(OH)D = 53.2 nmol/l) each 5 nmol/l increase in 25(OH)D was associated with a 6.3% drop in the risk of S. aureus carriage (p = 0.002), and high (3rd tertile > 58.2 nmol/l) versus low (1st tertile < 44.7 nmol/l) vitamin D was associated with a 33% reduced risk of carriage [Odds Ratio (OR) = 0.67; 95% Confidence Interval (CI) = 0.47, 0.94]. In non-smoking men aged 44-60 years, the OR was 0.52 (95% CI = 0.29, 0.92) in the high vitamin D group. In women and smokers there were no associations between vitamin D and S. aureus carriage. Our study strongly supports that serum vitamin D may be a determinant of S. aureus carriage. Prospective trials may assess the preventive effect of improved vitamin D status on S. aureus carriage and infection. (1) van Belkum et al. Inf Gen Evol 9;2009;32-47; (2) Chesney, J Ped 156;2010;698-703

0099-S

GENITAL CHLAMYDIA AND GONORRHEA ARE INDEPENDENT PREDICTORS OF HPV PREVALENCE. *TR Soong; PE Gravitt; SB Gupta; K Liaw; E Kim; A Tadesse; C Phongnarisorn; V Wootipoom; P Yuenyao; C Vipupinyo; S Sriplienchan; DD Celentano (Johns Hopkins Bloomberg School of Public Health, Baltimore, MD 21205)

This study evaluated the associations of recent sexually transmitted infections (STIs) with cervical HPV prevalence. Data came from a prospective study conducted in 1046 women aged 20-38 years with normal cervical cytology in Thailand. We assessed whether baseline HPV prevalence was predicted by STIs which were newly detected and laborato--confirmed within 2 years prior to enrollment. Prevalence ratios (PRs) with 95% confidence intervals were estimated using generalized linear models. Baseline prevalence of any HPV and high-risk (HR)-HPV were 19.9% and 8.7% respectively. Having genital chlamydia (CT) or gonorrhea (NG) in the past 2 years was associated with increased risk of HR-HPV infection after controlling for current and past sexual behaviors, age and contraceptive use [adjusted PRs (aPRs): CT: 2.9(1.3-6.5); NG: 3.4(1.7-6.7)]. Association between CT and prevalent HR-HPV was statistically significant only among non-hormonal contraceptive users [aPR: 2.7(1.2-6.3)] but *not* among those using hormonal contraceptives in the past 2 years [aPR: 1.2(0.7-2.2)]. Association of NG with prevalent HR-HPV was observed among those who used combined oral [aPR: 6.2 (2.2-17.7)] or progestin-only contraceptives [aPR: 3.5(1.1-10.9)] during the past 2 years but *not* among non-hormonal contraceptive users [aPR: 1.9(0.3-10.3)]. The differential impact of recent hormonal contraceptive use on the associations of CT and NG with HPV prevalence suggests that the observed correlations may be attributed to biologic interactions between the pathologies of CT or NG with HPV, and not merely residual confounding by shared sexual risks.

0100-S

ARE THERE MUTUAL ASSOCIATIONS BETWEEN THE INCIDENCE OF HPV INFECTION AND OTHER SEXUALLY TRANSMITTED INFECTIONS? *TR Soong; PE Gravitt; SB Gupta; K Liaw; E Kim; A Tadesse; C Phongnarisorn; V Wootipoom; P Yuenyao; C Vipupinyo; S Sriplienchan; DD Celentano (Johns Hopkins Bloomberg School of Public Health, Baltimore, MD 21205)

We aimed to determine (i) if other sexually transmitted infections (STIs) increase the risk of incident HPV infection and (ii) if HPV infection predicts the incidence of other STIs. Women aged 20-38 years were followed semi-annually for 18 months in Thailand (n=1200). Assessment was made on cervical HPV genotypes, cervical cytology, sexual behavior, demographic factors and diagnoses of other STIs including chlamydia, gonorrhea, syphilis, genital herpes and trichomoniasis. Incident detection was defined as any type-specific HPV or other STIs which was detected at current visit but not at previous visit. Associations were measured by odds ratios (ORs) with 95% confidence intervals estimated in generalized estimating equation models. During follow-up, 241 new cases of HPV, 110 incident cases of high risk(HR)-HPV and 47 new cases of other STIs were observed. Diagnosis of other STIs at previous visit was statistically significantly associated with 2-fold increased odds of any HPV but not HR-HPV after adjustment for sexual behavior, age, pap smear status and contraceptive use [adjusted ORs (aORs): any HPV: 2.1(1.1-4.3); HR-HPV: 1.9(0.7-5.4)]. Positive HPV detection predicted nearly 2-fold increased odds of other STIs with the estimate bordering on statistical significance [aOR: 1.8(0.9-3.4)]. We show that other STIs increase the risk of HPV incidence after controlling for sexual behavior. The data qualitatively suggest mutual associations of HPV with other STIs, warranting further studies to evaluate if these reflect true biologic interactions or confounding from unmeasured sexual risks.

0101

CHILDHOOD INFECTIOUS DISEASES AND PREMATURE ADULT MORTALITY: RESULTS FROM THE NEWCASTLE THOUSAND FAMILIES STUDY. Tennant PWG, Parker L and *Pearce MS (Institute of Health and Society, Newcastle University UK; Dalhousie University, Canada)

Early life infections may negatively influence health in later life, but there have been few studies of the association, due to the difficulty of simultaneously obtaining data from early and later life. This study utilised unique longitudinal data from the Newcastle Thousand Families Study, a prospective cohort of 1147 individuals born in Newcastle-upon-Tyne (UK) in 1947, to assess the impact of various childhood infectious diseases on mortality between ages 18 and 60 years. Methods: Detailed information was collected prospectively at birth and during childhood on a number of early life factors. Study members were 'flagged' by the UK National Health Service Central Register when they died or emigrated. Death between ages 18 to 60 years was analysed in relation to childhood infections, adjusting for potential confounders, using Cox regression. Results : History of infection with either tuberculosis or whooping cough was independently predictive of mortality between ages 18 and 60 years [Adjusted hazard ratio, aHR=2.00 (95% confidence interval, CI: 1.17-3.41) and 1.95 (95% CI: 1.21-3.14) respectively]. Of the other variables examined, adult mortality was significantly more common among men [aHR=0.62 (95% CI: 0.39-0.97)] and among first-born children [aHR=2.95 (95% CI: 1.52-5.73)]. The effect of whooping cough on mortality was largely attributable to a higher risk of death from cancer, particularly non-smoking related cancers. Conclusion: In a pre-vaccination cohort from northern England (UK), childhood infection with either tuberculosis or whooping cough was associated with an increased risk of premature adult mortality independent of other childhood circumstances. Further studies are required to investigate this association among different populations.

0102

EFECAB – STUDY DESIGN OF MANAGING PIGS TO PREVENT EPILEPSY. *H Carabin, LD Cowan (University of Oklahoma Health Sciences Center, Oklahoma City, OK, 73104), A Millogo (Université de Ouagadougou, Bobo Dioulasso, Burkina Faso), R Ganaba (AFRICSanté, Bobo Dioulasso, Burkina Faso), JB Ouédraogo (Centre MURAZ, Bobo Dioulasso, Burkina Faso), P Dorny, N Praet (Institute of Tropical Medicine, Antwerp, Belgium)

Neurocysticercosis (NCC), caused by the human-to-pig transmitted tapeworm Taenia solium, is increasingly recognised as an important cause of epilepsy and other neurological outcomes in developing countries. Yet, no cohort study has been conducted to estimate the incidence of infection with the larval stages of cysticercosis and the development of symptoms of NCC. Based on our pilot study in which the proportion of people with epilepsy with CT evidence of NCC was 45% in two pig-raising villages and 0% in one pig-free village, we designed a large community-based randomized trial to assess the effect of an educational programme on pig management and community -lead total sanitation on the incidence rate of cysticercosis and NCC. In each of 60 villages, 80 persons will be followed for the development of neurological outcomes (epilepsy, seizure, severe chronic headaches) and 60 will be followed serologically for a baseline period of 12 months. After 12 months, the educational package will be block-randomized (by department) to 30 of the 60 villages. All participants will be followed 24 months after the intervention. This study, which is planned to start on February 1, 2011, will be the largest randomized trial and cohort study of cysticercosis ever conducted. Challenges specific to conducting large community-based randomized trials in the developing world, issues of clustering of environmental risk factors (eggs of the parasite in this case) and of measurement error will be discussed.

0103-S

URBAN MALARIA IN DAKAR: RAPID DIAGNOSTIC TEST IMPLEMENTATION AND PRESUMPTIVE DIAGNOSIS. *Abdoulaye Diallo, Stéphanie Dos Santos, Assane Diop, Louis Barbosa, Jean-Yves Le Hesran (Institut de Recherche pour le Développement,BP 1386 Dakar, Sénégal)

Dakar, the capital city of Senegal, is located in a low malaria endemic area. However, the use of antimalarial drugs is reported to be very important. In 2007, malaria Rapid Diagnostic Test (RDT) and Artemisinin Combination Therapy were introduced to improve the management of fever cases. To assess the impact of RDT on burden of malaria at hospital, seven public health structures were selected throughout the Dakar area. The registers of attendance were investigated from March 1st 2008 to April 30th 2009. Following information was collected: number of patients, episode of fever, the use of RDT and the results, presumptive diagnosis of malaria, antimalarials prescription (Artemisinin Combination Therapy). 23% of the patients presented fever. According to fever, the global rate of RDT achievement was about 28%; this rate was variable between health structures. The rate of positive RDT was 39 %. 46 % of fevers were defined as presumptive diagnosis of malaria, without using a RDT. Global diagnosis of malaria was about 13.5 %, with huge variations between health structures. Health structures with high level of presumptive diagnosis are more likely to diagnose malaria. Prescription of Artemisinin Combination Therapy is variable between health structures and seems to be linked to the use of Rapid diagnostic Test. Despite RDT implementation, presumptive diagnosis remains important in this urban setting. The use of the RDT is not optimal, and this impairs adequate prescription of antimalarials. Further studies in a large scale are therefore needed to assess the policy of RDT in malaria diagnosis in Dakar area.

0104

DISCREPANCIES BETWEEN PATIENT, PROVIDER, AND EVIDENCE-BASED RISK ESTIMATES REGARDING HIGH INFECTIOUS RISK DONOR ORGANS. *LM Kucirka, RL Ros, C Bone, RA Montgomery, DL Segev. (Johns Hopkins Medicine, 21231)

Deceased organ donors are classified as CDC high risk donors (HRDs) if they meet 1 of 7 behavioral criteria thought to increase risk of a window period (WP) HIV or Hepatitis(HCV) infection (men who have sex with men, injection drug users(IDUs), hemophiliacs, commercial sex workers, sex with someone in preceding categories, percutaneous HIV exposure, inmates). While the indicator is binary, we hypothesized there might be significant variation in risk by behavior category. The goals of our study were to (1) assess patient and provider perceptions of risk by behavior category, and (2) conduct a systematic review of actual WP infection risk by behavior category.Methods: We performed 2 surveys: 1) 142 patients on our center's kidney transplant waitlist, 2) 422 transplant surgeons throughout the US. Patients were asked to rank each behavior from most to least risky. Providers were asked what percentage of organ offers they accepted in each category. We then performed a systematic review and meta-analysis of HIV and HCV incidence among persons in each HRD behavior category, and used pooled incidence estimates to rank the actual risk, based on best evidence available, of WP HIV and HCV infection in each category.Results: Perceptions of which behaviors carried the most risk differed significantly between patients and providers, and both differed significantly from the evidence-based estimates. In particular, both groups underestimated the relative risk of IDUs. The infectious risk of hemophiliacs was overestimated, possibly due to a high perceived prevalence (which does not drive risk of WP infection) but a very low incidence (which does drive risk of WP infection)in this population.Conclusions: Future CDC guidelines should include quantitative summaries of the evidence on which guidelines are based to better inform patient and provider decision making.

0105

PARAMETERS ESTIMATES IN THE PROBABILISTIC LINKAGE BETWEEN BRAZILIAN DEATH AND HOSPITALIZATION DATABASES, ACCORDING TO THE QUALITY OF THE RECORDS OF UNDERLYING CAUSE OF DEATH. *C. Coeli, F. Barbosa, R. Pinheiro, R. Medronho, K. Camargo Jr., A. Brito, K. Bloch (Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brazil, 21941-598)

Probabilistic record linkage can be a powerful tool in epidemiological and health services research, but the accuracy of the process is affected by data quality, and may vary within subsets of the databases to be linked. The purpose of the study was to compare the linkage parameter estimates between Brazilian hospitalizations and deaths databases calculated separately for the subsets of deaths with underlying ill-defined causes and defined causes. Data came from the 2001 Rio de Janeiro State databases. All records of deaths with underlying ill-defined causes (N=12,000) and a random sample of deaths with defined causes (N= 12,000) were separately linked to the records of hospital admissions that ended in death (N=35,418). The m parameter (m-probabilities) estimates were made using the Expectation-Maximization (EM) algorithm considering two strategies: (1) first name, last name, day, month and year of birth, (2) full name and date of birth. In the first strategy, the m parameter estimates for the first and last name fields were equal to or greater than 97% in both analyzed sets. The fields days, months and years, however, showed small values in both sets. In the second strategy there was an important difference between the two groups, with much smaller values in the ill-defined causes subset for full name (91% vs. 61%) and, especially, date of birth (91% vs 0.001%). Our results stress the need for pilot studies to evaluate possible internal heterogeneity of the databases during the planning stage of linkage projects.

0106-S

A COMPARISON OF RELIGIOUS ORIENTATION AND HEALTH BETWEEN WHITES AND HISPANICS. * Matiaco, P., Merrill, R. M., Steffen, P. (Brigham Young University, Provo, UT, 84602)

The study of religious orientation has neglected the influence of race/ethnicity as well as all four religious orientations (intrinsic, extrinsic, pro-religious, and nonreligious) in explaining differences in both physical and psychological health. A statewide representative sample of 250 Hispanics and 236 non-Hispanic Whites was drawn and analyzed for differences in health (self-rated health, life satisfaction, exercise) according to race/ethnicity, religious orientation, and religious attendance. Responses on the Religious Orientation Scale differed significantly by race/ethnicity, indicating that future studies of religious orientation should take cultural context into account. For both Whites and Hispanics, pro-religious individuals reported the highest life satisfaction scores, which highlights the utility of employing the four-fold religious orientation typology.

0107

PREVALENCE OF SELECTED HEALTH OUTCOMES AND HEALTH PREDICTORS FOR THE STATE OF CALIFORNIA: A COMPARISON TO U.S. NATIONAL ESTIMATES (NHANES 1999-2006). D. Kruszon-Moran[1]*, K. Porter[1], G. McQuillan[1], R. Fay[2], W. VanDeKerckhove[2], R. Hirsch[1] and L. Curtin[1] ([1]Centers for Disease Control and Prevention, Hyattsville MD 20782 and [2]Westat, Rockville, MD 20850)

The 1999-2006 National Health and Nutrition Examination Survey (NHANES) was a cross-sectional, nationally representative survey of the U.S. civilian non-institutionalized population. Sample weights were calculated for the national sample and recently recalculated for participants examined in the state of California. Seropositivity to infectious diseases measured for all four two-year cycles and the distribution of 1) demographic and 2) health behaviors for disease were examined and compared for the U.S. and California. As compared to the total U.S. population, California was found to have 1) fewer persons in the oldest age group (60 years or older), more of Mexican American or Other race/ethnicity as compared to non-Hispanic white or non-Hispanic black, more born outside the U.S., more with lower levels of education, and fewer who own a home; 2) fewer who can identify a regular health provider, more who ever tried cocaine, more who self-report Hepatitis A virus (HAV) or Hepatitis B virus (HBV) immunization, more seropositive to HBV due to vaccination; and 3) for disease outcomes, more seropositive to HAV and HBV (due to chronic disease) (all p-values < 0.05). These differences between the U.S. and California varied by race/ethnicity. The sample design and the number and types of California counties sampled in NHANES during 1999-2006 enabled the calculation of weights and sample design parameters for California, permitting the comparison of national estimates with those for a smaller geographic area for the first time.

0108-S

BUILDING CAPACITY AND RECRUITING FOR HIV EPIDEMIOLOGIC STUDIES WITH AFRICAN, CARIBBEAN AND OTHER BLACK COMMUNITIES IN UNDERSTUDIED URBAN-RURAL LOCALES: THE BLACCH STUDY. *S. Baidoobonso, G. Bauer, the BLACCH Study Team (Univ. of Western Ontario, London, ON, N6A 5C1)

London reportedly has Ontario's 3rd-highest HIV infection rate, and a small (2.2%) but growing African, Caribbean and other Black (ACB) population. Although targeted for HIV prevention efforts, ACB people are hard to reach for research and programming, especially in London and similar urban-rural locales with few ACB-specific resources. In Canada's ACB population, HIV is most commonly spread through heterosexual contact, yet cultural and religious norms often discourage discussions about sex or sexuality. Homophobia, racism and stigma discourage ACB people from seeking information about HIV/AIDS. In addition, few researchers have worked with local ACB communities; trust is lacking between ACB communities and service providers; and there are ethnic divisions in ACB communities. The BLACCH Study is a cross-sectional study about health and HIV in London's ACB population. To build research capacity and enhance recruitment, a variety of methods and strategies were employed. These included: following community-based research (CBR) principles; networking with stakeholders (ACB people, service providers, and researchers); performing semi-ethnographic work; forming a multi-stakeholder team; interviewing stakeholders; partaking in community events; sending periodic e-bulletins; engaging media; and employing venue-based and snowball sampling. These methods helped: identify relevant survey topics and recruitment methods; build relationships with stakeholders; promote the study; identify individuals to help with recruitment; and learn about community dynamics. CBR is necessary for conducting quality epidemiologic research with hard to reach populations.

0109

CREATING A MODEL OF INTEGRATED SURVEILLANCE FOR VACCINE-PREVENTABLE DISEASES: THE COSTA RICAN EXPERIENCE. T. Barrantes*, J. Rodríguez, M. Barrantes (Hospital San Vicente de Paul, Costa Rica), A. Ruiz, J. Lara, H. Bolaños, G. Chanto, E. Sáenz, (INCIENSA, Costa Rica)

In 2007, CDC and PAHO asked Costa Rican Ministry of Health to develop an integrated model for vaccine-preventable diseases surveillance. Costa Rica starts a cooperation work between the Ministry of Health, the Caja Costarricense de Seguro Social (responsible for health care) and INCIENSA as National Reference Laboratory. Hospital San Vicente de Paúl and its Pediatrics department is chosen as sentinel unit, with the 11 primary care centers close to it. Surveillance is integrated in 3 levels. First, diseases are integrated in syndromes according to their clinical presentation. The 5 syndromes are: acute severe respiratory infection (ASRI) for Streptococcus pneumoniae, Haemophilus influenzae, Bordetella pertussis, and Influenza virus; acute severe diarrheal disease (ASD) for rotavirus surveillance, meningeal syndrome for Streptococcus pneumoniae, Haemophilus influenzae and Neisseria meningitidis surveillance, acute febrile rash illness for measles, rubella, chicken pox and dengue fever surveillance and acute flaccid paralysis (AFP) for polio virus surveillance. During the first year of surveillance (September 2009 to October 2010), the integrated surveillance system for vaccine-preventable diseases captured 401 patients, 72% for ASRI, 13% for ASD, 12% for febrile rash illness and 1% for meningitis and AFP. Median age was 2.5 years for both male and female. 74% patients had a complete vaccine scheme according to age; only 3% had incomplete vaccines. The 98% of them were inpatients, and 2% required to be transfered to third level. The laboratory confirmed 85 cases of vaccine-preventable diseases: 48 for weeping cough, 32 for influenza virus, 8 for rotavirus, 3 for invasive pneumococcal disease and 3 for chicken pox. By these integrated surveillance 2 deaths were confirmed, like vaccine-preventable disease. This integrated surveillance model is effective for increasing sensibility in the capture of patients with vaccine-preventable diseases. The syndromes integration facilitates data and adequate sample collection, and improves surveillance.

0110

ESTIMATING EFFECTS OF ALCOHOL CONSUMPTION AND DRUG INJECTION FREQUENCY ON HIV ACQUISITION USING JOINT MARGINAL STRUCTURAL MODELS. *CJ Howe, SR Cole, SH Mehta, GD Kirk (UNC, Chapel Hill, NC 27599)

Previously we presented evidence for an effect of alcohol consumption on HIV acquisition among African American injection drug users in the AIDS Link to Intravenous Experience (ALIVE) cohort using marginal structural models. We now extend these results to the joint effects of alcohol consumption and drug injection frequency to demonstrate heretofore underused joint marginal structural models. The ALIVE study recruited and followed participants with semiannual visits in Baltimore between 1988 and 2008. Pooled logistic regression models were used to estimate stabilized inverse probability weights for alcohol consumption, drug injections, death, and drop out. These four weights were multiplied together and over visits. Covariates used in the weight estimation included socio-demographic factors, alcohol consumption, drug use, and sexual activity. Hazard ratios (HR) were estimated from a weighted Cox proportional hazards model which included age, education, alcohol consumption, drug injections, and the product of alcohol and injections. During the 8,181 person-years of follow up, 155 of 1,525 participants seroconverted with HIV. Weighted HRs for participants reporting 21-140 drinks/week in the prior two years compared to participants who reported 0-20 drinks/week were 2.09 (95% confidence limits [CL]: 1.34, 3.27) and 0.97 (0.59, 1.62) among participants reporting 7-38 drug injections/week and 0-6 drug injections/week in the same period, respectively. The robust P value for the Wald test for interaction was 0.01. The weighted analysis indicates that the hazard of HIV acquisition for high alcohol consumption is solely elevated among frequent drug injectors.

0111-S

THE ROLE OF SELECTION BIAS IN PANCREATIC CANCER CASE-CONTROL STUDIES: *Z. HU, K. ANDERSON (University of Minnesota, Minneapolis, MN, 55414)

We investigated the potential for selection bias for pancreatic cancer case-control studies based on the Iowa Women's Health Study (IWHS) dataset, a cohort of 41,837 post-menopausal women with 18 years of follow-up. Risk factors under our investigation included smoking, body mass index (BMI), type-II diabetes and alcohol consumption. Kaplan-Meier analyses and logrank tests were used to estimate survival rates for categorical variables, and a Cox proportional hazards model was applied to calculate hazard ratios (HR). Then, for each risk factor, a total of 5 case-control groups were simulated based on the IWHS cohort in a way that reflects how cases and controls being recruited in population-based studies. The reference group included all pancreatic cancer cases in the IWHS cohort. For the 4 others, we excluded cases whose survival time was less than 1.5 months, 3 months, 4.5 months and 6 months, respectively. Odds ratios (OR) were then estimated via conditional Logistic regression. We quantitatively compared the differences between ORs based on a "delay category", a dichotomous variable indicating the interaction between risk factors and survival time. Overall, BMI shows a significant inverse relationship with survival after controlling for confounding via Cox regression (HR = 1.23, *P*-value < 0.01). We observed a similar pattern when comparing the ORs for the simulated case-control pairs. The OR for BMI shows a significant decrease after the exclusion of cases with relatively low survivals. The interaction between BMI and the delay category with a cut-point of 3 months is also statistically significant (*P*-value < 0.01). In conclusion, our findings suggest that case losses could result in selection bias when estimating OR of pancreatic cancer associated with BMI.

0112-S

CLUSTERING OF DETERMINANTS OF STROKE AND MYOCARDIAL INFARCTION AT THE NEIGHBORHOOD LEVEL: A POPULATION HEALTH PLANNING APPROACH. A. Pedigo* and A. Odoi (University of Tennessee, Knoxville, TN, 37934)

Although socioeconomic, demographic, and geographic factors are known to be important determinants of stroke and myocardial infarction (MI), little is known regarding the clustering of these risk factors in neighborhoods. Research has overwhelmingly found that an individual's health can be influenced by the socioeconomic and demographic characteristics of their neighborhood. Thus, the objective of this study was to classify neighborhoods (census tracts) in East Tennessee using multivariate techniques based on demographic, socioeconomic, and geographic risk factors for stroke and MI to better identify and understand population characteristics and health needs. To our knowledge, this is the first study to investigate the clustering of population characteristics that may be risk factors of stroke or MI at the neighborhood level. Four peer neighborhoods (PNs) with unique population profiles were identified using fuzzy cluster analysis. Nearest neighbor discriminant analysis and decision trees were used to assess classification accuracy and the best discriminating variables. The proportion of the population below poverty, median housing value, and the urban/rural classification of the neighborhood were important variables. The highest risk of stroke and MI mortality tended to occur in urbanized, less affluent neighborhoods while the suburban, most affluent neighborhoods had the lowest risk. These findings provide population health planners a unique opportunity to better understand and effectively plan for neighborhood health needs. Careful integration of these findings into health is useful in guiding resource allocation, service provision, and policy decisions to address neighborhood health disparities.

0113

A PROBABILISTIC MULTIPLE-BIAS MODEL APPLIED TO A STUDY OF MOBILE PHONE USE AND RISK OF GLIOMA. *F. Momoli, M.-E. Parent, J. Siemiatycki, R. Platt, L. Richardson, D. Bedard, E. Cardis, M. McBride, D. Krewski (University of Ottawa)

We assessed the risk of glioma in relation to mobile phone use, as part of an international collaboration of case-control studies. The study population consisted of 170 cases of glioma and 653 population controls, from Montreal, Ottawa, and Vancouver. Using logistic regression, comparing regular users (at least one call per week for six months) to non-regular users, the odds ratio was 0.9 (95% CL: 0.6-1.3). Information on biases was then incorporated into the model in a probabilistic iterative procedure. First, with validation data on recall error, adjustments were applied to recalled number of calls and call durations. Second, to address selection bias, a dataset of individuals who refused participation in the study was simulated by sampling from the responders, according to a reasonable scenario of selection factors and assuming the same exposure distributions as in the completed data. With this reconstituted study population, we adjusted for confounding by age, education, sex, and region. Finally, random error was reintroduced and a median value and simulation interval were read from the distribution of estimates. Accounting for systematic and random error changed the odds ratio for regular users from 0.9 to 1.0 (0.8-1.3). Considering another exposure metric, the highest quartile of lifetime cumulative hours of use (greater than 558 hours) compared to non-regular users, resulted in a conventional odds ratio of 1.6 (1.0-2.7), and with the multiple-bias model, 1.8 (1.2-2.8). Application of bias modelling had marginal impact on results. Although our modelling incorporated limited correction for recall and selection biases, other biases may still be present.

0114

QUALITY ASSESSMENT OF THE COMPUTERIZED QUEBEC BCG VACCINATION REGISTRY AND LINKAGE WITH ADMINISTRATIVE DATABASES: A PILOT STUDY. *M-C. Rousseau, M. El-Zein, F. Conus, M-E. Parent, J. Li (INRS-Institut Armand-Frappier, Laval, QC, Canada, H7V 1B7)

The BCG (Bacillus Calmette-Guérin) Vaccination Registry for the Canadian province of Quebec comprises some 4 million vaccination records from 1926-1993. Its content, available in paper format, has recently been computerized using optical character recognition. In this pilot study, we aimed to: 1) compare the computerized database with the paper format, and; 2) determine the proportion of successful linkages with demographic and medical administrative databases. For the first aim, about 0.1% of the BCG records were systematically selected from the paper format. For each record, discrepancies with the database for any of 13 variables including names, birth date, gender, and characteristics of vaccination were documented. Exact agreement was observed for 99.6% of the 4,987 sampled records; no more than one error per record was present. For the second aim, a random sample of 3,500 subjects born in 1961-1974 and vaccinated from 1970-1974 was selected from the computerized BCG registry. Using personal identifiers (names, father's given name, sex, and birth date), separate linkages were conducted with the provincial medical insurance registration file (deterministic) and birth registry (probabilistic). The proportion of successful linkages was 69.5% with the medical insurance file and 77% with the birth registry, and varied greatly by birth year. In conclusion, the computerized data of the BCG registry was of excellent quality. Linkage of the BCG registry to administrative databases, as a first step to create a retrospective cohort, was feasible. The linkage method, birth year, and missing values in personal identifiers impacted on linkage success across years.

0115

AN APPROACH TO COMPARING NATIONS FOR INCLUSION OF STUDIES IN HEALTH-BASED SYSTEMATIC LITERATURE REVIEWS. *Raywat Deonandan, Howard Schachter, Mylan Ly, Alberta Girardi, Denise Lacroix, Nicholas Barrowman, Ceri Moore, Idil Abdulkadir. (Interdisciplinary School of Health Sciences, University of Ottawa, Ottawa, Ontario)

Objective: To develop and demonstrate a systematic approach for comparing nations, for the purpose of deciding whether to include or exclude studies in a systematic review of a health research question pertinent to the Canadian population. Method: A dialogical, discursive process was employed to identify criteria for describing a population. These criteria were then applied to select papers for inclusion in a large systematic review on paediatric mental illness prevalence. Results: a template of nine criteria was developed, including both sociodemographic and systemic indicators, and was applied to 68 jurisdictions, of which 19 were deemed sufficiently comparable to Canada to be included in the review. Conclusion: Subsequent systematic reviews should employ a similar process, with indicators and characteristics specific to the research questions, to ensure that political, economic, historical or ethnic biases are not influencing the selection or rejection of relevant papers.

0116-S

COMBINING BIOMARKERS AND SELF-REPORTED DIET TO ANALYZE THE ASSOCIATION BETWEEN FISH-DERIVED N-3 POLYUNSATURATED FATTY ACIDS AND ATRIAL FIBRILLATION – THE ARIC STUDY. *NN Gronroos, AM Chamberlain, AR Folsom, EZ Soliman, SK Agarwal, JA Nettleton, A Alonso (University of Minnesota, Minneapolis, MN, 55454)

Background: Results from observational studies investigating the association between n-3 fatty acids and atrial fibrillation (AF) have been inconsistent. We investigated whether the use of biomarker data in addition to self-reported diet changed associations between the fish-derived n-3 polyunsaturated fatty acids (PUFAs) eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) and AF. Methods: Dietary intake of fish-derived n-3 PUFAs was measured at baseline using a food frequency questionnaire (FFQ) and plasma phospholipids in 3,743 ARIC participants from the Minnesota field center. We identified 270 incident AF events over 18 years (1987-2005). Multivariable Cox proportional hazard models were run using five different exposures: (1) tertiles of FFQ-measured DHA+EPA; (2) tertiles of plasma-measured DHA+EPA; (3) subjects in the highest tertiles of intake for both FFQ and plasma measures vs. those in lower tertiles vs. all others (3-level categorical variable); (4) Howe's method with three categories (tertiles); (5) Howe's method with n categories (n=3,743). Howe's method ranks individuals' by categories of self-reported diet intake, then again by biomarkers, then sums the two ranks. Results: Associations between n-3 PUFAs and AF risk were null for all 5 exposure characterizations. Hazard ratios (95% CI) comparing extreme categories were (1) 1.0 (0.7-1.5), (2) 0.9 (0.7-1.2), (3) 1.1 (0.7-1.6), (4) 1.0 (0.7-1.5), (5) 1.0 (0.7-1.2). Discussion: In this subgroup of the ARIC cohort fish-derived n-3 PUFA intake was not associated with AF. Use of dietary biomarkers did not impact estimates of association.

0117

INFLUENZA VACCINE SURVEILLANCE IN REAL-TIME USING MOBILE PHONES AND SMS.*R Chunara, D Scales, D Diamond, JS Brownstein (Children's Hospital Boston, Boston, MA 21125)

We explored the use of mobile phones and Short Messaging Service (SMS) to monitor influenza vaccine coverage of a university community in real-time. Traditionally, influenza vaccine coverage is monitored by surveys with a significant time lag between vaccination and data collection. Individual reporting via SMS also eliminates recall-bias and can be used to provide real-time feedback about vaccination coverage within a specific geographic area or time. In this cross-sectional pilot study, subjects who received an influenza vaccine at the Massachusetts Institute of Technology medical center were solicited to self-report their gender, age and home zip code through their own mobile phones. Using linear regression analysis to estimate regression coefficients and 95% confidence intervals (CI), we found that the SMS reports generally were representative of the entire population that was vaccinated for each day of the study (coefficient: 1.64, CI: 1.49-1.80). Correlation by age gave coefficient: 1.26 and CI: 0.04-2.49 when considering all age groups and was highest without the 34-45 age group (coefficient: 1.73, CI 0.81-2.66). We also found that neither gender significantly reported vaccine coverage preferentially by SMS. Spatial coverage was also captured and mapped in real-time. These results indicate that with careful study design, specifically how the request for SMS reporting is advertised, SMS and mobile phones can be used as a method to gather vaccine coverage information representatively and quickly from a population.

0118

USING PARAMETRIC G-FORMULA TO ESTIMATE THE EFFECT OF MULTIPLE LIFESTYLE AND DIETARY INTERVENTIONS FOR PREVENTING TYPE 2 DIABETES IN A PROSPECTIVE COHORT. Danaei G*, Hernán MA , Hu FB (Harvard School of Public Health, Boston, MA)

Prospective observational data is often used to estimate the effect of hypothetical interventions on disease risk. Standard analyses (e.g., Cox models) face three challenges: (i) appropriate adjustment for time-varying confounders affected by prior exposure, (ii) generation of adjusted estimates of absolute risk and population attributable risk, and (iii) consideration of complex interventions not easily coded by the variables in the model. The parametric G-formula is an emerging analytic alternative that can handle these three problems (under the assumptions of no unmeasured confounding and no model misspecification). We used the parametric G-formula to estimate the causal effect of multiple lifestyle and dietary interventions on the risk of type 2 diabetes among U.S. women. The interventions include weight loss, physical activity, dietary changes, moderate alcohol drinking and quitting smoking. The parametric-g formula can appropriately adjust for time-varying confounders affected by prior exposure (e.g., past diet), and can readily estimate the absolute risk of diabetes under the intervention of interest. One can then calculate effect on the risk ratio and difference scale, population attributable risk, and number-needed-to-treat for each intervention. Finally, the g-formula can be used to estimate the effects of joint interventions on several risk factors, and naturally lends itself to articulating complex, but more realistic, interventions. For example, rather that proposing naïve weight loss interventions of the sort "instantly reduce body mass index (BMI) to 25 if above 25 kg/m2", one can consider interventions of the sort "reduce BMI by 5% in each 2-year period until it reaches 25 kg/m2". In this presentation we will illustrate the advantages of this method by presenting effect estimates from a large prospective cohort study for a variety of interventions.

0120

CONSIDERATIONS IN DEVELOPMENT OF TRANSGENDER SURVEY ITEMS FOR POPULATION HEALTH STUDIES. *G. R. Bauer (University of Western Ontario, London, Ontario, Canada N6H 2B1)

Trans (transgender, transsexual or transitioned) people represent a broad range of individuals who share the common experience of knowing themselves to be a gender that is not congruent with the sex they were assigned at birth. There has been a recent increase in research on, knowledge of, and interest in, trans health issues, sparked by evidence of extreme health-related inequities. Existing quantitative data on trans health come primarily from convenience samples of trans people at the local, state or provincial, or national levels. Attempts to collect and analyse data on trans participants in large population health studies are relatively new. Measures developed for studies within trans populations are not appropriate for inclusion in these broader population studies, as such measures often include community-specific language that would be confusing to many non-trans participants. While consensus guidelines have been developed for measuring sexual orientation in population surveys, no such guidelines exist for measuring sex and gender in a way that can capture data on trans participants that can be meaningfully analyzed. Considerations in developing such survey measures are explored. These include: 1) Accurate identification of all trans participants; 2) Minimizing respondent burden; 3) Protecting against misclassification of the much larger group of non-trans participants as trans; 4) Minimizing item non-response; 5) Understanding dimensions of sex and gender and deciding which to incorporate, and; 6) Ensuring data from trans participants is collected in a way that allows it to be used in full-sample analyses and sex-stratified analyses, so that trans participants will not simply be dropped from these analyses. Based on these considerations, preliminary recommendations are made for measures to be incorporated into population studies, and an example provided of such measures developed for a large population cohort study.

0121

RELIABILITY OF SELF-REPORTED HOUSEHOLD PESTICIDES USE. Fortes C, Mastroeni S, Boffetta P, Salvatori V, Melo N, Bolli S, Pasquini P. (Clinical Epidemiology Unit, IDI-IRCCS, Rome, Italy)

Background: Household pesticide exposure has been associated with cancer risk in both adults and children. We investigated the reliability of reported lifetime household pesticide exposure through repeated administration of a standardized questionnaire. Methods: A questionnaire including detailed questions on lifetime frequency and duration of pesticides use in non-occupational circumstances was administered on two occasions to 163 cutaneous melanoma cases and 113 controls. We investigated the agreement between the two measurements taken on average 12 months apart and studied the association between differences in the two measurements and a set of explanatory variables. According to the results of the reliability analysis we also corrected OR estimates from the main study. Results: Agreement for duration and frequency of use of pesticides outdoors was 89.5% (Cohen's Kappa = 0.48) and 92.0% (Cohen's Kappa = 0.40) respectively while for duration and frequency of use of pesticides indoors agreement was 75.4% (Cohen's Kappa = 0.32) and 77.4 % (Cohen's Kappa = 0.28) respectively. Agreement was higher for duration (97.4%; Cohen's Kappa = 0.72) and use of pesticides on domestic animals (86.4%; Cohen's Kappa = 0.68). The corrected OR showed a moderate increase with a reinforcement of the effect of pesticides. Conclusion: Overall, there was a good reproducibility in self-reported exposure to pesticides. This findings may reinforce previous studies which showed that residential pesticides may cause cancer.

0122

THE BENEFIT STUDY: DOES REIMBURSING THE COST OF COMMERCIAL WEIGHT CONTROL PROGRAMS INFLUENCE WEIGHT LOSS? *S. Lu, L. Shack, T. Mottershead, C. Parker and FD. Ashbury (Alberta Health Services, Calgary, AB, T2S 3C3)

To investigate the effect of financial incentives on weight loss outcomes, a community-based controlled trial was conducted in six health regions (3 intervention, 3 control) ,matched on obesity prevalence and population density. A cohort of 591 participants 20-65 years old, with a BMI of $\geq$ 25, and who lived in the selected communities, voluntarily enrolled in either intervention or control groups. Intervention participants received up to 70% reimbursement for program fees of commercial weight control programs (max $600) if they attended 75% of sessions. Participants' weekly weight values were recorded by the weight control programs. Multiple imputation was used to impute 13.5% missing weight measures. Mixed model analysis was used to analyze short-term repeat weight values in two treatment groups to measure the effect of financial incentives over time. In the first 12 weeks of participation, both intervention and control group members lost weight. Receiving financial incentives significantly increased the percentage of body weight loss (intervention 4.4%; control 3.1%). Weight loss was significantly higher for participants who were men, had more social support, had a higher initial BMI, and had not previously enrolled in a weight control program. Repeated financial incentives enhance weight loss for individuals participating in commercial weight control programs in the first 12 weeks. Reimbursing the cost of weight control programs may be a potential population health obesity-prevention intervention, however, further analysis of the impacts on longer term outcomes is necessary. Key Words: weight loss, multiple imputation, mixed model, incentives, obesity

0123-S

WEIGHT TRAINING AND RISK OF SUBSITE-SPECIFIC COLORECTAL CANCER. *T. Boyle, J. Heyworth, F. Bull and L. Fritschi (The University of Western Australia, Perth, Western Australia, 6009)

There is convincing evidence that physical activity reduces colon cancer risk. However it is unclear whether different types of activity, such as aerobic and anaerobic activity (e.g. weight training), have a different effect on risk. We conducted a case-control study to investigate whether weight training was associated with the risk of subsite-specific colorectal cancer. A total of 918 cases and 1021 controls participated in a case-control study of colorectal cancer in Western Australia in 2005-07. Cases were histologically confirmed incident cases of colorectal cancer and age and sex matched controls were randomly selected from the electoral roll. Data were collected on demographic and lifestyle-related colorectal cancer risk factors, including recreational physical activity performed over the adult lifetime. The estimated effect of weight training on the risk of cancers of the proximal colon, distal colon and rectum was analyzed using multinomial logistic regression. After adjusting for potential confounders, including energy expenditure in recreational physical activities other than weight training, participants who did any weight training had a non-significant 37% lower risk of distal colon cancer than those who did no weight training (Adjusted Odds Ratio = 0.63, 95% Confidence Interval 0.32, 1.24). Weight training was not associated with rectal cancer or proximal colon cancer. These results suggest that weight training may be inversely associated with distal colon cancer risk, independently of other recreational physical activity, although the low prevalence of the exposure resulted in insufficient power to detect a significant difference. Further studies are needed to confirm this novel finding.

0124-S

FINANCIAL INCENTIVE FOR PROMOTING GOOD-HEALTH BEHAVIORS IN THE WORKPLACE. * Matiaco, P., Merrill, R. M., Aldana, S. G., Garrett, J. G., Ross, C. (Brigham Young University, Provo, UT, 84602)

Background: Companies are increasingly turning to worksite wellness programs to improve employee health, increase company productivity and lower absenteeism. This study measures the effectiveness of a financial incentive worksite wellness program. Methods: Assessment is based on 3,737 (72% men) continuously employed workers from a large agribusiness, 2007 through 2009. Biometric measures are evaluated for improvement and assessed using standard statistical methods. Results: The number of employees completing biometric screening was around 60% each year, with women more likely to be screened than men. Reward points were submitted by about 85% of those undergoing screening. A higher percentage of women submitted reward points and those in the age range 30-59 and employed more years with the company were more likely to submit reward points. Significant improvements occurred over the study period in those who were underweight, those with high systolic or diastolic blood pressure, high total cholesterol, high LDL, low HDL, high triglycerides, and high glucose. Among obese employees in 2007, significant improvements occurred in selected mental health and dietary variables. Among those who lowered their Body Mass Index (BMI), significant decrease occurred in fat intake, and significant increase resulted in weekly aerobic exercise and feelings of calmness and peace, happiness, ability to cope with stress, and more physical energy. Conclusion: Employees participating in the incentive wellness program experience greater physical and mental health and improved health behaviors, particularly among those in the at risk categories of health at baseline.

0125

THE ASSOCIATION OF FOOD INTAKE PATTERNS WITH BREAST CANCER RISK: A COHORT STUDY. R.S. Kim, *G.C. Kabat, A.B. Miller, T.E. Rohan (Albert Einstein College of Medicine, Bronx, NY 10461)

Assessment of the role of dietary patterns in the etiology of various cancers may provide a more informative approach than the assessment of individual foods and nutrients. Methods to identify dietary intake patterns fall into two categories: partitional clustering and hierarchical clustering. We used agglomerative hierarchical clustering, which, unlike partitional clustering, does not require a priori knowledge of the number of clusters (k) or selection of initial clusters. In addition, this method accommodates subjects with uncertain food patterns better than partitional methods, and it has the additional benefit of enabling visual inspection of the clusters. For the purpose of identifying dietary intake patterns in a large prospective cohort study and relating them to risk of subsequent breast cancer, we performed agglomerative hierarchical clustering analysis on data from the Canadian National Breast Screening Study (NBSS) dietary cohort, in which a food-frequency questionnaire containing 86 food items was completed by 49,654 women. Over 16.4 years of follow-up, 2,545 cases of breast cancer were identified. A heatmap diagram was created displaying diverse food intake patterns and breast cancer incidence among 10,000 randomly selected members of the cohort. These data are being used to test the association between food patterns and risk of breast cancer using Cox proportional hazards regression models. In a preliminary analysis, we identified a cluster containing 7% of subjects with very heavy alcohol (wine, beer, liquor) and non-diet soda intake. After adjustment for covariates, the hazard ratio for this cluster, relative to all others, was 1.42 (1.06, 1.91, $p<0.02$).

0126

NUTRITIONAL KNOWLEDGE, ATTITUDES AND DIETARY BEHAVIOUR AMONG STATE EMPLOYEES IN TRINIDAD AND TOBAGO. Rhonda Arthur* and Selby Nichols (The University of the West Indies, St. Augustine, Trinidad and Tobago)

In this cross sectional study, we examined the nutritional knowledge, attitudes and dietary behaviour of 303 employees from fifteen state organisations. Participants completed a self administered questionnaire on their nutritional knowledge, attitudes and dietary behaviour. The findings revealed that taste, health and safety were the top three factors which influenced food choices. Additionally, only 44.6% reported viewing food labels, 40.9% reported consideration of nutrition information and 43.6% reported using from all food groups. Less than 40% were likely to consider Trans fat, fibre, saturated fat and sodium when purchasing foods. Nutritional knowledge was inversely correlated with reported consumption of meat ($p=.040$), sugar/jam ($p=.034$), snacks ($p=.001$), fats/oils ($p=.001$) and staples ($p=.057$) and positively correlated with the consumption of fish ($p=.051$). Person reporting good a good knowledge of nutrition were significantly more likely to consider nutrition information when purchasing foods ($p<.001$), purchase and use foods from the six food groups ($p<.001$) and consider all nutrition contents on labels ($p<.001$). These findings suggest that introduction of programmes on nutrition at the workplace may provide a vehicle for improving nutrition behaviours.

0127-S

ASSOCIATION BETWEEN PHYSICAL ACTIVITY AND RISK OF STROKE SUBTYPES: THE ATHEROSCLEROSIS RISK IN COMMUNITIES (ARIC) STUDY. *C.S. Autenrieth, K.R. Evenson, H. Yatsuya, E. Shahar, W.D. Rosamond (Department of Epidemiology, Gillings School of Global Public Health, University of North Carolina, Chapel Hill, NC)

Background: The evidence for the relationship between stroke subtypes and physical activity is not clear. Methods: Using data from 13,280 men and women aged 45-64 years who participated in the ARIC Study, sport and leisure physical activity were assessed by self-report using the Baecke questionnaire at baseline (1987-1989). Stroke and its subtypes were ascertained from physician review of medical records. Multivariable adjusted hazard ratios (HR) and 95% confidence intervals (CI) were calculated using Cox regression models. Results: During a median follow-up of 18.8 years, a total of 757 incident stroke cases occurred. Compared with the lowest quartile of sport physical activity, age-, sex-, and race-field center adjusted HR (95% CI) for the highest activity quartile were 0.76 (0.61-0.95) for total, 0.80 (0.64-1.02) for total ischemic, 0.53 (0.24-1.19) for hemorrhagic, 0.87 (0.50-1.51) for lacunar, 0.89 (0.55-1.44) for cardioembolic, and 0.74 (0.54-1.00) for non-lacunar stroke. Further adjustments for confounders and mediators attenuated the HR for total (0.92; 0.73-1.15), total ischemic (0.99; 0.78-1.25), hemorrhagic (0.61; 0.27-1.39), lacunar (1.12; 0.64-1.95), cardioembolic (1.07; 0.66-1.74) and non-lacunar (0.90; 0.66-1.23) stroke. There was little evidence for dose-response association between quartiles of physical activity and stroke subtypes. Similar results were obtained for leisure activities. Conclusion: These data suggest a trend toward a reduced risk of total and non-lacunar stroke with higher levels of physical activity that is explained by measured confounders and mediators.

0128

APPLYING FEDERAL PHYSICAL ACTIVITY GUIDELINES TO HEALTHY PEOPLE 2020 OBJECTIVES. *A. Ryskulova, R. Klein, R. Hines (National Center for Health Statistics, CDC, Hyattsville, MD, 20782)

Regular physical activity (PA) is associated with decreased risk for chronic diseases and premature mortality. Healthy People 2010 (HP2010) included objectives measuring PA among adults. In 2008 Federal PA guidelines were published and new PA standards were used for developing HP2020 objectives. Federal PA guidelines recommend 2 hours and 30 minutes a week of moderate-intensity, or 1 hour and 15 minutes a week of vigorous-intensity PA for adults. Additional health benefits can be provided by increasing to 5 hours a week of moderate-intensity PA, or 2 hours and 30 minutes a week of vigorous-intensity PA, or a combination of both. The HP objectives were modified to follow the new PA guidelines. Data from the 2008 National Health Interview Survey (NHIS) were analyzed to produce the baseline data for HP2020 objectives addressing regular adult PA. More than 43% of adults met federal PA guidelines in 2008. Men, adults ages 18-24, white non-Hispanic, and persons without disabilities were more likely to be physically active than their counterparts. The prevalence of PA was two times as high among adults with bachelor or advanced degrees as those who did not graduate high school. About 28% of adults reported being engaged in moderate PA for at least 5 hours a week or 2.5 hours of vigorous PA. Similar patterns were observed among population subgroups: males, younger adults, persons with higher income and education levels had higher rates of PA. It should be noted that the self-reported NHIS data may not reflect the actual PA status. HP2020 objectives will be tracked during the decade to further promote benefits of PA and to monitor the PA status of Americans with a focus on eliminating disparities.

0129

CALCIUM INTAKE, DEMOGRAPHIC AND ANTHROPOMETRIC FACTORS ASSOCIATED WITH TOTAL AND IONIZED CALCIUM LEVELS IN SERUM: RESULTS FROM THE THIRD NHANES SURVEY. *H.G. Skinner, G.G.Schwartz (University of Wisconsin, Madison, WI, 53726).

Serum concentrations of calcium and dietary calcium intake have been independently associated with risk for fatal prostate cancer in prospective studies. Understanding the relationship between dietary calcium and serum calcium may provide insight into the relationship of these variables to prostate cancer risk. Moreover, a better understanding of the relationship between dietary calcium and serum calcium is important for epidemiologic studies because it is commonly stated that, over a wide range of dietary intake, intake of calcium does not influence serum calcium concentrations. We examined associations between the concentrations of total serum calcium and ionized calcium, the physiologically active fraction of serum calcium, and intake of calcium and phosphorous, among 14,262 adults in the Third National Health and Nutrition Examination Survey. We also examined the relationship between serum calcium and demographic and anthropometric factors. In multivariate linear regression analyses accounting for the complex sampling design, we observed positive (log-log) associations between the dietary intake of calcium and both the concentration of ionized calcium in serum (Beta=3.6e-03; SE=1.1e-03; p=0.002), and total calcium concentration in serum (Beta = 3.2e-02; SE=1.8e-03; p=0.08). We observed an inverse association between height and both total (Beta=-3.53e-05; SE=7.5e-05; p=4.5e-05) and ionized serum calcium concentrations (Beta = -2.63e-05; 8.73e-06; p=0.005), and a positive association between weight and ionized calcium concentration (Beta = 2,13e-06;SE=9.97e-07;p=0.04). Our findings of a positive association between dietary intake of calcium and serum calcium, in a large, nationally representative sample, may resolve an important issue in prostate cancer epidemiology and has broad implications for other epidemiologic studies of calcium intake.

0130

ASSOCIATION BETWEEN QUALITY OF LIFE AND NUTRITION STATUS OF OLDER PEOPLE IN A CITY OF SÃO PAULO STATE, BRAZIL. Luciana Bronzi de Souza (Graduate Program in Collective Health - Botucatu School of Medicine - UNESP - Botucatu, São Paulo, Brazil) and *José Eduardo Corrente (Department of Biostatistics - Biosciences Institute - UNESP - Botucatu, São Paulo, Brazil)

In the last few decades, population growth patterns have shown high figures for older adults. The accentuated increase in the number of older individuals, particularly in developed countries, has brought consequences to society, and in order to face such challenge, it is necessary to identify the determinant causes of older persons' present health and life conditions. Knowledge concerning the multiple facets that involve the ageing process is also required. Hence, this study aimed at evaluating the existence of an association between quality of life and nutritional status in a sample of older residents in the city of Botucatu – SP, Brazil. It was an epidemiological, cross-sectional, population-based study on individuals aged 60 years or older. A home interview was conducted with 96 individuals at a mean age of 75.11±7 years. Most of them were females (60%), poorly educated, married (62,11%) and retired (84,21%). When questioned about their quality of life, 72,62% reported to be satisfied about it. As to nutritional status, it was found that 41% of the participants were overweight. Anthropometric measurements reduced as age advanced, even though such reduction was not always significant. No significant association between anthropometric measurements or nutritional status with quality of life was observed. Hence, it is possible to conclude that most of the older individuals evaluated were females, married, retired, poorly educated and overweight. It was also observed that there was no association between nutritional status and quality of life.

0131-S

PREVALENCE OF MICRONUTRIENT INTAKE INADEQUACY IN OLDER RESIDENTS IN THE MEDIUM SIZED CITY OF SÃO PAULO STATE, BRAZIL. Luciana Bronzi de Souza, *José Eduardo Corrente (Department of Biostatistics - Biosciences Institute - UNESP - Botucatu, São Paulo, Brazil)

Ageing and its implications in morbidity rates are frequently associated with increased risk for food intake inadequacy of several nutrients. Hence, this study aimed at evaluating the prevalence of nutrient intake inadequacy in 96 older residents in the city of Botucatu, São Paulo, Brazil. To that end, nutritional data were obtained by applying three 24-hour recalls. The Nutwin software, v.1.5, was used to obtain the quantity of nutrients reported in the food inquiries. The data were processed by SAS for Windows, v.9.2. Nutrient intake distribution was estimated using the routines proposed by Tooze et al (A New Statistical Method for Estimating the Usual Intake of Episodically Consumed Foods with Application to Their Distribution, JADA, 2006). Inadequacy prevalence was estimated by using the values from the Dietary Reference Intake as cut-off points. The Adequate Intake (AI) was utilized when the nutrient did not have the Estimated Average Requirement (EAR) value. With respect to the prevalence of micronutrient intake inadequacy, approximately half of the nutrients evaluated showed low inadequacy prevalence (<20%), namely: phosphorus, iron, riboflavin, thiamine, niacin and vitamin B12 for both genders, except for vitamin B6, which showed low intake inadequacy only for males. Folate, vitamin E and magnesium were the nutrients with the highest intake inadequacy prevalences. Calcium, pantothenic acid and manganese did not show EAR values; hence, it was not possible to reach any conclusions about its inadequacy prevalence. Calcium, pantothenic acid and manganese showed intake below AI. Policies encouraging the intake of healthy foods could help overcome the nutritional deficiencies herein described, thus improving older persons' nutritional status.

0132-S

REDUCTIONS IN MEDICATIONS WITH SUBSTANTIAL WEIGHT LOSS WITH BEHAVIORAL INTERVENTION. *M Jhaveri, J Anderson (University of Louisville, Louisville, KY)

Medical costs of obesity in the United States exceed $147 billion annually with medication costs making a sizable contribution. We examined medication costs associated with substantial weight losses for patients treated in intensive behavioral weight loss program. Inclusion criteria were medication use for obesity co-morbidities: hypertension, diabetes, dyslipidemia, degenerative joint disease (DJD), or gastroesophageal reflux disease (GERD). Group 1, 83 consecutive obese patients on medications who completed 8 weeks of classes lost 19 kg in 20 weeks. Group 2, 100 consecutive severely obese patients who lost more than 45 kg (59 kg total in 45 weeks). Medications were discontinued: Group 1, 18%; Group 2, 64%. The numbers of medications per day decreased significantly for all conditions. Numbers of medications, initial and final, respectively were: Group 1, total, 3.0 to 1.7; diabetes, 1.7 to 0.6; Group 2, total, 2.5 to 0.5; hypertension, 1.8 and 0.5; diabetes, 1.9 and 0.6; dyslipidemia, 1.1 and 0.3; DJD, 1.1 and 0.2; and GERD, 1.1 and 0.3. Monthly costs for all medications decreased significantly and were as follows for Group 1, total, $249 and $153; diabetes, $287 to $130; Group 2: total, $237 and $65; hypertension, $111 and $29; diabetes, $371 and $125; dyslipidemia, $130 and $30; DJD, $62 and $9; and GERD, $157 and $51. Average reduction in monthly medication costs were: Group 1, $96; Group 2, $172. Weight loss in medically supervised intensive behavioral weight loss program is a very effective approach to improving diabetes and cardiovascular risk factors and reducing medical costs.

0133

FRAILTY, DIETARY INTAKE, AND FOOD INSUFFICIENCY IN OLDER ADULTS. *E. Smit, K. Winters-Stone, A.M. Tang, C.J. Crespo (Oregon State University, Corvallis, OR 97331)

We examined frailty, energy and protein intake, and food insufficiency in US adults (age ≥60 years) who participated in The Third National Health and Nutrition Examination Survey (n=4731). Frailty was defined as meeting ≥3 criteria and pre-frailty as meeting 1-2 of the 5 item criteria adapted to the available data (low body mass index (BMI), slow walking, weakness, exhaustion, and low physical activity). Intake was assessed by 24-hour dietary recall. Food insufficiency was assessed as self reported "sometimes" or "often" not having enough food to eat. Analyses were adjusted for gender, race, age, smoking, education, income, BMI, other comorbid conditions, and complex survey design. Frail people were more likely to be female, less educated, smokers, and obese than people who were not frail. Independent of BMI, energy intake was lowest in people who were frail, followed by pre-frail, and highest in people who were not frail (mean kilocalories (kcals) ± standard error: 1535±62, 1675±20, 1757±18, respectively, $p<0.01$). Excluding the low BMI (<18.5) criteria from the frailty definition also showed lower energy intake in frail than not frail people ($p<0.01$). For each of the frailty criteria, kcals were significantly lower in people who met the criteria than people who did not. Energy adjusted grams of protein and percent of kcals from protein intake were similar in people with and without frailty. Frail (adjusted odds ratio (AOR)=3.7, 95% confidence interval (CI)=1.3, 10.4) and pre-frail (AOR=2.2, 95% CI=0.9, 5.4) people were more likely to be food insufficient than people who were not frail. Our results suggest that targeted interventions are needed to promote availability and access to nutritious foods among older US adults with frailty.

0134-S

URBAN SPRAWL AND THE RISK OF OVERWEIGHT AND OBESITY IN THE NURSES' HEALTH STUDY. *Peter James, Jaime E. Hart, SV Subramanian, Francesca Dominici, Philip J. Troped, John D. Spengler, and Francine Laden (Department of Epidemiology and Department of Environmental Health, Harvard School of Public Health, Boston, MA 02215)

There is a growing body of literature linking overweight and obesity to the built environment. We conducted a survival analysis linking the county sprawl index, a measure of residential density and street accessibility, to risk of incident overweight and obesity. Our sample consisted of Nurses' Health Study participants living throughout the continental United States from 1986-2006 who were either free of overweight (n=64,852) or free of obesity (n=85,994) at baseline. Participants were 94% white and 41-68 years old at baseline (mean 55 years, standard deviation 7.16 years). Adjusting for age, race, disease status, smoking status, education, marital status, and husband's education, a one standard deviation (24.9) increase in the county sprawl index (indicating a more dense, more compact county) was associated with a 3.55% (95% Confidence Interval (CI) 2.25%, 4.83%) decreased risk of becoming overweight and a 4.57% (95% CI 2.99%, 6.14%) decreased risk of becoming obese. In summary, we found that women living in denser, more compact counties were at lower risk of becoming overweight or obese.

0135-S

THE ROLE OF PUBLIC TRANSPORT IN ACHIEVING RECOMMENDED MINUTES OF PHYSICAL ACTIVITY: A CASE STUDY FROM MONTRÉAL, CANADA. R.A. Wasfi*, N.A. Ross and A.M. El-Geneidy (McGill University, Montreal, QC, H3A 2K6)

The use of active transportation (walking, cycling backed up by public transit) is well known to have public health benefits, yet the extent to which public transit helps individuals achieve daily recommended levels of physical activity is unknown. This paper measures the amount of daily walking associated with the use of public transit in Montréal, Canada. It also examines the underlying individual and contextual factors associated with walking to transit stations. Total walking distances are calculated from a travel behaviour survey (n=10,305 respondents) within a geographic information system. Multilevel regression modelling is used to assess the influence of individual, neighbourhood and transit service characteristics on walking distances. The average walking distance per day to and from public transit stops is 1,447 meters (15.87 minutes) for females and 1,596 meters (17.5 minutes) for males. Individuals with low household income (less than $20K) walked approximately 173.7 metres (1.9 minutes) less per day compared to individuals with household income more than $80K. Commuter train trips that link suburban areas to the downtown are associated with the maximum walking minutes. Recommended minutes of daily physical activity can be achieved for transit users, especially for train users, just through walking to and from transit stations. The physical activity benefits of using public transit vary along gender and socioeconomic lines, however, public health interventions that call for increased public transit use might inadvertently increase health inequalities associated with physical activity. Keywords: Active transport, public transit, physical activity, walking, health inequalities

0136

DIET QUALITY IN RELATION TO GEOGRAPHICAL LIFE HISTORY FACTORS. *C. Frankenfeld, J. Poudrier, N. Waters, P. Gillevet, and Y. Xu (George Mason University, Fairfax, VA, 22030)

Poor diet quality is a risk factor for numerous diseases. Studies of acculturation and diet suggest that individuals' diets change when they move to a different area. Less is known about the influence of diversity of residential history on diet quality. The objective of this study was to evaluate lifetime residential history and current diet quality. Adults are being recruited from the Northern Virginia area. For this preliminary analysis, 62 out of a target 125 individuals have completed residential history interviews and self-reported personal characteristics. A Healthy Eating Index (HEI) was calculated for each individual based on two days of diet reported using the National Cancer Institute Automated Self-Administered 24-Hour Dietary Recall. The mean HEI was 54.2 (range: 30.0-83.1). After adjustment for age, sex, completing college, and being single, having lived internationally in the past five years was associated with a 16-point higher HEI ($p<0.001$), having lived internationally as a child was associated with an 8.3-point higher HEI ($p=0.004$), and an increasing number of unique states lived in was positively associated with HEI (p-trend=0.038). After mutual adjustment in regression, international residence in past five years, but not as a child, remained statistically significant. These preliminary results suggest that recent residences are more influential on diet quality than residences as a child and that residential diversity is associated with a better diet quality. Future analyses on the completed sample will include dietary intake from four-day food records and geocoding of residential history, with linkage to census and environmental data to evaluate lifetime spatial-related risk factors for poor diet quality.

0137

ENROLLMENT AND COMPLIANCE IN A NATIONAL PHYSICAL ACTIVITY ACCELEROMETER STUDY. *VJ Howard, JD Rhodes, A Le, B Hutto, N Colabianchi, JE Vena,V Seshadri, MS Stewart, S Blair, SP Hooker (Sch of Public Health, Univ AL at Bham, Bham, AL 35294)

Background: Innovative clinical trials and epidemiologic studies examining physical activity (PA) now use objective measurement devices (e.g., accelerometers) over self-report. Herein we describe the experience of a national epidemiologic study using accelerometers. Methods: This is an ancillary study to REGARDS, a national, US, population-based, longitudinal study of 30,239 blacks and whites, aged > 45 years, enrolled January 2003-October 2007. Participants are followed every 6 months by telephone for stroke events, and also asked about willingness/availability to wear an accelerometer for 7 days. Device, instructions, and stamped addressed envelope for return are mailed to consenting participants. Postcard acknowledgement, reminders, and up to two calls are made to encourage compliance with wearing device and its return. Summary results but no financial compensation are provided. Results: By November 1, 2010, 9,502 were asked to participate: 56% consented, 17% deferred, 27% declined. Consent rate for blacks was 35% vs. 66% for whites. Devices were shipped to 5,147 with return rate of 84%; 397 are lost (not returned > 120 days.) Of accelerometers returned/analyzed (n=4016), 81% provided usable data, 4% not worn sufficient amount of time, 15% had incomplete/missing log sheet or device malfunction. Initial inventory of accelerometers was 600, increased to 900. After processing, cleaning, and battery change of returned devices, maximum number of devices ever shipped in a week was 200. A challenge is determining when the device was actually worn. The usual algorithms substantially overestimate non-wear in the REGARDS-PA sample. Conclusions: While our results compare favorably to NHANES, a limiting factor is availability of accelerometers. Budget and protocol could be re-examined towards consideration of incentives to participate and return devices.

0138

RED MEAT CONSUMPTION AND COLORECTAL CANCER: A META-ANALYSIS OF PROSPECTIVE EPIDEMIOLOGIC STUDIES. *D.D. Alexander, PhD, MSPH; V. Perez, PhD, MS; C.A. Cushing, BS; D.L. Weed, MD, PhD (Exponent, Inc, Wood Dale, IL)

Controversy about the potential role of red meat consumption in colorectal carcinogenesis has been especially pronounced. One approach to partially resolving controversies, with issues of consistency at their core, is to perform a meta-analysis. Therefore, we conducted a meta-analysis of prospective studies of red meat intake and colorectal cancer to estimate the statistical association, examine potential sources of heterogeneity, and determine the magnitude of effect over time. Thirty-four prospective studies of red meat and CRC were identified, of which, 25 represented independent non-overlapping study populations. Summary relative risk estimates (SRREs) for high vs. low intake and dose-response relationships were calculated using random effects models. In the analysis of high vs. low intake, the SRRE was 1.12 (95% CI: 1.04-1.21), although significant heterogeneity ($p = 0.014$) was present. Summary associations were modified by tumor site and gender. The SRREs for colon cancer and rectal cancer were 1.11 (95% CI: 1.03-1.19) and 1.19 (95% CI: 0.97-1.46), respectively. The SRREs among men and women were 1.21 (95% CI: 1.04-1.42) and 1.01 (95% CI: 0.87-1.17), respectively. The SRRE for studies published before 2000 was 1.30, whereas the SRRE was 1.12 for the studies published between 2000 and 2010. Based upon summary associations that are weak in magnitude, heterogeneity across studies, inconsistent patterns of associations across the sub-groups analyses, and the likely influence of confounding by other dietary and lifestyle factors, the available epidemiologic data are not sufficient to support an independent and unequivocal positive association between red meat intake and CRC.

0139

PROCESSED MEAT CONSUMPTION AND STOMACH CANCER: A META-ANALYSIS OF PROSPECTIVE EPIDEMIOLOGIC STUDIES. *V. Perez and D.D. Alexander (Center for Epidemiology, Exponent Inc., Wood Dale, IL, 60191); D.L. Weed (DLW Consulting Services LLC, El Prado, NM, 87529)

Several epidemiologic studies have suggested a relation between processed meat consumption and stomach cancer risk in adult populations. To estimate the statistical association between intake of processed meat and stomach cancer, we performed a meta-analysis using random-effects models of prospective studies published up to January 2011 in PubMed. Population group, study design and setting, type and amount of processed meat consumed, risk estimates and corresponding 95% confidence intervals [CI], and covariate adjustments were extracted from all studies included for analysis (N=11). The summary relative risk estimate for high vs. low processed meat intake was 1.14 (95% CI: 1.00-1.30), however, statistically significant heterogeneity was indicated ($p=0.044$). These findings should be interpreted within the context of various methodological challenges such as inconsistency in processed meat exposure definitions and consumption patterns; cultural differences in the different study populations; variability in the length of follow-up between studies; potential effect modification by helicobacter pylori status; differences in risk according to gastric cardia and non-cardia tumors; and confounding by other dietary (e.g., fruit and vegetable intake) and lifestyle (e.g., smoking, physical activity) characteristics. In summary, our findings do not provide evidence of a consistent and statistically significant association between processed meat intake and stomach cancer in adults. Future epidemiologic research accounting for these methodological limitations is needed.

0140

PARITY AND BODY MASS INDEX IN U.S. WOMEN: A PROSPECTIVE 25-YEAR STUDY. B.Abrams*, B.Heggeseth, E.Davis and A.Lindquist. (School of Public Health, University of California, Berkeley, CA 94720)

Weight gain during the childbearing years is common in United States (U.S) women, especially among minorities, but little is known about the prospective relationship between pregnancy and body size at midlife. We used multivariable longitudinal regression analysis with generalized estimating equations to model change in body mass index (BMI) and weight over time for primiparas and multiparas, compared to nulliparas, by race-ethnicity and baseline BMI category, adjusted for age and psychosocial and economic variables among female participants in the 1979 U.S National Longitudinal Survey of Youth from 1981(n=4095) to 2006 (n=3059). Baseline height, parity and non-pregnant weight were reported in 1981, covariates were collected beginning in 1979 when women were 14-21 years old. Among nulliparas, adjusted mean BMI increases at 25 years were 5.43, 6.86 and 7.63 kg/m^2 for white, Hispanic and non-Hispanic black women, respectively. Any childbearing was associated with significantly increased BMI for white primiparas, black women and obese women, with results less consistent for Hispanics. The importance of a first versus subsequent birth on BMI change over time differed by race-ethnicity and baseline BMI. Combining adjusted weight gain attributable to age and other factors with that due to childbearing, 25 year gains were lowest for white, normal weight multiparas at 14.6 kg (95% Confidence Interval (CI): 13.8,15.4) and highest at 27.6 kg (95% CI: 22.7, 32.8) for black, obese multiparas. These findings suggest that parity is an independent risk factor for long-term weight gain; black women and those who are obese during young adulthood appear to be at highest risk.

0141

ESTIMATING FREQUENCY AND MAGNITUDE OF EFFECT OF PHYSICAL SPACE OF ICU, NURSE TO BED RATIO AND INAPPROPRIATE ANTIBIOTIC THERAPY IN INCIDENCE OF NOSOCOMIAL INFECTIONS IN ICUS OF IRAN. Abbasali Keshtkar[1,2]*, Gholamreza Roshandel[2], Mohsen Zahraei[3], Sara Madani[2], Behnaz Khodabakhshi[2] ([1]Endocrine and Metabolism Research Institute, Tehran University of Medical Sciences, Tehran, Iran; [2]Golestan Research Center of Gastroenterology and Hepatology, Golestan University of Medical Sciences, Gorgan, Iran; [3]Center for Diseases Control, Ministry of Health and Medical Education, Tehran, Iran)

Background: This study conducted to determine frequency of nasocomial infection (NI) risk factors and estimating the magnitude of effect for predicting avoidable burden and contributing proportion of each factors in intensive care units (ICUs) in Iran. Methods: This survey was done in 90 ICUs in Iran. A structured questionnaire was completed for assessing NI risk factors (ICU structure, nurse to bed ratio, proportion of inadequate antibiotic therapy). We used generalized impact fraction (GIF) for predicting avoidable burden of these preventable risk factors. Results: Mean of ICU lifetime and the ward bed numbers were 8.7 years and 7.6, respectively. The physical space in 2 (2.2%) ICUs met international standards. The nurse to bed ratio in one (1.1%) ICU was 1. Inadequate antibiotics therapy was seen in 19.1% of patients. GIF model showed that, decreasing the frequency of ICUs with >=11 beds from 15.5 to 5 percent may lead to 6.3% decrease in NI risk. Decreasing the proportion of inadequate antibiotics therapy from 19.7 to 10 percent could decrease the risk of NI almost 20%. Obtaining nurse to bed ratio equal to 1 at 30% of ICUs, could decrease NI risk almost 20%. Conclusion: Because of no methodological limitation of GIF model, it could be use for decision and policy making in NI prevention program.

0142

EPIDEMIOLOGICAL PATTERN OF ROAD TRAFFIC INJURIES IN TEHRAN-ABALI AXIS IN 2008: A PROSPECTIVE STUDY. *Hamid Soori, Hamidreza Hatamabadi, Reza Vafaee, Mashyaneh Hadadi, Elaheh Ainy, Hamireza Asnaashari (Shahid Beheshti University of Medical Sciences, Tehran, IRAN)

Background and Objective: A study was conducted to determine epidemiological pattern of road traffic injuries in Tehran-Abali axis in 2008. Materials and Methods: In a prospective study road traffic injuries data in Tehran-Abali axis on event time until one month later and information of pre hospital and hospital care of injured subjects was collected by road traffic police, six emergency stations, twelve hospitals and three clinics during one year. Pre hospital information was included: age, gender, injured organ, Revised Trauma Score (RTS), Injury Severity Score (ISS) and hospital information was duration of hospitalization, status on dismissed time and post event one month later. Results: During one year 243 accidents occurred. In scene 23 subjects have been died. 345 injured subjects were followed. Mean age of subjects was 33.6±15.6. Overall, 71.1 percent of injured subjects were male and more than 60 percent of them were 20-39 years. The most common injuries were head and face damage. Mean of (RTS) and (ISS) was 7.23 and 9.38 respectively. Intensity of injury was higher among pedestrian than vehicles and motorcycle drivers, and occupants, ($p<0.05$). Mean of hospitalization among 75 percent of injured subjects was less than 24 hour. 66.5 percent of injured subject after dismissed was like before of accident. Conclusion: More medical services at scene, education and monitoring to novitiate youth drivers, public education and security transit place to pedestrian, educational program to protect of head and face and high quality of medical services to intend for indoor wear injured subjects needs to be predicted. Key Words: Traffic injuries, epidemiology, care, pre hospital, Revised Trauma Score (RTS) ، Injury Severity Score (ISS)

0143

STUDY OF RISKY BEHAVIOURS LEADING TO UNINTENTIONAL INJURIES AMONG HIGH SCHOOL STUDENTS IN TEHRAN IN 2009. *Elaheh Ainy, Mohammad Movahedi, Hamid Soori (Shahid Beheshti University of Medical Sciences, Tehran, IRAN)

Objective: Since unintentional injuries are very high among children and adolescents, a study was conducted to determine risky behaviours leading to unintentional injuries among Tehrany high school students in 2009. Methods: A cross-sectional study was conducted on 727 governmental and non governmental high school students in both genders which were selected by using multistage randomizing sampling in Tehran. Eight selected districts of 2o education districts were divided to three areas (North, Centre, and South) by stratified sampling. Data was collected by cluster sampling in each district using standard questionnaire of management diseases centre of America which was validated in Iran. Subjects were healthy students aged 12-18 years (ill students were excluded). Risky behaviours on fall, burn, poisoning and road traffic injuries were studied. Results: Mean age of subjects was 16.8±1.2, range (12-18) years. Overall 44% of boys and 38% of girls exposed to risky behaviours leading to unintentional injuries. Significant differences were observed in driving without licence among boys. Non use seatbelt was more prevalent in governmental schools. Motorcycle using was more prevalent in the south of Tehran ($P<0/001$). Significant differences was observed among boys related to poisoning substance expose, driving without licence, motorcycle driving, non helmet use during motorcycle driving ($p<0/001$). Conclusion: About half of boys and more than one-third of girls were exposed to risky behaviours leading to unintentional injuries during their life. Children's risky behaviours should be considered as major risk factors on prevention of unintentional injuries particularly among those from deprived areas and boys. Key words: unintentional injuries fall, burn, poisoning and road traffic injuries

0144

EPIDEMIOLOGIC FINDINGS SUGGEST THE SCIENTIFIC PARADIGM SHAPING UROLOGIC RESEARCH NEEDS MAJOR REVISION. *JB McKinlay (New England Research Institutes, Watertown, MA, 02472)

Scientific advances follow the rise and fall of paradigms-overarching viewpoints which determine the research agenda, methods, and scientific support. Accordingly, science is essentially conservative: innovative ideas are ordered by the prevailing paradigm and changes occur only as paradigms are replaced. Data from the Boston Area Community Health (BACH) Survey (4145 subjects at baseline (2002-5) and follow-up (2006-10) (1610 men, 2535 women; 1327 Black, 1341 Hispanic, 1477 White) suggest a need to revise the current urologic paradigm. There is marked overlap between supposedly discrete urologic diseases, suggesting a need for lumping rather than diagnostic splitting. Psychosocial events and lifestyle often contribute more than traditional physiologic risk factors, suggesting a need for a multidisciplinary, biopsychosocial approach. Racial/ethnic differences are largely explained by socioeconomic influences, suggesting the search for genomic explanations may be misplaced. There are sex differences in risk factors, suggesting different pathophysiologic pathways and a need for a sex specific urology. Urologic symptoms are early predictors of major health outcomes, suggesting a need to think beyond immediate bothersome symptoms. Diagnoses depend more on who the patient and provider are than the specific symptoms presented, suggesting a need for evidence-based definitions and diagnoses, and detailed clinical guidelines for patient management. Recent epidemiologic data indicate many assumptions underlying urologic research and clinical practice lack empirical support and may perpetuate unproductive lines of enquiry, a narrow biomedical orientation and distract resources from promising areas of investigation and intervention. BACH is supported by NIH NIDDK UO1 DK 56842. The content is solely the responsibility of the authors and does not necessarily represent the official views of NIDDK or NIH.

0145

IMPACT OF A PILOT INTERVENTION TO DECREASE OVERREPORTING OF HEART DISEASE DEATHS. *T. Al-Samarrai, A. Madsen, R. Zimmerman, G. Maduro, W. Li, C. Greene, E. Begier (New York City Department of Health and Mental Hygiene, New York, NY 10013)

Heart disease (HD) deaths are overreported in the United States, particularly in New York City (NYC) where a study revealed overreporting of coronary heart disease deaths by 91%. We evaluated the impact of a pilot intervention to improve cause of death (COD) reporting. A pilot intervention at 8 hospitals reporting the highest proportion of HD deaths in NYC was implemented during August 1, 2009–January 31, 2010. The intervention had multiple components, including an in-service and e-learning module to educate hospital staff on COD reporting. We analyzed death certificate data and compared leading underlying COD in the 6-month pre- and postintervention periods February 1–July 30, 2009, and 2010, respectively, for all NYC hospitals. At intervention institutions, reported HD deaths declined 50.4%, from 1,589 (62.9%) of 2,527 deaths during the preintervention period to 758 (31.2%) of 2,431 deaths during the postintervention period. Reported deaths from underlying malignant neoplasms increased from 12.7% to 17.7%; influenza and pneumonia deaths increased from 4.4% to 10.0%; and chronic lower respiratory disease deaths increased from 2.7% to 5.1%. At nonintervention hospitals, reported HD deaths decreased from 37.0% to 34.9%; other leading causes changed by <0.3%. NYC's intervention to decrease overreporting of HD deaths was effective and led to substantial changes in HD reporting and other leading COD. Intervention scale-up and monitoring the durability of this effect are planned. The marked increase in reported influenza and pneumonia deaths postintervention requires further investigation, because the preintervention NYC rate already exceeded the national average.

0146

WHAT ARE THE CORE COMPETENCIES FOR DOCTORAL-LEVEL AND MASTER-LEVEL TRAINING IN EPIDEMIOLOGY? *LRB Huber, KP Fennie (UNC Charlotte, Charlotte, NC 28223)

In recent years, there has been interest in developing competencies for a range of fields, including public health. In Spring 2009, a sample of American College of Epidemiology (ACE) members were invited to respond to on-line surveys regarding competencies (one for "established" epidemiologists and one for recent graduates of epidemiology programs). These surveys included previously identified domains (n=19) and competencies (n=66) and asked respondents to indicate the importance of each for individuals receiving various graduate degrees in epidemiology. A total of 183 individuals completed these surveys. Thirteen competencies were viewed as important/very important and 8 were considered unimportant for all individuals receiving graduate training in epidemiology. Twelve additional competencies were viewed as important only for individuals receiving doctoral training. There were numerous discrepancies in the importance of competencies for individuals receiving various master-level degrees. For example, interpreting research results was viewed as important for individuals with an MPH degree, but not for individuals with an MSPH or MS degree. Recent master-level graduates identified 9 domains they felt less prepared in and recent doctoral-level graduates identified 2 such domains. ACE is using these data as the basis for a series of follow-up surveys. A Delphi process will be used in order to gather expert opinions and synthesize these opinions to reach consensus on the core competencies important to graduate-level training in epidemiology, and to determine if competencies differ by degree program and/or by job setting.

0147

BUILDING AN EVALUATION FRAMEWORK FOR A GRADUATE EPIDEMIOLOGY PROGRAM –STARTING WITH COMPETENCIES. *D.C.Cole, S.J.Bondy, Jennifer M.Bell, Brendan T Smith, Leora Pinhas, Alex Martiniuk (Dalla Lana School of Public Health, University of Toronto, Toronto, ON M5T 3M7)

A committee of faculty and students of our masters and doctoral programs took up the call for increased attention to epidemiology education (Gange, 2001). We drew on work by International Epidemiological Association colleagues (Armenian et al, 2001) on competency-based curricula and our own primary research on public health epidemiologist competencies. We reviewed current job descriptions for graduates in Ontario organizations and earlier mapping of both masters and doctoral curricula. Based on these inputs, we constructed visual maps of competencies, for different stages of different career paths across graduate degrees. Using a Delphi process, we conducted iterative surveys of faculty and students re: completeness and wording of the competencies; current curriculum contributions to students achieving these competencies; and gaps which exist. In parallel, we collected information on current assessment methods relevant to competencies, both students' learning of them and faculty teaching of them. These activities led to an agreed upon set of competencies and stimulated reflection on assessment practices. Although these are preliminary steps, we are convinced that a transparent competency framework and systematic analysis of data on competency teaching and acquisition will provide invaluable resources for quality improvement of both masters' and doctoral programs. Armenian H,Thompson M, Samet J. Competency-based curriculum in epidemiology. Cha 19 in Olsen J, Saracci R, Trichopoulos D (eds) Teaching Epidemiology. Oxford & IEA, 2001. pp 373-389. Gange SJ. Teaching epidemiologic methods. Epidemiology. 2008;19:353-356.

0148

INTERNET ADDICTION, MENTAL STRESS, EATING AND SLEEPING DISORDERS: NEW PUBLIC HEALTH CHALLENGES AMONG FRENCH UNIVERSITY STUDENTS? *J. Ladner, H Villet, MP Tavolacci, S Grigioni, P Déchelotte (Rouen University Hospital, Rouen, FRANCE)

Objectives: To study the prevalence and risk factors associated to Internet addiction, mental stress, eating and sleeping disorders in students in higher education in France. Methods: A cross-sectional survey was conducted in students in 7 campuses in Upper Normandy region in 2009. The students completed an anonymous questionnaire on line (www.tasanteenunclic.org). The questionnaire collected the age, gender, alcohol consumption using ADOSPA test, tobacco smoking, cannabis consumption (experimentation), practice of sport, eating disorders assessed with the Scoff questionnaire, risk of cyber addiction using the Internet Stress Scale (Orman test), and sleeping disorders. Results: A total of 601 students were included. The mean age was 20.9 years (SD=3.1), the sex ratio M:F was 0.44. 209 of students (34.8%) were considered as stressed, 30.6% declared sleeping disorders, 22.5% were smokers and 41.4% experimented cannabis. A risk of alcohol drinking was identified in 44.8% of students (ADOSPA +). In the last 12 months, 81.2% were drunk at least once, 23.3% with more than 10 binge drinking episodes. 29.0% of students presented a risk of cyberaddiction. 24.8% of students presented risk of ED. After logistic regression, IA was significantly associated to male gender (AOR=1.67, CI 95%=1.10-2.57; p=0.01), to alcohol consumption (AOR=1.65, CI 95%=1.14-2.30; p=0.008) and mental stress (AOR=2.04, CI 95%=1.35-3.01; p=0.001). Conclusion: Alcohol consumption, smoking and cannabis use, which were common in university student population, new risks and comportments as stress, cyberaddiction and eating and sleeping disorders, appear high. These findings stress the need to investigate health risks and behaviours and to initiate prevention interventions in student population using integrated approaches. There is an urgent need for public health practitioners working in these new areas in university campuses.

0149

CORRELATES OF SPENDING EXTENDED TIME IN THE SUN AND NOT PRACTISING SUN PROTECTION: RESULTS FROM THE SECOND NATIONAL (CANADIAN) SUN SURVEY. *LD Marrett, E Pichora, MT Spinks , CF Rosen (Cancer Care Ontario, Toronto, Canada M5G 1X3)

Skin cancer is the most common cancer in fair-skinned populations; overwhelming evidence supports overexposure to ultraviolet radiation as its major cause. Despite this, there is a paucity of information about population exposure levels against which to measure prevention progress. The 2006 Second National Sun Survey asked 7,121 Canadian adults (aged 16+) about their summer sun exposure and use of protection. Using multiple logistic regression analysis, correlates of spending extended leisure time in the sun and of not regularly practising sun protection were explored. Only 11% of adults spend fewer than 30 leisure-time minutes in the summer sun between 11 am and 4 pm on both weekend and week days. In contrast, 30% regularly spend 3+ hours in the sun on either weekend or week days; an additional 10% spend 3+ hours in the sun only while on summer vacation. Demographic, personal and behavioural factors that significantly increase the likelihood of 3+ (vs. <3) leisure-time hours in the sun on summer days are: younger age, male, tendency to tan, lighter hair colour, Caucasian, higher household income, not having a university degree, spending extended work-time in the sun, and trying to get and keep a tan during the summer months. Of these, younger age, male, tendency to tan, not having a university degree and trying to tan are also associated with not regularly (always/often) seeking shade/avoiding the sun, wearing protective clothing and a hat, and using sunscreen with SPF 15+ on face and body. More effective strategies to moderate sun exposure and increase use of protection are required, especially for certain population subgroups, if we are to reduce the risk of skin cancer.

0150-S

RESOURCES FOR EPIDEMIOLOGISTS EMBARKING ON REGULATED RESEARCH. EL Priest*, CD Berryman (University of North Texas Health Science Center, Addison, TX)

It is critical for epidemiologists to know when they are embarking on a research project that is regulated by the U.S. Food and Drug Administration (FDA) because non-compliance with regulations can have legal and professional implications. In addition, epidemiologists interested in learning more about FDA regulations may find themselves overwhelmed by the masses of available information. This paper provides the answers to questions that epidemiologists have about research regulated by the U.S. Food and Drug Administration such as: What types of research is regulated by the U.S. Food and Drug Association? What additional responsibilities does an investigator have when doing investigator-initiated research? What are the regulations that are important for researchers? What are the consequences of not complying with regulations? We will answer these questions and provide epidemiologists with a summary of regulatory references and resources that can be used when embarking on regulated research.

0151

CHANGING CANCER PREVALENCE IN ONTARIO, CANADA: A GROWING BURDEN.*S. Bahl, D Nishri, B Theis, LD Marrett (Cancer Care Ontario, Toronto, Canada M5G 1X3)

Background: Prevalence – an estimate of the number of individuals living with cancer – is a measure of the ongoing burden of cancer for individuals, families and the health care system. Methods: One-, 1 to 5 -, 5 to 10-, and 10-year tumour-based prevalence were estimated from the Ontario Cancer Registry for January 1, 1991 to January 1, 2008. Results: 311,078 (2.4%) Ontarians alive on January 1, 2008 had been diagnosed with cancer in the previous ten years. The most prevalent cancers were prostate, female breast and colorectal cancers, melanoma, lung and thyroid cancers, and non-Hodgkin lymphoma. For all cancers combined, and for breast, colorectal and lung cancers, melanoma and non-Hodgkin lymphoma, prevalence approximately doubled between 1991 and 2008. Prostate and thyroid cancer, however, had the larger increases, with 3.9 and 4.5 times higher prevalence in 2008 compared to 1991, respectively. One-, 1 to 5-, and 5 to 10-year prevalence counts for all cancers were 49,281, 140,478, and 121,319, respectively (as of January 1, 2008). Prevalence was highest at 1 to 5 years after diagnosis for all cancers and the most prevalent cancers (44 -47%). Conclusion: More Ontarians are living with cancer mostly because of increasing survival, population growth and aging. This growing burden of cancer will lead to a demand for more and changing cancer services. The proportions of prevalent cases within 1, 1 to 5 and more than 5 years of diagnosis provides information about the types of services required as these periods represent different phases of the cancer journey from post-diagnosis events to palliative care. Prevalence can be used for planning and allocating resources.

0152-S

SCHOOL STATUS, JOURNAL IF AND ABSTRACT QUALITY: PILOT STUDY ON SCIENTIFIC DISCOURSE. *J Speicher, (School of Public Health, CUNY)

Epidemiologists today work in an era of tremendous advances in technology and routes of information dissemination, ideal conditions for scientific discourse. Discriminating selection at each stage of an investigation's journey—from exposure to ideas that give birth to new questions, to support of research, to peer review and journal acceptance—shapes the field. Although the effects of impact factors (IF) on this process have been questioned, no quantitative studies have examined the combined influence of institutional status and journal IF on publication. This study examined whether the status of institutions corresponds with the quality of abstracts in a high-impact journal in 2009. Primary data include all abstracts (N=81) of longitudinal studies by authors from U.S. public health (PH) schools and other institutions. Each abstract was scored for quality using STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) criteria. Scores were correlated with the authors' schools as ranked by *US News & World Report*. The top 5 schools (N=28) had a lower average score, 10.21, than the those ranked 6-10 (N=11), which had the highest mean, 10.86, or those ranked 11-18 (N=14), with 10.75; other institutions (N=13) and schools (N-15) followed (one-way ANOVA p-value 0.003). Secondarily, among all longitudinal-study abstracts the foreign (N=68) mean score was 10.51 and US (N=103) was 10.02 (p-value 0.060). Limits include small study size and use of only one unblinded scorer. Although abstract quality does not indicate study strength, it is important to scientific discourse. Since the abstracts from the top 5 schools did not score as well as the lower-ranked ones in a high-IF journal, further research is warranted.

0153

AN INTEGRATIVE APPROACH TO APPLIED EPIDEMIOLOGY IN WISCONSIN: BRIDGING RESEARCH, POLICY AND HEALTHCARE QUALITY TO IMPROVE POPULATION HEALTH. *Malecki, K, Nieto, F.J., Booske, B., Gigot, M., Remington, P. (University of Wisconsin, Madison, WI 53562)

There is growing recognition that diseases with the most dramatic impact on population health such as and cardiovascular disease have complex etiologies and risk factors operating at multiple levels. Furthermore, healthcare quality and population health are inextricably linked yet few studies have been designed to adequately address these relationships. Novel approaches and compound data systems (individual, healthcare and community) are needed. Three applied epidemiologic initiatives and one healthcare model have been combined to create a novel and unique infrastructure for exploring population health. Including: (1) the Survey of the Health of Wisconsin: an annual survey of representative samples of state communities and their adult residents including data on demographics, employment, medical history and health behaviors, access to health care, quality of life, as well as an individuals' physical exam and blood/urine samples; (2) the Wisconsin County Health Rankings: an annual summary of the health status of the population in all Wisconsin counties; (3) the Wisconsin Collaborative for Healthcare Quality: a consortium of health care provider organizations (physician groups, health plans) sharing health care quality data; and (4) What Works—Policies and Programs to Improve Wisconsin's Health: a compendium of programs and policies that might influence and reduce health disparities. Each component has unique features with important epidemiologic utility. The integrated network bridges data for advancing population health leading to a better understanding of how health care quality and population health interact to increase and mitigate health disparities.

0154-S

THE LIMITED APPROACH OF MALARIA PREDICTION MODELS: RESULTS FROM A SCOPING REVIEW. *K. Zinszer[1], A. Verma[1], J. Brownstein[2], T. Brewer[1], D. Buckeridge[1] ([1]McGill University, Montreal, QC; [2]Harvard University, Boston, MA)

Malaria is a public health crisis, responsible for an estimated 300 to 500 million cases and one million deaths each year. Despite malaria control gains, there remain substantial gaps in the knowledge of the drivers of malaria and the magnitude of their impact, which is critical information for evidence-based control and prevention programs. We conducted a scoping review to determine the environmental, social, and demographic predictors of malaria risk, spread and re-emergence. Searches for primary studies with malaria morbidity or mortality as the outcome measure and having used at least one area-level variable in the analysis were carried out using the following databases: Medline, EMBASE, LILACS, Global Health, Conference Proceeding and Citation Index, ProQuest Dissertations & Theses Database, and CAB abstracts. Initially, 3,247 different citations were captured and based upon our screening criteria, 177 studies were identified for inclusion. Several area-level factors were found to be associated with malaria risk, spread, or reemergence including: temperature, precipitation, altitude, vegetation, land use, population density, migration, health status, accessibility of treatments, public health interventions, and sociodemographic factors. We determined that 40% of the studies included predictive models, of which 94% only included temperature, precipitation, humidity, and/or a vegetation index as predictors. This scoping review revealed that nearly all malaria prediction models have narrowly focused on a few environmental predictors despite substantial research demonstrating the importance of other area-level factors in influencing malaria risk. While climate may be an important predictor of malaria, a more comprehensive approach to malaria prediction is needed to advance the utility of disease forecast models.

0155

HEALTH EFFECTS OF INDUSTRIAL WIND TURBINES; A REVIEW OF THE EPIDEMIOLOGY AND ASSOCIATED RHETORIC. *CV Phillips (Populi Health Institute, Wayne, PA, 19087)

Evidence is accumulating that a nontrivial portion of residents living near large electric-generating wind turbines suffer health effects including stress, vestibular problems, mood and sleep disorders, and hypertension. It is likely that the primary causal pathway is via psychological stress due to the cyclic noise and light from spinning blades, though we cannot be sure or rule out other pathways. Also uncertain due to minimal systematic research are the prevalence of susceptibility and the effects of individual or geographic variables. What is certain, from adverse event reports, informal case-crossover studies, and a few systematic population-based studies, is that there is ample evidence to support the hypothesis that substantial health effects exist. As interesting as the epidemiology itself is the rhetoric that denies the epidemiologic evidence, trying to portray the concern as an unscientific fringe health scare. This has been effective, making the dominant message that there is no evidence of health risks. We expect this from unscrupulous industries, but governments have taken the same position due to a combination of capture, ignorance, corruption, and wanting to support a (dubiously) "green" cause. Attempts to deny the evidence include perverting the definitions of epidemiology and evidence, claiming that the observed suffering is not a health concern because it is subjective or not an official disease, and denying that causation is possible because the causal pathway is unknown, there are other component causes, or the effects are heterogeneous. These nihilistic claims, many made by card-carrying epidemiologists, have ethical and epistemic implications for the use of epidemiology in policy decisions.

0156

365 DAYS OF UNHEALTHFUL NEWS. *CV Phillips (Populi Health Institute, Wayne, PA, 19087)

Substantial epidemiologic misinformation reaches the public via health news reporting. The misinformation stems from oversimplification, misunderstanding, biased choices of what to report, biased analysis, and many other factors. Guilt for these is divided among researchers, their publicists, and the news reporters. But unlike such sciences as paleontology or physics, where the average reader cannot critically evaluate claims or suffers nothing from believing misinformation, epidemiology affects people's behavior and much of the misleading epidemiology reporting can be recognized and critically evaluated (or at least doubted) by educated consumers. Unfortunately, most critical analyses of health reporting or popularized epidemiology are done by other journalists or "debunkers" who often declare epidemiology to be simplistic junk science rather than recognizing it as complicated and thus is often bungled. With some impressive exceptions, (e.g., Kabat), few who are skilled in analyzing epidemiology have tried to educate the public about how to interpret popular information. To address this, each day in 2011 I am presenting a lesson pitched for interested non-experts based on the current "unhealthful" news (unhelpful health news) in a free populist modern medium, ep-ology.blogspot.com. I employ pedagogic methods I used for teaching epidemiology-based decision making to policy and epidemiology students. Rather than introducing epidemiology by teaching simply research methods or grade-school-style history of science, this focuses on being a skilled consumer of epidemiologic information. By the June meetings I will be halfway through this project and will be able to report on the success of the project (readership, feedback), as well as summarizing the main pedagogic points needed to clarify a half year of news.

0157

THE ROLE OF EPIDEMIOLOGISTS IN DATA COORDINATING CENTERS. *EE Fox, DJ del Junco, JB Holcomb, MH Rahbar (University of Texas Health Science Center, Houston, TX 77030)

Epidemiologists have long served within Data Coordinating Centers (DCCs) in a variety of roles including study design, project coordination, data management, statistical analysis and interpretation. Despite their unique contributions, epidemiologists are not always included in DCCs. Primarily responsibility for study design and statistical analysis in DCCs often falls upon statisticians, but the viewpoint and skills of epidemiologists can enhance efficiency as well as the scientific and public health impact of clinical and translational research. Training programs for epidemiologists concentrate on the systematic assessment and optimization of the trade-off between the logic and logistics of observational and experimental studies in terms of their capacity to support valid causal inference. The eclectic nature of the discipline (drawing from medicine, statistics, genetics, environmental and social sciences) creates epidemiologists well suited to serve as team facilitators. Too often the focus of the interaction between clinical/ translational investigators and statisticians narrows down to design and analysis strategies to maximize statistical power. Inclusion of an epidemiologist on the DCC team can help to promote synergy between the clinical, statistical and basic science disciplines through a practical emphasis on both study validity and reproducibility. As the research tide turns to comparative effectiveness, the experience of epidemiologists with heterogeneous study populations in real-world settings will prove invaluable. Highlighted examples include a traumatic injury research network that incorporates epidemiologists to meet the challenges of moving from retrospective to prospective studies with highly time-dependent variables.

0158

HURRICANE KATRINA EXPERIENCE AND THE RISK OF GESTATIONAL DIABETES MELLITUS . X. Xiong*, E.W. Harville, K. Elkind-Hirsch, G. Pridjian, P. Buekens (Department of Epidemiology, Tulane University School of Public Health and Tropical Medicine, New Orleans, LA)

Background: Little is known about the effect of natural disasters on gestational diabetes mellitus (GDM). The objective of this study was to examine the effect of exposure to Hurricane Katrina on GDM. Methods: We analyzed data from a prospective cohort study of 301 pregnant women who exposed to Hurricane Katrina. Women were interviewed about their experiences of the following eight severe hurricane events: feeling that one's life was in danger, experiencing illness or injury to self or a family member, walking through flood waters, significant home damage, not having electricity for more than one week, having someone close die, or seeing someone die. GDM and other pregnancy outcomes were obtained by reviewing medical chart. Results: The frequency of GDM in women who had none, one, two, three, and four or more of the severe hurricane experiences was 6.2%, 7.8%, 16.4%, 13.3%, and 23.3% respectively. There was a trend toward increased rate of GDM with an increasing number of severe hurricane experiences (P Trend < 0.05).Women who had two or more of the severe hurricane experience were at higher risk of having GDM, with an adjusted odds ratio (aOR): 3.1 (95% confidence interval: 1.0-9.6); after adjustment of maternal race, age, education, parity, smoking, family income, prior preterm birth, and hospital. The risk of having GDM was markedly increased in women who had four or more of the severe hurricane experiences, with aOR: 8.9 (1.2-64.3). Conclusion: Women who exposed to severe hurricane events were at an increased risk of having GDM.

0159

EFFECT OF GESTATIONAL DIABETES MELLITUS ON PREGNANCY-INDUCED HYPERTENSION AND OTHER PREGNANCY OUTCOMES. X. Xiong*, E.W. Harville, K. Elkind-Hirsch, G. Pridjian, P. Buekens (Department of Epidemiology, Tulane University School of Public Health and Tropical Medicine, New Orleans, LA)

Background: The objective of this study was to examine the effect of gestational diabetes mellitus (GDM) on pregnancy-induced hypertension (PIH) and other pregnancy outcomes. Methods: We analyzed data from a prospective cohort study of the effect of a natural disaster (Hurricane Katrina) on pregnancy outcomes. Pregnancy outcomes were obtained by reviewing medical charts, including GDM, pregnancy-induced hypertension (including gestational hypertension and preeclampsia), preterm birth (< 37 weeks), low birth weight (< 2500 g), macrosomia (>4000 g), and cesarean delivery. Results: Of the 256 pregnant women, the rate of GDM, gestational hypertension, preeclampsia was 14.5%, 7.8, and 6.3%, respectively. The rate of PIH was significantly higher in women with GDM (30.6%) than in women without GDM (11.0%), with an adjusted odds ratio (aOR): 4.2 (95% confidence interval: 1.4-12.5); after adjustment of maternal race, age, education, parity, smoking, family income, prior preterm birth, prior GDM, and hospital. Women with GDM were much more likely to having gestational hypertension (aOR: 7.4; 95% CI: 1.7-31.9) than having preeclampsia (aOR: 2.6; 95% CI: 0.4-17.9). In addition, GDM was associated with an increased risk of macrosomia (aOR: 3.3; 95% CI: 0.8-14.2), cesarean delivery (aOR: 3.1; 95% CI: 1.2-8.3), and preterm birth (aOR: 2.9; 95% CI: 1.0-8.3). Conclusion: Women with GDM are at higher risk of having pregnancy-induced hypertension and other adverse pregnancy outcomes.

0160

INFLUENZA VACCINATION IN PREGNANCY. *L Dodds, S McNeil, J Scott, VM Allen, A Spencer, N MacDonald (Dalhousie University, Halifax, Nova Scotia B3K6R8)

In 2007, the Canadian National Advisory Committee on Immunization recommended that all pregnant women receive the influenza vaccine. In Canada, limited data are available to determine rates of influenza vaccination in pregnant women, but rates are generally thought to be very low. We began collecting data on vaccination during pregnancy in April, 2006, from women at the time of admission for delivery at the IWK Health Centre in Halifax, Nova Scotia. The cohort includes women who delivered a singleton infant prior to November, 2009 so results reflect the pre-H1N1 vaccination period. The purpose of this study was to determine influenza vaccination rates in pregnant women and to determine infant outcomes among vaccinated and non-vaccinated women. Results were obtained for high risk and low risk women separately. There were 9781 women included and overall, 20% received the influenza vaccine in pregnancy with little variation by year. Among low risk women, the adjusted odds ratio (OR) and 95% confidence interval (CI) for a small for gestational age infant (bottom 10th percentile birth weight for gestational age and sex) was 0.8 (95% CI 0.7-1.0) for vaccinated women relative to non-vaccinated women. For high risk women, the corresponding OR was 0.7 (95% CI 0.4-1.2). The adjusted OR for low birth weight (<2500 grams) was 0.8 (95% CI 0.6-1.0) and 0.5 (95% CI 0.2-0.9) for low and high risk women respectively. A minority of pregnant women receive an influenza vaccine in pregnancy. Rates of adverse neonatal outcomes tend to be lower among vaccinated women, but most ORs are of borderline significance. As evidence supporting improved outcomes continues to mount, more public health measures are necessary to encourage pregnant women to receive the influenza vaccine.

0161-S

CUTANEOUS MELANOMA AND ENDOGENOUS HORMONAL FACTORS: A FRENCH PROSPECTIVE STUDY. *Kvaskoff M, Bijon A, Mesrine S, Boutron-Ruault MC, Clavel-Chapelon F. (Inserm U1018, Team 9, Villejuif, France, 94805)

Cutaneous melanoma has been hypothesized to be a hormone-dependent tumor, which has been a strong debate in the literature over recent decades while prospective data on the topic are lacking. To assess the role of endogenous hormonal factors on the risk of melanoma, we conducted a prospective analysis of 91,972 French women, aged 40-65 years at inclusion into the E3N cohort. Between 1990 and 2005, 460 melanoma cases were ascertained. Relative risks (RRs) and 95% confidence intervals (CIs) were computed using Cox proportional hazards regression models. Risks of melanoma were reduced in women with ≥15 years at menarche (RR=0.67, 95% CI=0.46, 0.97; compared with 13-14 years), irregular menstrual cycles (RR=0.52, 95% CI=0.31, 0.89; compared with regular cycles of 25-31 days), <48 years at natural menopause (RR=0.70, 95% CI=0.48, 1.02; compared with 48-51 years), and shorter menstrual life (RR=0.51, 95% CI=0.28, 0.91; for <33 years compared with ≥39 years). Modest inverse associations were observed with parity, and number of pregnancies and miscarriages. There was no evidence of an association between melanoma risk and age at first birth or pregnancy, age at last birth, time since last birth, breastfeeding duration, age at menstruation regularity, or menopausal status. Results did not significantly differ according to ambient ultraviolet radiation dose, and melanoma site or subtype. These findings from a large prospective cohort may suggest a reduced melanoma risk associated with decreased exposure to ovarian hormones.

0162-S

SCREENING FOR GENITAL CHLAMYDIA AMONG YOUNG PEOPLE IN COMMUNITY PHARMACIES: A META-ANALYSIS. *M.Z.Kapadia, P. Warner, K. (Fairhurst University of Edinburgh, Scotland)

To review, summarize and evaluate the evidence relating to feasibility of provision of chlamydia testing and treatment (CT&T)in community pharmacies among youth aged 15-24 years. METHODS: Systematic searches were conducted for international research in electronic databases and grey literature from January 1990 to September 2010. The evidence categories used by the UK Department of Health in the National Service Framework (2001) was applied to each paper. Data were also extracted on study population, sample size and prevalence of chlamydia to report pooled proportion of chlamydia using meta-analysis approach. RESULTS: We included 17 papers and reports. No systematic reviews and only one RCT was found. The proportional meta-analysis showed a pooled proportion of 0.077 (95% CI = 0.052 to 0.106). The reported prevalence was lower than those reported in studies of other health care settings e.g. sexual health clinics or family planning clinics. Chlamydia screening programs in community pharmacies tend to be targeted at certain patient groups e.g. patients accessing emergency hormonal contraception in pharmacies. Young people and pharmacists find chlamydia services via community pharmacy broadly acceptable. However the uptake of the service was much lower than expected and failed to reach men and ethnic minorities. CONCLUSION: CT&T programs tends to target more health conscious population (as is true for other community based screening) who are at lower risk of getting the disease. However this new approach of CT&T is acceptable to both young people and pharmacists. Encouraging men and ethnic minorities to access community pharmacy based chlamydia services remains a challenge.

0163

TREATMENT OF GESTATIONAL DIABETES (GDM), WEIGHT GAIN AND PERINATAL OUTCOME – MARGINAL STRUCTURAL MODEL (MSM) ANALYSIS. *M.Klebanoff for the Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network (NICHD, Bethesda MD, 20892)

BACKGROUND: In a randomized trial (NEJM 2009;361:1339-48) treating mild GDM reduced several perinatal outcomes and also reduced weight gain (2.8 vs 5.0 kg from enrollment to delivery) with no difference in gestational age at birth. This secondary analysis estimates the effect of treatment, controlling weight gain/week by MSM; conventional regression introduces confounding by common causes of gain and perinatal outcome even though treatment was randomized. METHODS: Eligible women had fasting glucose <95 mg/dl and 2 or 3 elevated values on a glucose tolerance test, and were randomized to intensive nutritional counseling, diet therapy, and insulin if needed or to usual care. Comparable BMI women with normal glucose tolerance were followed to mask the usual care group. The MSM used inverse probability weights from logistic regression of weight gain on treatment group. RESULTS: 958 women were randomized (485 treatment, 473 control); data on outcome and weight gain from randomization to delivery were available for 921; 4 gain outliers were deleted. Stabilized weights ranged from .54-6.6 (mean 1.01). The odds ratios for treatment (95% CI) from intent to treat and MSM analyses were 0.6 (0.4,0.9) and 0.7 (0.5,1.1) for any hypertension; 0.4 (0.2,0.9) and 0.6 (0.3,1.3) for preeclampsia; 0.7 (0.5,1.0) and 0.8 (0.6,1.1) for cesarean; 0.4 (0.2,0.9) and 0.4 (0.2,1.0) for shoulder dystocia; 0.4 (0.2,0.6) and 0.4 (0.2,0.6) for macrosomia (>4kg); and 0.4 (0.3,0.7) and 0.5 (0.3,0.7) for LGA. CONCLUSION: MSM control of weight gain slightly reduced the apparent effect of GDM treatment, but estimates were imprecise.

0164

SOCIO-ECONOMIC INEQUALITIES IN THE RATE OF STILLBIRTHS: A POPULATION BASED STUDY. *S.E.Seaton, L.K.Smith, E.S.Draper, B.N.Manktelow, A.Springett, D.J.Field (Department of Health Sciences, University of Leicester, UK)

To investigate socioeconomic inequalities in stillbirth rates in England, we used national population data on all stillbirths 1997-2007. Causes of stillbirth were coded according to the extended Wigglesworth classification and denominator data were the total number of live births and stillbirths. Deprivation was measured using a small area level deprivation index. Poisson regression models were used to estimate the relative and absolute deprivation gap (comparing the most deprived tenth with the least deprived tenth) in rates of stillbirths (both all cause and by specific cause). In the most deprived decile, the overall rate of stillbirths was double that in the least deprived areas (Rate Ratio: 2.06 95% Confidence Interval (1.98, 2.13)). Over the time period there has been a general widening of the deprivation gap (1997-1999: RR: 1.96 (95% CI: 1.83, 2.11) 2005-2007: RR: 2.12 (95% CI: 1.95, 2.31)). A similar pattern was seen for most individual causes. The widest deprivation gap in stillbirth rates was in congenital anomalies (RR: 3 (95% CI: 2.63, 3.43) and antepartum stillbirths which were small for gestational age (RR: 2.41 (95% CI: 2.25, 2.58)). Only 30% of the deprivation gap was explained by known causes such as congenital anomalies and intrapartum events. This leaves 70% of the gap accounted for by antepartum stillbirths of unknown cause. Further research is needed to understand these unexplained death.

0165

A PROSPECTIVE STUDY OF PRE-PREGNANCY DIETARY IRON INTAKE AND RISK FOR GESTATIONAL DIABETES. Katherine Bowers, Edwina Yeung, Michelle Williams, Deirdre Tobias, Lu Qi, Frank Hu, Cuilin Zhang (NICHD, NIH, Rockville, MD)

Gestational diabetes (GDM), one of the most common pregnancy complications, has been related to short- and long-term adverse maternal and infant health outcomes. It is important to identify modifiable factors that may lower GDM risk. Dietary iron is of particular interest given that iron is a strong pro-oxidant and high body iron levels can damage pancreatic β- cell function and impair glucose metabolism. We therefore evaluated the association between pre-pregnancy dietary and supplemental iron intakes and the risk of GDM. Methods: A prospective study was conducted among 13,475 women who reported a singleton pregnancy between 1991 and 2001 in the Nurses' Health Study II. A total of 867 incident GDM cases were reported. Pooled logistic regression was used to estimate the relative risk (RR) of GDM for quintiles of iron intake controlling for dietary and non-dietary confounding factors. Restricted cubic spline regression was used to model the association between continuous dietary heme iron intake and GDM risk. Effect modification by risk factors of GDM associated with iron storage, oxidative stress, and or insulin resistance was assessed via stratification. Results: Dietary heme-iron intake was positively and significantly associated with GDM risk; adjusted RRs across increasing quintiles of heme-iron were 1.0 (reference), 1.11 (0.87, 1.43), 1.31 (1.03, 1.68), 1.51 (1.17, 1.93), and 1.58 (1.21, 2.08), respectively (P for linear trend 0.0001). The association was particularly strong among current cigarette smokers (p for interaction 0.26). These findings suggest that higher dietary heme-iron intake pre-pregnancy is associated with an increased GDM risk.

0166

CHARACTERISTICS OF WOMEN WHO RECEIVED INFLUENZA VACCINATION IN A POPULATION-BASED COHORT OF PREGNANT WOMEN IN ONTARIO. *DB Fell, AS Yasseen III, AE Sprague, M Walker, SW Wen, N Liu, G Smith (BORN Ontario, Ottawa, Ontario, K1H 8L6)

Influenza vaccination is recommended for all women who will be pregnant during influenza season; however, there is little population-based information on the uptake of these recommendations. We evaluated influenza vaccination rates in women who gave birth during the 2009 H1N1 pandemic and identified characteristics associated with receiving vaccination (H1N1 and/or seasonal influenza vaccine) during pregnancy. Information on influenza vaccination was collected in the population-based provincial perinatal database for women who gave birth between Nov 2, 2009 and Apr 30, 2010. Rates of influenza vaccination were calculated according to maternal, pregnancy and neighbourhood characteristics. Log-binomial regression was used to estimate adjusted relative risks (aRR) and 95% confidence intervals (CI). Among 56,654 women who gave birth during the study period, the rate of influenza vaccination was 42.6% (n = 24,134). Vaccination rates increased with increasing maternal age and were higher in women who had chronic health conditions (aRR 1.10, 95% CI: 1.07-1.13), while women who smoked during pregnancy had significantly lower rates (aRR 0.92, 95% CI: 0.89-0.95) as did women who lived in neighbourhoods with the lowest education and income levels and the highest concentration of recent immigrants. Many factors associated with influenza vaccination in this cohort of women are demographic characteristics that are not modifiable; however, they do potentially indicate subgroups of the obstetric population that may benefit from targeted public health intervention strategies to improve future vaccination rates for this priority vaccination group.

0167

CIGARETTE SMOKING AND RISK OF GESTATIONAL DIABETES MELLITUS IN A COHORT OF HISPANIC WOMEN. *T. A. Moore Simas, K. Szegda, X. Liao, G. Markenson, L. Chasan-Taber (University of Massachusetts, Amherst, MA, 01003)

Cigarette smoking has been associated with an increased risk of type 2 diabetes but studies examining smoking and risk of gestational diabetes mellitus (GDM) are sparse, conflicting, and have been conducted predominantly in non-Hispanic white women. Therefore, we evaluated this relationship among 2679 Hispanic prenatal care patients (predominantly Puerto Rican) in Western and (n=930) and Central (n=1749) Massachusetts from 2004-2009. GDM diagnosis was abstracted from medical records and based on American Diabetes Association criteria. A total of 3.7% of participants were diagnosed with GDM. Approximately 23% of participants reported smoking prior to pregnancy, while 11% of women reported smoking during pregnancy with 8% smoking 1-9 cigarettes/day and 3% smoking 10+. As compared to nonsmokers, pregnancy smokers were more likely to be multiparous and older ($p<0.0001$). Increasing age (Odds Ratio (OR)=7.9, 95% Confidence Interval (CI) 4.3-14.6 for >34 vs. <25 yrs), BMI (OR=3.5, 95% CI 2.1-5.7 for obese vs. normal), and parity (OR=1.7, 95% CI 1.0-2.9 for 2+ vs. 0 live births) were positively and significantly associated with GDM risk. After adjusting for age, BMI, pregnancy weight gain, parity, and study site, women who smoked prior to pregnancy were not at increased risk of GDM (OR=0.9, 95% CI 0.5-1.7) as compared to non smokers. Similarly, smoking during pregnancy was not associated with GDM risk (OR=0.5, 95% CI 0.2-1.3). Findings did not differ according to dose of smoking in prepregnancy (ptrend=0.6) or during pregnancy (ptrend=0.3). In summary, we did not observe an association between smoking and risk of GDM in this high-risk population. Findings extend prior research to Hispanic women.

0168-S

PREDICTORS OF HEMOGLOBIN DURING EXCLUSIVE BREASTFEEDING IN HIV-EXPOSED, UNINFECTED MALAWIAN INFANTS. *EM Widen, CS Chasela, ME Bentley, D Kayira, G Tegha, AP Kourtis, DJ Jamieson, C van der Horst, LS Adair, (University of North Carolina Chapel Hill, Chapel Hill, NC 27599)

Infants of mothers with poor iron status in pregnancy have reduced iron stores at birth and are at an increased risk of anemia during exclusive breastfeeding. We evaluated predictors of hemoglobin (Hb) in 1,934 exclusively breastfed HIV-exposed, uninfected infants from 2 to 24 weeks postpartum. As part of the Breastfeeding, Antiretroviral and Nutrition Study, Malawian HIV-infected mothers were randomized to receive a lipid-based nutrient supplement (LNS), providing 15 mg iron/day and meeting other nutritional needs of lactation, or no LNS. Within these groups, there was further randomization to maternal antiretroviral drugs, daily infant nevirapine, or no antiretroviral regimen. We used longitudinal regression models to determine factors associated with infant Hb (g/dL) at 2, 6, 12, 18, and 24 weeks, adjusting for infant Hb at birth and drug arm, as maternal LNS arm was not significant (p=0.28). Higher infant Hb at birth predicts higher subsequent infant Hb, but the effect diminishes over time. Rate of infant weight gain was inversely associated with infant Hb, except at 12 weeks. Higher maternal Hb was associated with higher concurrently measured infant Hb, especially at 18 and 24 weeks. Each one-unit increase in maternal Hb at 18 and 24 weeks was associated with a 0.09 g/dL (95% confidence interval: 0.04, 0.14) and 0.07 g/dL (95% confidence interval: 0.02, 0.12) respective increase in concurrently measured infant Hb. These results suggest that maternal iron status during lactation influences infant Hb when infant iron stores are more likely to be depleted. Support: CDC(U48-DP000059-01); Bill & Melinda Gates Foundation(OPP53107)

0170

PATTERNS OF AGE OF PUBERTY IN RELATION TO EXPOSURE TO PERFLUOROOCTANOIC ACID (PFOA) AND PERFLUOROOCTANE SULFONATE (PFOS) AMONG CHILDREN LIVING IN AN AREA WITH PFOA-CONTAMINATED DRINKING WATER. *Tony Fletcher, Maria-Jose Lopez-Espinosa, Ben Armstrong, Nicola Fitz-Simon, Bernd Genser, Debrapriya Mondal (Department of Social and Environmental Health Research, London School of Hygiene & Tropical Medicine, London, WC1H 9SH, UK)

Animal studies suggest that perfluorocarbons (PFCs) may alter sexual maturation. Relationships of human PFC exposure with puberty are not clear. We conducted a cross-sectional study to investigate whether perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) affect pubertal status based on sex steroid hormone levels and self-reported menarche. We analyzed patterns of puberty in a 2005-2006 survey of residents with PFOA water contamination from the Mid-Ohio Valley (3076 boys and 2931 girls aged 8-18 years). Participants were classified as having reached puberty based on either hormone levels (total >50 ng/dL and free >5 pg/mL testosterone in boys, and estradiol >20 pg/mL in girls), or onset of menarche. We estimated the odds of reaching puberty and the fitted median age of reaching puberty in relation to serum PFOA and PFOS levels measured when puberty status was assigned. For boys, there was a relationship of reduced odds of reached puberty (raised testosterone) with increasing PFOS (delay of 190 days between the highest and lowest quartile). For girls, higher exposure to PFOA or PFOS was associated with reduced odds of post-menarche (130 and 138 days of delay, respectively). These are the first results indicating a delay in puberty in relation to these compounds. Exposure was assessed at the same time as puberty was classified and further work will assess timing of puberty in relation to estimates of PFC levels in utero.

0171-S

THE ROLE OF TLR3 IN HBV INFECTION IN PLACENTA AND NEWBORNS OF HBSAG POSITIVE WOMEN. S-Z Li,X-X Song,C-L Yuan,L-P Feng，Bo Wang,Y-Q Qv,* S-P Wang (Dept.of Epidemiology,Shanxi Medical University, Taiyuan, Shanxi, 030001, China)

The aim of this work is to explore the relationship of Toll-Like Receptor (TLR) 3 in term human placenta and hepatitis B virus(HBV) intrauterine infection. Semi-quantitative RT-PCR and quantitative Real-time RT-PCR were conducted to detect TLR3 mRNA in term human placenta from normal and HBsAg positive women. Immunohistochemistry ABC and double labeling immunofluorescent histochemistry assay were conducted to detect TLR3 in placenta. HBV DNA were determined by fluorescence quantitative PCR. OR and 95% CI for factors of HBV infection in placenta and HBV intrauterine infection were calculated using unconditional logistic regression. TLR3 mRNA in placenta showed weaker expression in HBsAg positive women (1.7029± 0.2033) than normal women (1.3882± 0.1913) ($t=4.698$, $P<0.01$). There was significant difference in the positive rate of TLR3 between placentas of normal and HBsAg positive women (100%,41/41 vs 73.28%,85/116) (Fisher's exact probability test P=0.000). TLR3 of term placenta (235/300) was mostly located in the cytoplasm, a part on the cell membrane. The positive rate of TLR3 gradually increased from the maternal side to the fetal side in the placental cell layers and the positive rate of HBsAg gradually decreased (trend $\chi 2$ value were 262.715 and 109.809, respectively, $P<0.01$). The multivariable analysis showed the expression of TLR3 in term placenta was showed a protective factor of HBV infection in placenta (OR=0.247, 0.141~0.431) and it also was a protective factor of HBV intrauterine infection in newborns (OR=0.438, 0.204~0.942) of HBsAg positive women.It is suggested the TLR3 take the role against HBV infection in placenta and newborns of HBsAg positive women.

0172

SPATIAL AND TEMPORAL TRENDS IN MATERNAL TOBACCO USE IN SAN BERNARDINO COUNTY: EFFECTS OF MIGRATION AND ECONOMIC RECESSION? PN Singh*, M Batech, S Wiafe, B Oshiro, R Chinook, T Morris, J Job (Loma Linda University, Loma Linda, CA 92350; Cal State San Bernardino, San Bernardino, CA 92407)

San Bernardino County, one of the most populous counties in the US, has undergone a recent demographic and economic shift that has resulted in 1)a younger population 2)a multiethnic population that includes a rapidly growing immigrant population 3)a spatial change in the size and demographics of residential communities due to an increase in new housing followed by one of the highest rates of mortgage foreclosures in the nation. As part of the National Children's Study sampling effort for this county, we examined spatial and temporal changes in the age, ethnicity, income, and residence of mothers on the California state birth files for years 2004-2008. We also examined how these factors impact rates of pre-pregnancy and maternal tobacco use. Unrestricted quadratic spline models were used to model trends in pre-pregnancy and maternal tobacco use. All births and births to tobacco users were spatially mapped to chloropleths of demographic variables and residence type. The prevalence of pre-pregnancy and maternal tobacco use decreased in under 18 year-olds, and increased among 18-25 year olds. Hispanics were the only ethnic group to post an increase in prevalence of pre-pregnancy and maternal tobacco use. Mothers with no coverage (i.e. no medi-cal, no private insurance, did not qualify/participate in a government program) for pre-natal care exhibited a 42% prevalence of pre-pregnancy and/or maternal tobacco use that further increased during 2007-2008. We found a strong association between changes in demographic and economic indicators and rates of pre-pregnancy and maternal tobacco use in San Bernardino County.

0173

EVIDENCE OF A GENETIC OR MATERNAL EFFECT ON FETAL LEPTIN AND ADIPONECTIN LEVELS AND THE IMPLICATIONS FOR FETAL INSULIN SENSITIVITY. *ZC Luo, AM Nuyt, WD Fraser, P Julien, E Delvin, E Levy (*CHU Sainte-Justine, University of Montreal, Canada)

Adiponectin is an endogenous insulin sensitizer, and leptin a fetal fat content indicator. There is a lack of data on the longitudinal associations between maternal and fetal leptin and adiponectin, and whether they affect fetal insulin sensitivity. We assessed the associations between maternal (24-28 weeks and 32-35 weeks of gestation) and cord blood leptin and adiponectin concentrations, and their associations with fetal insulin sensitivity (glucose/insulin ratio) in a prospective pregnancy cohort (n=248). Comparing cord vs. maternal blood, leptin concentrations were less than half as high, but adiponectin concentrations over 2.4 times as high. Maternal plasma levels were higher for leptin and lower for adiponectin in obese (n=31) vs. normal weight women, and lower for adiponectin in gestational diabetic (n=26) vs. euglycemic women. There were no significant differences in cord plasma leptin or adiponectin concentrations comparing gestational diabetic vs. euglycemic, or obese vs. normal weight women, although adiponectin levels were non-significantly lower in diabetic pregnancies. Consistent positive correlations were observed between cord and maternal plasma concentrations at 24-28 and 32-25 weeks of gestation for both leptin (r=0.26 and 0.27, respectively, all $p<0.0001$) and adiponectin (r=0.29 and 0.32, respectively, $p<0.0001$). Fetal insulin sensitivity was negatively correlated with maternal or fetal leptin, and positively correlated with maternal but not fetal adiponectin. Adjusting for fetal adiponectin or leptin, the differences in fetal insulin sensitivity attenuated in diabetic vs. euglycemic women. The results provide the first evidence of a potential genetic or maternal effect on both fetal leptin and adiponectin levels. The adverse effects of gestational diabetes on fetal insulin sensitivity may be partly mediated by adiponectin and fetal adiposity.

0174

PEAK DAY: A SIMPLE, PROSPECTIVE METHOD TO IDENTIFY OVULATION IN ORDER TO PERFORM PERI-CONCEPTIONAL EXPOSURE ASSESSMENT. *CA Porucznik, KC Schliep, SL Willardson, JB Stanford (University of Utah, Salt Lake City, UT 84108)

Evidence indicates that very early intrauterine exposures may have both short- and long-term health effects. To obtain the most complete lifetime exposure assessment, initial monitoring should occur at or near the time of conception. Prospectively determining ovulation dates can identify precise time intervals between conception and developmental windows and allow for targeted exposure assessment during relevant times. We developed and implemented a simple, prospective method of identifying ovulation using systematic observation of fertility signs in a pilot cohort of 58 women. The majority correctly applied the method to identify the estimated day of ovulation in their first cycle of observation. Among the initial group of enrolled women, 57% followed instructions by charting continuously and an estimated day of ovulation was identified correctly according to the Peak Day algorithm in 77% of cycles. The average participant selected the estimated day of ovulation according to the algorithm in 1.3 cycles (standard deviation: 0.8, range: 1 to 4). Among the 29 women trying to achieve pregnancy, 19 (66%) conceived during the study, an indicator that they were able to apply the knowledge of their estimate day of ovulation to achieve their reproductive intention. In two pilot studies, we asked women to complete an exposure assessment task, web-based survey or biospecimen collection, at each identified ovulation and achieved 96% compliance. Peak Day is a resource efficient method for prospective ovulation determination that could be applied to large, population-based epidemiologic studies.

0175

RESIDENTIAL PROXIMITY TO POWER TRANSMISSION LINES AND STILLBIRTH. N. Auger, S. Yacouba, *A. Park, M. Goneau, and J. Zayed (Institut national de santé publique du Québec, Montréal, QC H2P 1E2)

The relationship between exposure to extremely low frequency (ELF) electromagnetic fields and stillbirth has not been studied, despite data suggesting an association between ELF fields and miscarriage. We examined the association between residential proximity to ELF power transmission lines and stillbirth. Power transmission line maps for 2008 were obtained for census metropolitan areas of the province of Québec, Canada. Singleton live births (N=514,826) and stillbirths (N=2,033) in metropolitan areas were extracted for 1998-2007. Distance between lines and residential 6-digit postal codes (<24, 25-49.9, 50-74.9, 75-99.9, and ≥100 meters) was calculated. Generalised estimating equations were used to compute odds ratios (OR) and 95% confidence intervals (CI) between distance to power lines and stillbirth, adjusted for maternal age, education, civil status, language, immigration, parity, period, neighbourhood deprivation and clustering. Early preterm (<28 gestational weeks), late preterm (28-36 weeks), and term (≥37 weeks) stillbirths were examined relative to ongoing pregnancies. Distances <100 meters of lines were not associated with statistically significant greater odds of preterm stillbirth (<37 weeks) relative to ≥100 meters. Greater odds of term stillbirth were observed for <25 meters relative to ≥100 meters (OR 2.25, 95% CI 1.14-4.45), but not for other distances. In summary, the likelihood of term stillbirth was elevated for residences <25 meters from power lines but not for other distances relative to ≥100 meters. Reasons for the elevated odds are unclear. Though it is reassuring that term stillbirth is rare, more research is needed to understand the mechanisms behind this finding.

0176-S

PRENATAL AND NEONATAL RISK FACTORS FOR TESTICULAR GERM CELL CANCER. M. van Gelder, C. van Veldhoven, C. Wijers, K. Aben, and *N. Roeleveld (Department of Epidemiology, Biostatistics and HTA, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands)

Although testicular cancer is the most common malignancy among male adolescents and young adults, the etiology of testicular germ cell cancer (TGCC) is not well understood. A prenatal etiology has been suggested, in which fetal exposure to endocrine disrupting substances is considered a risk factor for TGCC because male development strongly depends on sex hormones. We conducted a case-referent study to evaluate the role of a wide range of prenatal and neonatal characteristics in the etiology of TGCC. We included 184 men with TGCC (cases) and 278 fathers of children born in the Radboud University Nijmegen Medical Centre (referents) for whom a self-administered questionnaire and a maternal interview with information on prenatal and neonatal exposures were available. Adjusted odds ratios (ORs) with 95% confidence intervals (CIs) were calculated using multivariable logistic regression. We found several factors to be associated with the risk of TGCC, including cryptorchidism (OR, 4.02; 95% CI, 2.26–7.15), surgery for inguinal hernia (OR, 3.23; 95% CI, 1.39–7.52), gestational hypertension (OR, 0.64; 95% CI, 0.40–1.03), and regular consumption of fish during pregnancy (OR, 0.66; 95% CI, 0.45–0.97). In addition, cases were an inch taller than referents. An increased risk of nonseminomas was observed for low birth weight, preterm birth, and breast feeding ≥ 6 months, whereas being born macrosomic and prenatal exposure to iron supplements increased the risk of seminomas. Our findings support the hypothesis that prenatal and neonatal factors, and especially potential exposure to endocrine disrupting substances, play a role in the etiology of TGCC.

0177-S

PRENATAL AND ADULT EXPOSURE INVOLVED IN THE RISK OF POOR SPERM QUALITY. C. Wijers, M. van Gelder, C. van Veldhoven, I. van Rooij, L. Ramos, and *N. Roeleveld (Department of Epidemiology, Biostatistics and HTA, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands)

During the last decades, the prevalence of male reproductive disorders, including poor sperm quality, increased rapidly. It has been hypothesized that prenatal and adult exposure to exogenous substances, especially endocrine disrupting chemicals (EDCs), are likely causes. To study the effects of a wide range of potential risk factors on the risk of poor sperm quality, we performed a case-referent study. Cases were men of reproductive age with sperm concentrations < 20*106 per ml who visited the fertility clinic at the Radboud University Nijmegen Medical Centre in 2002-2007. Referents were randomly selected fathers of children born in the same hospital in 1997-2007. A total of 147 cases and 319 controls and their mothers were included. We used self-administered questionnaires and maternal interviews to determine exposure and calculated adjusted odds ratios (ORs) with 95% confidence intervals (CIs) using multivariable logistic regression. Poor sperm quality was associated with a family history of reproductive disorders, some health-related factors, periconceptional oral contraceptive use (OR=2.9, 95%CI 1.5–5.7), use of iron supplements during pregnancy (OR=2.1, 95%CI 1.3–3.5), current use of cosmetics (OR=5.3, 95%CI 1.6–17.8), and occupational exposure to anaesthetics (OR=4.2, 95%CI 1.3–13.6). Being breast-fed (OR=0.6, 95%CI 0.3–1.0) and consumption of fish and sea food (OR=0.5, 95%CI 0.3–0.8) seemed to decrease the risk of poor sperm quality. The associations found support the hypothesis that prenatal and adult exposure to exogenous substances, including EDCs are involved in the etiology of poor sperm quality.

0178

THE BUILT ENVIRONMENT AND WOMEN'S PSYCHOSOCIAL HEALTH. *P. Maxson, L. Messer & ML. Miranda (Duke University, Durham, NC 27708)

The built environment (BE) to which women are exposed during pregnancy has been associated with adverse maternal and reproductive health. Limited research has identified maternal psychosocial status as a mechanism through which the BE influences health. We assess this relationship using directly observed neighborhood characteristics and psychosocial attributes from an ongoing pregnancy cohort study. Durham city tax parcels (n=17,239) were assessed, and observed BE variables were summed into five domains: housing damage, property disorder, nuisances, territoriality and vacancy. These analyses include 595 non-Hispanic black and 178 white or Hispanic participants living in the study area. Generalized linear latent and mixed models were run with binomial family and multinomial links. Outcomes–including perceived stress, partner support and active coping–were constructed as defined in the literature. Living in areas with more property disorder or higher proportions of rental or vacant housing was associated with more active coping and perceived stress as well as less positive partner support. For example, living in areas with more housing damage was associated with 50% higher odds of women reporting moderate perceived stress, compared to women with low perceived stress (odds ratio (OR) =1.5; 95% confidence interval (95% CI): 1.1, 2.1). Following adjustment for covariates, the relationship was attenuated, but still significant (OR=1.4; 95% CI: 1.0, 2.1). Since we may be explaining a portion of the BE effect we are trying to observe, the unadjusted models may be a more accurate depiction of the 'built environment effect.' The BE, an important aspect of a woman's mental and physical health, is modifiable and thus an important target for interventions designed to improve public health.

0179-S

MATERNAL PRENATAL AND PARENTAL POSTNATAL STRESS IN A COHORT OF DEPRESSED WOMEN AND THEIR PARTNERS. *Karam F, Sheehy O, Bérard A, and the OTIS Collaborative Research Group. (Université de Montréal, Montreal, Canada.)

Studies have shown that perinatal stress is associated with unfavourable outcomes. Our objective was to evaluate parental stress in a cohort of pregnant depressed women who continue or discontinue antidepressant (AD) treatment, and their partners. The OTIS Antidepressants in Pregnancy Study cohort was used. Women were recruited through North American Teratogen Information Services and at the outpatient clinic of CHU Ste Justine (Montreal, QC). To be included, women had to be ≥18 years old, <15 weeks pregnant, using AD (exposed group) or any non-teratogenic drugs (non-exposed group). Women were excluded if they were using a known teratogen or other psychotropic drugs (except for benzodiazepines) or taking AD in the year prior to pregnancy (for the non-exposed group). Parental stress was assessed by telephone interview using the validated 4-items perceived stress scale during the 1st trimester of pregnancy (TP) for mothers and at 2 months postpartum for both parents. To compare stress levels between groups, statistical analyses were conducted using t-tests and ANOVA with posthoc tests. Overall, 249 women and 138 men were recruited for this study. During the 1st TP, women exposed to AD, and especially those who discontinued taking their AD, had a higher level of stress than women in the non-exposed group ($p<0.001$). After pregnancy, exposed women as well as their partners also had a higher level of stress than parents in the non-exposed group ($p<.05$). These results indicate that depressed women taking AD while pregnant as well as their partners have higher levels of stress during and after pregnancy than those not taking AD.

0180

MID-PREGNANCY URINARY COTININE CONCENTRATIONS AND GESTATIONAL DIABETES.*JD Peck, C Robledo, J Ricci Goodman, J Stoner, E Knudtson, A Elimian (University of Oklahoma Health Sciences Center, Oklahoma City, 73104)

Tobacco use during pregnancy may increase risk of gestational diabetes. Inconsistencies in previous studies are attributed to methodological limitations such as self-reported smoking and inadequate control for confounders. We conducted a case-control study of gestational diabetes using a biochemical marker of tobacco exposure. Pregnant women undergoing 1 hour 50 gram glucose challenge tests at the University of Oklahoma Medical Center between August 2009 and May 2010 were recruited during the subsequent clinic visit (mean=29 weeks, sd=3.7). Cases (n=65) were defined as women with 1) a screening value ≥135 mg/dl who went on to have a 3 hour 100 gram oral glucose tolerance test with ≥ 2 values above standard diagnostic thresholds, or 2) a screening value ≥200 md/dl. Controls (n=244) were selected (approximately 4:1) from those completing screening without a diagnosis of gestational diabetes. Self-reported tobacco use was collected by questionnaire. Urine samples were collected at enrollment and analyzed for cotinine concentrations. A multivariate logistic regression model controlling for age, race/ethnicity, body mass index and gestational age indicated diagnosis of gestational diabetes was not associated with an increased odds of cotinine exposure (referent: non-detectable urinary concentrations; 3.4 to 15 ng/ml, OR=1.6 (0.7-3.7), and >15 ng/ml, OR=0.6; 95% CI 0.2-1.5.) An observed interaction with body mass index (BMI≥30) suggests the association between tobacco exposure and gestational diabetes may differ for obese and non-obese women (interaction p=0.002). The stratified estimates, however, lacked precision (e.g., OR=2.9; 95% CI 0.8-10.2 for obese/smokers compared to non-obese/non-smokers.)

0181-S

PASSIVE SMOKING IN EARLY LIFE AND ADULTHOOD AND TIME-TO-PREGNANCY. *R.G. Radin, L.A. Wise, K.J. Rothman, E. Mikkelsen, H.T. Sørensen, A.H. Riis, E.E. Hatch (Boston University School of Public Health, Boston, MA, USA)

Background: Female passive smoking has been associated with reduced fecundability in the few studies that have examined this relation. Epidemiologic studies of the association between in utero smoke exposure and fertility have generated mixed findings. Methods: We examined time-to-pregnancy (TTP) in relation to in utero smoke exposure, passive smoking in childhood (age 0-10 years), and passive smoking in adulthood among 2,149 Danish women with no history of active smoking. In this prospective cohort study, participants reported their smoking history at baseline and contributed cycles at risk until the occurrence of pregnancy, fertility treatment, loss to follow-up, or the end of follow-up (12 months), whichever came first. We estimated fecundability ratios (FR) and 95% confidence intervals (CI) for each category of the exposure relative to no passive smoking across the lifespan, using discrete-time Cox regression models adjusted for potential confounders. Results: Relative to no passive smoke exposure at any life stage, the FR for in utero smoke exposure was 1.03 (95% CI: 0.89, 1.20), the FR for passive smoke exposure in childhood was 1.02 (95% CI: 0.90, 1.17), and the FR for passive smoke exposure in adulthood was 0.95 (95% CI: 0.73, 1.24). Conclusions: Among women with no history of active smoking, there was little evidence of reduced fecundability among women exposed to passive smoke either in early life or in adulthood.

0182-S

HIGHER ENVIRONMENTAL TEMPERATURE DURING PREGNANCY CAUSES LOW BIRTHWEIGHT (LBW). Alka Gupta[1], *Jagjit S Teji[2], and Kamal Eldeirawi[3] ([1]University of Illinois, Chicago, Illinois, United States; [2]Pediatrics, University of Chicago, Chicago, Illinois, United States and [3]College of Nursing, University of Illinois, Chicago, Illinois, United States)

LBW is a major cause of infant morbidity and mortality in the world. Animal and human studies have shown that intrauterine growth retardation was inversely related to environmental temperature. The purpose of this study is to assess the associations of higher temperature with lower birth weights in the United States infant born between 1995 and 2002. CDC Linked Death and Infant Birth data were analyzed only term babies and from MaxMind and National Oceanic and Atmospheric Administration (NOAA) website; The variables were maternal age, race, and Hispanic origin of the parents, birth weight, period of gestation, plurality, prenatal care usage, maternal education, live birth order, marital status, and maternal smoking and alcohol usage. Logistical regression was performed with LBW as the dependent variable with all the other dichotomized variables as confounding and where independent variables latitude and/or temperature with respect to race using STATA. About 25 million records from over 32 million births were used for analysis. It was noted average annual temperature>55 F and lower latitude had a higher probability of LBW; Odds ratio (OR) 1.23, P<0.0005; 95% CL-1.22-1.23). Greatest impact of LBW was for NHW and lowest for H, OR 1.22 vs 1.003 irrespective of other variables of LBW when directly related to temperature during pregnancy. Conclusions: LBW at birth is directly related to higher environmental temperature during pregnancy. LBW at birth is associated with diseases common to adults.

0183

INVESTIGATING THE RELATIONSHIP BETWEEN GESTATIONAL AGE, BIRTHWEIGHT AND CHILDHOOD SLEEP APNOEA, USING LONGITUDINALLY LINKED DATA. Camille H Raynes-Greenow, Ruth M Hadfield, Peter Cistulli, Jennifer Bowen, Christine L Roberts (University of Sydney, Australia)

Background: There is an increasing interest in the role of obstructive sleep apnoea in children and subsequent heath outcomes. There is some evidence relating preterm birth and childhood sleep apnoea. Aim: To investigate the relationship between perinatal risk factors and sleep apnoea in childhood using population health longitudinally linked data from NSW. Methods: All live births recorded in NSW between 2000 and 2004 were extracted from the Midwives data collection, and followed up to the age of 6 years for all NSW hospitalisations recorded in the Australian Patient Data Collection. Exclusions included those births identified with major congenital anomalies, any births with birth weight outliers, and any deaths in the first year of life. Birth weights were adjusted for sex and gestational age using national centile charts. Sleep apnoea was identified using the (International Classification of Diseases) ICD-10 code G47.3 and the procedure codes for polysomnography and adenotonsillectomy. Results: We identified 4145 (1.0%) children with sleep apnoea diagnosed >1 year old, mean follow-up was 5.03 years. Mean age at first diagnosis was 3.6 years, 86% had adeno/tonsillectomy and 36% had polysomnography. After adjusting for gestational age, year of birth, baby's sex, maternal age, smoking during pregnancy, mode of delivery, number of previous pregnancies, we found an increased risk for children to be diagnosed with sleep apnoea if they were born at < 32 weeks [Odds ratio (OR) 2.50; 95% CI 2.0, 3.2], or those born to mothers with any pregnancy hypertension [OR 1.19; 95% CI 1.1, 1.3], or those born by caesarean section [OR 1.19; 95% CI 1.1, 1.3]. There was no significant association between birthweight, adjusted for gestational age, and sleep apnoea. Conclusion: These results suggest that some perinatal factors are related to an increase in the risk of childhood sleep apnoea. Obstructive sleep apnoea in adults has been related to hypertension, coronary artery disease, diabetes and depression.

0184-S

ARSENIC EXPOSURE, PREGNANCY OUTCOMES, AND INFANT HEALTH IN BANGLADESH. *M. Argos, F. Parvez, and H. Ahsan (The University of Chicago, Chicago, IL, 60637)

Background: Chronic arsenic exposure through drinking water is a growing public health issue affecting millions of people worldwide, including 35 to 57 million in Bangladesh. Objectives: The aim of the present analysis was to evaluate whether individual-level arsenic exposure in females in the Bangladesh Vitamin E and Selenium Trial (BEST) is associated with pregnancy outcomes and infant health characteristics. Design: BEST consists of population-based participants from the Araihazar and Matlab regions of Bangladesh, recruited between April 2006 and August 2009, and followed-up bi-weekly for clinical events including pregnancy. Study participants, aged 25-65 years at enrollment, have been chronically exposed to arsenic at various doses through the consumption of groundwater. Individual-level maternal arsenic exposure was measured by urinary total arsenic concentration in a spot urine sample at enrollment. Self-reported pregnancy outcome and infant characteristics were collected by interview and physician examination. Logistic regression models were used to estimate odds ratios and their 95% confidence intervals for pregnancy outcomes, as well as infant health characteristics including growth and morbidity, with respect to maternal arsenic exposure. Results: Associations between pregnancy outcomes, as well as infant growth and morbidity, with arsenic exposure will be presented. Conclusion: Our findings demonstrate the importance of maternal arsenic exposure for pregnancy outcomes and infant health in a Bangladeshi population.

0185

CHILDREN'S CIGARETTE SMOKING ASSOCIATED WITH LIFE STRESS, RULE-BREAKING BEHAVIOR, PARENTING STYLE AND ACADEMIC ACHIEVEMENT *YL Liu, CC Chen, YY Yen, CH Lee and HL Huang (Kaohsiung Medical University, Kaohsiung, Taiwan 807)

Early initiation of smoking increases the likelihood of adult smoking dependence; still, most smokers start smoking in their early teens. Most schoolchildren start their smoking habit in the fifth or sixth grades. The current study was to understand children's life stress, rule-breaking behavior, parenting style and academic achievement associated with their cigarette smoking. Multistage cluster sampling was used to obtain a representative sample (n=5,353) among 3rd to 6th graders from 65 elementary schools, in southern Taiwan in 2008-2009. A series of regression models was used to examine the influence variables had on smoking status of elementary school students. After adjusting for gender and grade, the risk of first cigarette smoking behavior was significantly associated with life stress, rule-breaking behavior, parenting style, and academic achievement. Compared to never smokers, the smokers were found to be more likely to have high level of stress (adjusted odds ratio (aOR) =1.84, 95%CI:1.42-2.39), use swear words (aOR＝2.13, 95% CI:1.67-2.71), have the authoritarian parenting style (aOR＝1.28, 95% CI:1.01-1.63), and they were more likely to have low academic achievement in mandarin(aOR＝1.45, 95%CI:1.03-2.02) and mathematics(aOR ＝1.41,95%CI:1.03-1.93). The findings suggested that interventions aimed at reducing smoking initiation in children need to target on those who suffer high level of stress, have rule-breaking behavior and low academic performance, and to enhance their child-parent relationships as well as improve support system at school for children.

0186-S

A MULTILEVEL STUDY OF CHILDREN'S CIGARETTE SMOKING IN RELATION TO INDIVIDUAL- AND SCHOOL-LEVEL CHARACTERISTICS IN ELEMENTARY SCHOOLS.*CC Chen, YY Yen, CH Lee, Ted Chen and HL Huang (Kaohsiung Medical University, Kaohsiung, Taiwan 807)

The main aim is to examine the relationship between the individual- and school-level characteristics and cigarette smoking behavior of schoolchildren. We conducted a multilevel-based study to assess two-level effects for smoking among 5357 grades 3-6 students in 65 randomly selected elementary schools in southern Taiwan in 2008-2009. A series of multilevel models was analyzed. A significant random variation between schools was identified [$\sigma^2_{\mu 0}$ =1.11(0.23), P<0.05]. Between schools differences accounted for approximately 26.7% of the residual variance in smoking, indicating that the school cluster is very important. The presence and status of a school general tobacco policy, smoking restrictions or attending health promoting school programs appeared to be unrelated to student smoking behavior. However, the risk of smoking was significantly associated with those schools with a high perceived smoking rate, as compared to those with a low perceived smoking rate [adjusted odds ratio (aOR) =1.67 , 95% CI:1.17-2.51]. The specific school students attended had a positive significant effect on the risk of being smokers. Other individual-level characteristics having a significant relationship to student smoking were positive attitude toward smoking (aOR=1.16) and immediate social environmental factors in which best friends always smoked in front of me (aOR=6.32), and family always smoked in front of me (aOR=1.57) as well as drinking alcohol (aOR=2.56) and chewing betel nuts (aOR=4.11). In addition to social models for smoking as predictors, the broader school environment with a higher student perception of smoking prevalence is associated with children's smoking behavior.

0187

DOES THE IMPACT OF SMOKING DIFFER BY SOCIOECONOMIC STATUS? *R. Charafeddine; H. Van Oyen; S. Demarest (Scientific Institute of Public Health, Belgium)

The joint influence of smoking and socioeconomic status (SES) on health and mortality has received little attention in the literature; and the few published studies reported inconsistent findings and supported contradictory hypothesis. Some studies suggest that the effect of tobacco on health is higher among individuals with a lower socioeconomic status, others purport that the effect of tobacco is higher among individuals with a higher socioeconomic status, finally some suggest that the effect of tobacco is similar across all social groups. In this study, we examine whether educational level modifies the association between smoking and mortality. We used the Belgian Health Interview Surveys of 1997 and 2001 for information on tobacco consumption by age, gender, and educational level. The mortality follow up of the survey respondents was reported until December 2008. We used a Poisson regression to estimate the hazard ratio (HR) of mortality by smoking status controlling for age and other confounders. Our results show that men with the lowest educational level had the lowest relative risk of mortality (HR= 1.79 95% CI (1.10-2.89)) while intermediate (HR=3.69 95% CI (2.59-5.26)) and high educated (HR=3.51 95% CI (1.83-6.73)) men had comparably high relative risks. The variation in the effect of smoking observed among men is borderline significant as indicated by the log likelihood test. For women, the hazard ratios were only significant for the low and intermediate educated while there was no significant effect of tobacco on mortality among the highly educated. Variations among women were not statistically significant. This study provides evidence that the effect of smoking on mortality is conditional upon educational level, especially for men.

0188-S

NEIGHBORHOOD SOCIODEMOGRAPHIC, PHYSICAL, SERVICE-RELATED, AND SOCIAL-INTERACTIONAL CHARACTERISTICS AND BMI OR WAIST CIRCUMFERENCE IN THE RECORD STUDY: EVALUATION OF THE SEPARABILITY OF ASSOCIATIONS WITH A NEIGHBORHOOD CHARACTERISTIC-MATCHING TECHNIQUE *Leal C., Bean K., Chaix B.(Inserm U707 and IPC Center, Paris, France)

We investigated whether correlated neighborhood characteristics related to the sociodemographic, physical, service-related, and social-interactional environments measured within ego-centered areas were associated with BMI and waist circumference, and assessed whether or not these associations could be disentangled using an original neighborhood characteristic-matching technique (analysis of each environmental effect within pairs of individuals similarly exposed to another environmental variable). We conducted cross-sectional analyses of 7230 adults from the RECORD Cohort Study (Paris region, France). After adjustment for individual/neighborhood socioeconomic variables, both outcomes were negatively associated with characteristics of the physical/service environments reflecting higher densities (e.g., built surface area, street network connectivity, and densities of fruit/vegetables selling shops, fast-food restaurants, and healthcare resources). Multiple adjustment models were unable to disentangle the effects of these correlated densities. Analyses by pairs of participants similarly exposed to another environmental variable only identified a few associations, primarily with the density of fruit/vegetables selling shops. Overall, beyond influences of the socioeconomic environment, certain characteristics of the physical/service environments may be associated with weight status, but it may be difficult to disentangle the effects of various environmental dimensions because of the strong correlation between the variables (even if they imply different causal mechanisms and interventions).

0189-S

ORGANIZATIONAL JUSTICE AND MENTAL HEALTH: A SYSTEMATIC REVIEW OF PROSPECTIVE STUDIES. * R. NDJABOUE, C BRISSON and M. VEZINA. (Unité de recherche en Santé des Populations G1S 4L8)

The Demand-Control-Support model (DCS) and the Effort-Reward Imbalance model (ERI) are the models most commonly used to study the effects of psychosocial work factors on workers' health. An emerging body of research has identified *organizational justice* as another model that can help to explain deleterious health effects. This review aimed 1) to review prospective studies of the associations between organizational justice and mental health in industrialized countries from 1990 to 2010, 2) to evaluate the extent to which organizational justice is an independent predictor of mental health in prospective studies, 3) to discuss theoretical and empirical overlap and differences with previous models. The studies were collected from the Medline and PsychINFO databases, from references listed in major articles, and from experts in the field. The studies had to: present associations between organizational justice and a mental health issue; be prospective; and be available entirely in English or in French. Of the 363 selected studies, ten prospective studies were selected for this review. Prospective studies provide evidence showing that procedural justice and relational justice are associated with mental health. These associations remained significant after controlling for the DCS and ERI models. We also observed that there is a lack of prospective studies on distributive and informational justice and mental health. In conclusion, the organizational justice model can be considered a different and complementary model to the DCS and ERI models. Future studies should evaluate the cumulative effects of the exposure to organizational justice on employees' mental health over time.

0190-S

SOCIAL CONTACTS AND DEPRESSION IN MIDDLE AND ADVANCED ADULTHOOD: FINDINGS FROM A NATIONAL SURVEY. *R.N. Polur, L.P. McKenzie, C.G. Wesley, J.D. Allen, R.E. McKeown, J. Zhang (Jiann-Ping Hsu College of Public Health, Georgia Southern University, Statesboro, GA 30460)

To assess how social contacts are associated with depression, we analyzed the data of adults aged 40 years or older, who completed a depression screening as part of the National Health and Nutrition Examination Survey, 2005-2008. Depression was ascertained using the Patient Health Questionnaire (PHQ), a 9-item screening instrument. The prevalence of depression was 5.5% (SE: 0.64) in men (N=2,836) and 8.5% (SE: 0.71) in women (N=2,845). After adjustment for covariates, significant associations between social contacts and depression were identified, and they were more salient among men than women. Compared to those who attended church weekly, the odds ratio (OR) was 2.57 (95% confidence interval (CI): 1.47-4.20), 2.43 (95% CI: 1.36-4.33), and 2.16 (95% CI: 0.88-5.31) among men who never attended church, attended occasionally, and more than weekly, respectively. The corresponding ORs for women were 1.81 (95% CI: 1.11-2.94), 1.71 (95% CI: 1.05-2.78), 0.99 (95% CI: 0.53-1.85). Compared with the respondents having 10 or more friends, the ORs of depression were 3.72 (95% CI: 1.77-7.83) for men and 1.88 (95% CI: 0.90-3.71) for women who had no close friends. Compared to married individuals, being previously married was significantly associated with depression in both men with OR of 2.15 (95% CI: 1.46-3.15) and women with OR of 1.62 (95% CI: 1.06-2.48). The current study provides evidence to support increasing social contacts to prevent depression, particularly among men. The inherent limitation of cross-sectional design, however, prevented the authors from investigating causality.

0191

ASSOCIATIONS BETWEEN THE DENSITY OF ALCOHOL OUTLETS AND NON-VIOLENT CRIME IN URBAN NEIGHBORHOODS. *K. Lenk, T. Toomey, D. Erickson, H. Quick, E. Harwood, B. Carlin (University of Minnesota, Minneapolis MN 55454)

A growing body of literature has found statistically significant positive associations between the density of alcohol outlets (e.g., bars, liquor stores) and the incidence of crime in small geographic areas such as census blocks or neighborhoods; however, most studies have focused on effects of alcohol outlet density on violent crime. In contrast, we examine associations between alcohol outlet density and five types of non-violent crime: vandalism, nuisance crime, public consumption of alcohol, driving under the influence, and alcohol consumption by minors. Data come from the city of Minneapolis, Minnesota in 2009 and were aggregated and analyzed at the neighborhood level (n=84 neighborhoods). Alcohol outlet density was measured as the number of outlets per roadway mile and crime outcomes were modeled as counts (Poisson distribution). A Bayesian approach was used for model estimation accounting for spatial auto-correlation and controlling for relevant neighborhood demographics. Models were estimated for total alcohol outlet density and then separately for off-premise outlets (e.g., liquor and convenience stores) and on-premise outlets (e.g., bars, restaurants). We found a significant positive association between total alcohol outlet density and each crime outcome. The estimated percent increase in crime related to an additional alcohol outlet in a neighborhood ranged from 2.7% to 8.1% across crime outcomes with the strongest associations for public consumption. Similar results were seen for on- and off-premise outlets although the strength of the associations were lower for off-premise density. Geospatial maps of outlets and crime outcomes will be presented as will implications of results.

0192-S

NEIGHBORHOOD SOCIOECONOMIC STATUS AND SECURITY AND INDIVIDUAL HAZARDOUS ALCOHOL DRINKING IN CHILE: A MULTILEVEL ANALYSIS. *A. Castillo-Carniglia[1] and E. Ansoleaga[1,2] ([1]Doctoral Program in Public Health, University of Chile, Independencia 939, Santiago, Chile. [2]Program of Psychosocial Studies in Work, Diego Portales University, Vergara 275, Santiago, Chile)

It has been hypothesized that social environmental conditions, such as neighborhood security and socioeconomic status, act as stressors at the individual level and may increase alcohol consumption. However, there is little evidence of this, particularly in developing countries. We investigated the association between hazardous alcohol consumption, and neighborhood socioeconomic status and security, in a sample of adults in Chile. We analyzed a sample of 12,896 persons of both sexes between 18 and 65 years of age, who were included in the 8th General Population Survey of the National Council for Narcotics Control of Chile. Hazardous alcohol consumption was based in the Alcohol Use Disorders Identification Test (AUDIT). All analyses were performed with mixed-effect logistic models with two levels. There was no association between neigborhood socioeconomic status (in quartiles) and hazardous alcohol consumption when we adjusted for income and education at the individual level. In the case of neighborhood security (1st quartile [Q1] higher security of the neighborhood, the 4th quartile [Q4] lower security), there is a significant association in all models, even after controlling for individual perceptions of neighborhood security, except for Q4. In the fully adjusted model, the odds ratio and 95% confidence interval (OR, 95%) for Q2, Q3 and Q4 (vs Q1) were 1.24, 1.03-1.49; 1.22, 1.02-1.46; and 1.11, 0.92-1.34, respectively. The neighborhood security is thus independently associated with individual hazardous alcohol consumption in Chilean adults.

0193

INDIVIDUAL SOCIAL CAPITAL IN THE WORKPLACE AND WORK-RELATED INJURY IN CANADA: A CROSS-SECTIONAL ANALYSIS. VL. Kristman, PhD (Centre of Research Expertise in Improved Disability Outcomes, Toronto; Dalla Lana School of Public Health, University of Toronto, Canada); *A. Vafaei, MD, MSc, PhD Candidate(Department of Community Health & Epidemiology, Queen's University, Kingston, Canada)

Background: Work-related injuries result from complex interactions between multiple risk factors. Individual-level social capital in the workplace has been implicated as a risk factor for workers' health. Objectives: To determine associations between individual worker social capital and work-related repetitive and most serious injury. Methods: Canadian Community Health Survey data were used. Injury outcomes included repetitive strain and most serious injuries at work. Two comparison groups of non-work-related injured and non-injured were used. Individual worker social capital was determined by questions about workplace conflict, supervisor helpfulness, and co-worker helpfulness. Regression analyses were performed to quantify associations, adjusting for true confounders. Results: Females reporting high social capital had significantly decreased odds of repetitive strain injury compared to those reporting low social capital (Odds Ratio [OR]=0.36;95%CI:0.15-0.86) using the injured comparison group.Compared to the non-injured group, both males and females reporting high social capital were less likely to report repetitive strain injuries (female OR=0.45;95% CI:0.32-0.63; male OR=0.64;95%CI:0.43-0.96). Individual worker social capital was not associated with the most serious injury using either control groups. Conclusions: We found an association between individual worker social capital and repetitive strain injury at work. Future studies need to examine this association prospectively to establish the causality.

0194

THE RELATIONSHIP BETWEEN QUALITY OF LIFE OF FEMALE STUDENTS AND THEIR PARENTS' EDUCATION IN TEHRAN. Aminda Amanollahi, *Mohammad-Reza Sohrabi (Shahid Beheshti University of Medical Sciences, Tehran, Iran),Ali Montazeri (Iranian Institute for Health Sciences Research, ACECR, Tehran, Iran)

This study aimed to assess the relationship between the quality of life in female students and their parents' education in Tehran, the capital of Iran. This cross sectional survey was conducted on a sample of 1040 girls aged 9-12 years. Among 22 districts of Tehran, five regions selected randomly. These 5 regions were representative of different socioeconomic status of North, South, East, West and Central regions of Tehran. Then according to the list in the Department of Education 4 schools were selected randomly from each region. Thereafter 52 girls randomly selected using school's office list in each school. The validated Iranian version of pediatric quality of life inventory (PedsQL 4.0) was used to measure health related quality of life (HRQoL). Information on educational level of each student's parents also was recorded. One-way analysis of variance was performed for data analysis. The mean age of 1040 participants was 10.6 (SD = 0.71) years. In general the findings indicated that there was significant association between parents' educational status and quality of life ($p<0.001$); as a better quality of life was seen among students with higher parental education from illiterate to bachelor academic degrees. However, an exception was inverse association for those whose parents were highly educated in master degree and higher. The results suggest that more educated parents increase the quality of children's life but higher educated parents might put their children at risk of sub-optimal quality of life due to their busy schedules. Key words: Quality of life, Child, Educational status, Parents, PedsQL

0195

THE HEALTHY IMMIGRANT EFFECT IN SPAIN: HEALTH STATUS OF ROMANIANS-BULGARIANS, ECUADORIANS AND MOROCCANS LIVING IN SPAIN. *D. La Parra (University of Alicante, Alicante, Spain, 03080)

To investigate the healthy immigrant hypothesis in Spain for the three main immigrants groups, we used data from two surveys: a) The European Health Survey in Spain (2009) and b) The Survey on Disability, Impairment and Handicap (2008). We compared health status indicators of foreigners born in Morocco, Romania-Bulgaria and Ecuador with Spanish native-born population. Several indicators were chosen to compare general health status: self-perceived health, activity limitation, chronic diseases, obesity, impairments, disability and handicaps. We have also analysed the access to an official certificate of handicap. Crude and adjusted odds ratios (95% confidence intervals) were calculated using logistic regression analysis stratified by sex and adjusted by age and education. Before adjusting by age, foreign born populations, as they are much younger, has in general a better health status. After adjusting for age, according to most indicators their health is similar than that of native-born population with some gender differences. A clear health advantage is observed in terms of functional health. Foreign born populations are more likely free of activity limitation than Spanish native born population: for instance, for men: Romanians and Bulgarians 2.44 (1.67-3.57), Ecuadorians 2.70 (1.75-4.15) and Moroccans 2.53 (1.82-3.51). And the difference is very large in terms of access to an official certificate of handicap: Romanians and Bulgarians 9.13 (4.12-20.3), Ecuadorians 3.54 (2.05-6.09) and Moroccans 4.56 (2.82-7.37). We conclude that there is enough support for the healthy immigrant hypothesis in Spain, especially when functional health (being able to work) is considered. A healthy worker effect may explain these results.

0196-S

SOCIOECONOMIC PREDICTORS OF MULTIPLE SEXUAL PARTNERSHIPS AMONG PERSONS TESTED FOR HIV IN NAMIBIA. *S Blank, B Nichols, S Sturgeon, P Pekow, K Reeves. (University of Massachusetts, Amherst, MA, 01003.)

Multiple sexual partnerships are associated with greater risk of human immunodeficiency virus (HIV), sexually transmitted infections (STIs) and intimate partner violence. Namibia has an 18% HIV prevalence and up to 40% of men in parts of the country have reported multiple sexual partnerships; yet no studies have evaluated characteristics associated with this behavior. We assessed the relationship between education, occupation and migration and multiple sexual partnerships among 275 men and 295 women tested for HIV in Lüderitz, Namibia using data from a cross-sectional study at a Voluntary Counseling and Testing Center in 2009. Preliminary results in a logistic regression model adjusted for age, gender and marital status show that employment in professional, administrative or healthcare positions (vs. no employment) was associated with multiple sexual partners over the lifetime (Odds Ratio (OR)=2.1, 95% Confidence Interval (CI) 1.1-4.1) as was being away from home for over a month in the past year (OR=1.7, 95% CI 1.1-2.6). Employment as a soldier, policeman or security guard (vs. no employment) was negatively associated with multiple sexual partners in the past year (OR=0.2, 95% CI 0.1-0.9). Analyses were repeated stratified on gender and adjusted for age and marital status. For men, being away from home for over a month in the past year remained associated with multiple sexual partners over the lifetime (OR=2.0, 95% CI 1.1-3.5). For women, employment in professional, administrative or healthcare positions was associated with multiple sexual partners over the lifetime (OR=3.1, 95% CI 1.2-7.8). Findings can help target behavioral interventions among Namibians in a resource-limited setting.

0197

THE BUILT ENVIRONMENT AS A MEDIATOR IN THE ASSOCIATION BETWEEN RACIAL ISOLATION AND BIRTH OUTCOMES IN DURHAM, NORTH CAROLINA. *Rebecca Anthopolos, Lynne Messer, and Marie Lynn Miranda (Duke University, Durham, NC 27708)

Research has shown that racial residential segregation of blacks in the US is associated with poor birth outcomes among blacks and whites; however, the mediating pathways through which segregation affects maternal and fetal health remain understudied. One of the main pathways through which segregation is hypothesized to act is the built environment, including neighborhood characteristics such as the quality of housing and access to healthy food stores. We tested whether the built environment played a mediating role in the relationship between neighborhood level racial isolation of blacks and birth outcomes among non-Hispanic blacks and non-Hispanic whites in Durham, North Carolina. Previously constructed indices of black isolation and characteristics of the built environment, including housing damage, property disorder, vacant housing, tenure, nuisances, and security, were linked to 2000 to 2008 birth data in the North Carolina Detailed Birth Record. Outcomes included birthweight, low birthweight, preterm birth, small for gestational age, and birthweight percentiles. In race stratified multilevel models that controlled for maternal level characteristics, property disorder and tenure were especially important full or partial mediators in the association between black isolation and continuous birthweight, low birthweight, and preterm birth among blacks. In contrast, among whites, housing damage, property damage, nuisances, tenure and vacancy acted as mediators in models for continuous birthweight and birthweight percentiles. Identifying mediating pathways will help guide public resources for reducing the racial disparity in birth outcomes between US blacks and whites.

0198

POPULATION FACTORS AND SEXUAL RISK BEHAVIOR AMONG PEOPLE ON PROBATION AND PAROLE. *TC Green, ER Pouget, M Harrington, AG Rhodes, D O'Connell, SS Martin, M Prendergast, PD Friedmann (Brown University Medical School, Providence, RI 02903)

Background: Racial/ethnic disparities in prevalence of HIV and other sexually transmitted infections (STIs) reflect disparities in incarceration, and may be related to population factors that can modify opportunities for sexual partnerships. Objectives: We explored associations of selected population factors (including sex ratios and incarceration rates) with indicators of sexual risk behavior of participants while under community supervision. Methods: Longitudinal data from 1287 drug-involved persons on probation and parole as part of the Criminal Justice Drug Abuse Treatment Studies were matched by county of residence with population factors, and stratified by race/ethnicity and gender for analysis. Adjusted generalized estimating equation models assessed associations with having unprotected sex with a partner who had HIV risk factors, and having more than one sex partner in the past month. Results: Low sex ratios or high incarceration rates were associated with greater odds of having unprotected sex with a risky partner among all racial/ethnic groups. Among women, low sex ratios were associated with having more than one sex partner. Generally, effects of population factors were stronger among non-Hispanic Black participants than among non-Hispanic White or Hispanic participants. Conclusions: Sex ratios and incarceration rates may act as social determinants to influence individual sexual risk behavior before and during probation and parole. Research investigating possible causal mechanisms of these associations is needed. HIV- and STI-prevention programs may be improved by addressing structural barriers to safer sexual behavior, particularly for non-Hispanic Blacks.

0199

WORKPLACE SOCIAL CAPITAL AND ALL-CAUSE MORTALITY: A PROSPECTIVE COHORT STUDY OF 28,043 PUBLIC SECTOR EMPLOYEES, 2000-2009. *T. Oksanen, M. Kivimäki, I. Kawachi, SV. Subramanian, S. Takao, E. Suzuki, A. Kouvonen, J. Pentti, P. Salo, M. Virtanen. J.Vahtera (Harvard School of Public Health, Boston, MA 02115)

To examine the association between workplace social capital (i.e. social cohesion, trust and reciprocity in the workplace) and all-cause mortality, we examined data on 28,043 public sector employees in Finland (82% female, aged 20-66 years) who responded to surveys in 2000-2002 and 2004. All participants were successfully linked to national mortality registers through 2009. We used repeated measurements of self-assessed and co-workers' assessment of workplace social capital in the same work unit. To estimate the association between workplace social capital and all-cause mortality, we used Cox proportional hazard models and fixed effects conditional logistic regression. During the 5-year follow-up period 196 employees died. A one unit increase in the mean of repeat measurements of self-assessed workplace social capital (range 1-5) was associated with a 19% decrease in the risk of all-cause mortality [age- and sex-adjusted hazard ratio (HR) was 0.81; 95% CI 0.66-0.99]. The corresponding point estimate for the mean of co-workers' assessed social capital was similar, although the association was more imprecisely estimated [age- and sex-adjusted HR=0.77; 95% CI 0.50-1.20]. In fixed-effects analysis, a one unit increase in self-assessed social capital across the two time points was associated with a lower mortality risk (OR=0.81, 95% CI 0.55-1.19). These findings suggest that workplace social capital is associated with decreased risk of mortality in the working-age population. Further research is needed to provide insight into the pathways underlying this association.

0200

SOCIOECONOMIC FACTORS AND TUBERCULOSIS INCIDENCE IN WASHINGTON STATE. *E. Oren, J. Mayer (University of Washington, Seattle WA 98195)

Traditional individual□level studies and ecological studies are unable to simultaneously examine the role of individual□ and group□ level factors in disease risk. Few studies have used a multilevel approach to assess the role of area-based socioeconomic status on tuberculosis (TB) incidence. This analysis examined neighborhood-level influences on TB incidence in a multilevel population-based sample as well as modifying effect of living in an urban area. All incident TB cases in Washington state (n=2,161) reported between January 1, 2000 and December 31, 2008 were identified using a retrospective cohort design. Multivariate Poisson analysis was used at zip-code tabulation area (ZCTA) level, which allowed for further exploration of area-specific influences on TB incidence. A significant association was found between indices of socioeconomic position (SEP) and TB incidence in Washington State, with a clear gradient of higher rates observed among lower ZCTA socioeconomic quartiles (Incidence rate ratio of lowest to highest SEP index quartile: 2.17, 95% CI: 1.93, 2.45; P-trend <0.001). In multivariate analyses, addition of individual- and area-level covariates significantly attenuated this association, although statistical significance was preserved. No interaction between urbanness and socioeconomic status was observed for any SEP quartiles. This study found significant socioeconomic differences in risk of TB incidence across ZCTAs in Washington even after adjusting for individual age and sex and area-based race, ethnicity, origin and urbanness. Results emphasize importance of neighborhood context and the need to target prevention efforts to low SEP neighborhoods regardless of urban or rural status.

0202

IS SMOKING PERCEIVED AS RISKY AMONG CAMBODIAN AMERICAN ADULTS? *R. Friis, C. Garrido-Ortega, A. Safer, C. Wankie, J. Pallasigui , M. Forouzesh, K. Trefflich, K. Kuoch. (California State University, Long Beach, CA)

Cambodian Americans, especially men, have a high prevalence of cigarette smoking. Our previous research with focus groups suggested that they may not regard smoking as a major risk factor for adverse health outcomes. Using a community survey, we examined the degree to which Cambodian Americans perceived cigarette smoking as risky according to harm to one's overall health, chance for developing problems with heart, lungs, and fertility, chance of developing cancer, and harm from secondhand cigarette smoke. A cross-sectional survey was administered to a stratified, random sample of adult respondents (n = 1,414; females = 60.1%; mean age = 50.5 years) in census tracts with high concentrations of Cambodian Americans in Long Beach, California. Respondents responded to a five-point Likert scale (strongly disagree to strongly agree) to indicate perceived risks of smoking. Logistic regression analyses were employed to predict covariates that prompted respondents to perceive smoking as risky. Significant predictors were marital status, educational status, and smoking status. The odds of perceiving cigarette smoking as risky were 2.0 times (95% CI = 1.5 – 2.5) higher among married persons than among unmarried persons. The odds of perceiving cigarette smoking as risky were 1.8 times (95% CI = 1.1 – 2.8) higher among persons who had a college education than among persons who had no formal schooling. The odds of perceiving cigarette smoking as risky were 2.2 times (95% CI = 1.5 – 3.2) higher among former and never smokers than among current smokers. We concluded that persons who perceived cigarette smoking as risky tended to be former or never smokers, married, and have a college education.

0203

MENTAL HEALTH EFFECTS OF A HOUSING MOBILITY PROGRAM BY VULNERABLE SUBGROUPS: WHO BENEFITS FROM MOVES TO LOW-POVERTY NEIGHBORHOODS? *TL Osypuk, MM Glymour, E Tchetgen Tchetgen, A Lincoln, D Acevedo-Garcia, F Earls. (Northeastern University, Boston MA)

Section 8 housing choice vouchers are a primary US housing policy serving 2.1 million families. Vouchers can facilitate moves to higher quality neighborhoods, yet little is known about differential health effects of Section 8 moves for children from vulnerable families. We therefore tested for subgroup treatment effect differences on psychological distress (Kessler K6 measure, alpha=.80) in the Moving to Opportunity program, a social experiment randomizing volunteer low-income families to receive a Section 8 voucher to move to lower-poverty neighborhoods, compared to controls in public housing. We tested effect modification (additive scale) of treatment on distress among adolescents age 12-19 by baseline health vulnerability defined by health/developmental problems. We modeled standard intent to treat (ITT) analysis; since not all families offered vouchers opted to move, we also used instrumental variable (IV) analysis for families who used the voucher. The distress outcome was self-reported 4-7 years after random assignment. There were significantly opposite treatment effects by gender on distress: using a Section 8 voucher to move was beneficial for girls & harmful for boys. Moreover, treatment benefited (reduced distress) girls with no health vulnerability, but not for vulnerable girls (null effects). Treatment had no effect on boys without vulnerability but it harmed vulnerable boys. Overall, health vulnerability predicted 0.17 point worse treatment (higher distress) for both genders [95% CI: 0.03,0.32](ITT models). IV results yielded effect size twice as large. Results may inform housing mobility programmatic changes to offset health vulnerabilities.

0204-S

PRE-DRINKING AND IMPAIRED DRIVING AMONG YOUNG-ADULT MALE POST-SECONDARY STUDENTS IN LONDON ONTARIO.*Pirie T, Wells S (University of Western Ontario, London, ON, N6A 3K7)

Recent studies suggest that heavy-episodic drinking (HED i.e. ≥5drinks) is significantly associated with impaired driving. Pre-drinking, the consumption of alcohol in a private setting before going out to a social event, may increase the likelihood of impaired driving. In the present study, we investigated the nature of pre-drinking and its association with impaired driving in a sample of young-male post-secondary students. Using a cross-sectional study design, male students were randomly sampled from the University of Western Ontario and Fanshawe College and asked to complete an online questionnaire (N=1356) which included questions regarding their drinking behavior and drinking consequences. Multiple logistic regression models were used to examine the relationship between heavy-episodic pre-drinking (HEPD i.e. ≥5drinks on a pre-drinking occasion) and impaired driving, adjusting for HED, age, race, program of study, and living arrangement. About 89% of males reported pre-drinking, with a mean of 5.67 drinks consumed during a typical pre-drinking occasion. Approximately 62% of pre-drinkers engaged in HEPD. Those most likely to engage in HEPD were white students; students living off campus without family; 19-20 year old students; and students enrolled in a science, social science, or technology program. HEPDs were 3.47 (95% Confidence Interval 2.2-5.4) times more likely than non-HEPDs to drive impaired. Overall, HEPD appears to be highly prevalent among young male post-secondary students and an important correlate of impaired driving. These results highlight the importance of developing and improving prevention strategies and policies aimed at reducing harmful patterns of drinking among post-secondary students.

0205

CONFLICT AND CONFLUENCE IN NORMS ACROSS SOCIAL ENVIRONMENTS SHAPES SMOKING. *J Ahern, S Lippman, S Galea (University of California, Berkeley, CA 94720)

Social norms strongly shape health behavior. Ethnographic research suggests that across social environments, either conflict in norms or confluence of negative norms generates vulnerability among young adults, however how this affects health behaviors has yet to be examined. We used data from young adult participants (ages 18-24) in the New York Social Environment Study (n=4000, 59 neighborhoods, conducted in 2005) to examine the relation between smoking norm conflict and confluence and individual smoking behavior. Smoking norms in the friend/family and neighborhood environments were categorized as confluent (both anti-smoking, both pro-smoking, both equivocal), mildly conflicting, or strongly conflicting. We used generalized estimating equation logistic regression models to examine relations of smoking norm conflict and confluence with current smoking, adjusting for confounders including history of smoking prior to residence in the current neighborhood and socio-demographic characteristics. Smoking prevalence was highest when norms were confluent and pro-smoking across environments (odds ratio=9.4, p=0.02) and lowest when norms were consistently anti-smoking across environments (reference group). When norms in only one environment were pro-smoking, smoking was also significantly elevated. The one exception was that anti-smoking norms in the neighborhood counteracted pro-smoking norms among friends/family such that smoking was not elevated. While confluent healthy norms may be ideal, this analysis found that norms in the neighborhood environment can overcome those among friends/family, suggesting that targeting the neighborhood environment may be most fruitful for intervention with young people.

0206

ANTI-DEPRESSANT USE AMONG WORKING AGE CANADIANS: EXPLORING INTERACTIONS BETWEEN GENDER, WORK AND FAMILY ROLES, AND SOCIOECONOMIC POSITION. I. Kelly, B. Laverty, B. Janzen (University of Saskatchewan, Canada)

Use of antidepressants in the general population has been found, on average, to be greater among women than men, among the divorced compared to the partnered, and among those from lower income groups. However, research examining the sociodemographic patterning of antidepressant drug use has focused on main effects rather than on potential interactions between gender, indicators of social position (education and income) and work and family role occupancies. The purpose of this study, then, was to examine the sociodemographic and economic patterning of antidepressant use in a representative sample of working age Canadians. We used data from cycle 1.2 of Statistics Canada's Canadian Community Health Survey (2002). To address our research goals, the sample was restricted to 20,450 Canadians between the ages of 20 and 59 years. Self-reported use of antidepressant medication in the last year was the dependent variable. The primary independent variables considered were gender, age, education, income adequacy and work/family role occupancies. Logit log-linear models, using backward elimination, were applied to examine if these demographic and economic variables interacted in their association with the dependent variable. All analyses were conducted using the sampling weights provided by Statistics Canada. Among women, use of antidepressants was greatest among the following groups: low income, divorced, non-parents (27.8%); never married, parents with a post-secondary degree (23.8%); and never married, non-parents with a less than high school education (23.7%). Among men, use of antidepressants was greatest among the following groups: low income, divorced, non-parents (16.8%); low income, non-employed, with a less than high school education (15.8%); and never-married, non-parents with a less than high school education (11.7%). Limitations of the study are discussed and future research implications.

0207-S

ASSOCIATION OF PERCEIVED NEIGHBOURHOOD SAFETY, OBJECTIVE CRIME AND PERCEIVED NEIGHBOURHOOD SOCIAL COHESION ON CHILDREN'S BODY MASS INDEX. *R Caleyachetty, EM van Sluijs, SJ Griffin (MRC Epidemiology Unit, Cambridge, UK)

Research on the influence of the social neighbourhood environment has received little attention and linked few aspects of the social environment, particularly safety and social cohesion to child adiposity. We examined the association between parent's perception of neighbourhood safety, objective crime and perception of neighbourhood social cohesion on children's BMI (BMI, kg/m^2). Data came from a population-based cross-sectional sample of 1,721 children aged 9-10 years in Norfolk, England. Parents reported demographics, perception of neighbourhood safety and social cohesion by standardized questionnaire. Geocoded crime rate data came from the Norfolk Constabulary. Height and weight was measured, and BMI transformed to z-scores based on gender- and age-specific reference values. Adjusted regression coefficients (B) and 95% confidence intervals (95% CI) were obtained from multiple linear regression. After adjustment for parent's education, socio-economic position, urban/rural location and child's ethnicity, children whose parents perceived their neighbourhoods as having a high crime rate had higher BMI z-scores on average than children whose parents perceived their neighbourhoods as having a low crime rate (B=0.24, 95% CI: 0.07, 0.40). Objective crime and perceived neighbourhood social cohesion were not significantly associated with children's BMI z-score. Future research should seek to explore the association between perceived neighbourhood crime rate and children's BMI z-score longitudinally and confirm whether this association is causal and, if so, to what extent it is mediated by health behaviours and chronic stress.

0209

TEMPORAL AND GEOGRAPHIC SHIFTS IN URBAN AND NON-URBAN COCAINE-RELATED FATAL OVERDOSES IN A CANADIAN SETTING. B.D.L. Marshall, M-J. Milloy, E. Wood, S. Galea, and T. Kerr (BC Centre for Excellence in HIV/AIDS, Vancouver, BC, V6Z 1Y6)

Background: Illicit drug overdose is a leading cause of premature mortality and no longer a predominately urban phenomenon. We sought to examine geographic distributions and temporal trends in cocaine-related fatal overdoses in British Columbia, Canada. Methods: All coroner case files in which an illicit drug overdose was identified as the cause of death between January 1, 2001 and December 31, 2005 were reviewed and geocoded. We compared the characteristics of cocaine and non-cocaine related overdoses and used multi-level mixed effects models to determine the individual and area-level risk factors for cocaine-related death. A spatial analysis was conducted to identify clusters of these cases. Results: In total, 904 illicit drug overdoses were recorded, including 535 (59.2%) in non-urban areas and 532 (58.9%) related to cocaine consumption. Over the study period, the proportion of cocaine-related overdoses remained constant in urban centres ($p=0.526$), but increased significantly in non-urban settings ($p<0.001$). In a multi-level mixed effects model, we observed a significant interaction ($p=0.010$) between population density and year of observation, indicating a differential increase in the proportion of cocaine-related deaths in less populated areas of the province. Spatial analyses confirmed a statistically significant cluster of cocaine-related overdoses in a rural southeast region of the province. Conclusions: Increasing levels of cocaine-related overdoses in non-urban areas should be a public health concern. Evidence-based interventions to reduce the risks associated with cocaine consumption and reach drug users in non-urban settings are needed.

0210-S

DETERMINANTS OF HIV/TB MORTALITY ADJUSTING FOR GEOSPATIAL CONFOUNDERS IN RURAL SOUTH AFRICAN CHILDREN. *Eustasius Musenge, Penelope Vounatsou, Mark Collinsonand Stephen Tollman, Kathleen Kahn (School of Public Health, University of the Witwatersrand, Johannesburg, South Africa)

Background: South Africa alone has more than 20% (5.5 million) of global HIV infections, a TB incidence of 21 per 1,000 person years and has the highest TB/HIV co-infection rate, making her the nation with the greatest burden of HIV/TB infections globally. The aim of the study was to determine the spatially adjusted household and individual -level risk factors of childhood HIV/TB mortality in Agincourt which is located in rural north-east of South Africa. **Methods**: This was a retrospective cohort study done in 2004. Data were collected between January and December of the same year. A multilevel random effects model was done using a spatial Bayesian semi-parametric Cox survival model, catering for individual as well as household random effects. **Results**: Fifty one out of 6,527 children under 5 years from 4,211 households died of HIV/TB. Maternal death had the greatest impact on child HIV/TB mortality (HR=3.33, 95%CI[1.01 - 12.28]). Other risk factors were multiple household deaths and being a former Mozambican refugee. A protective effect on child HIV/TB mortality was found with households that; were male headed, were least poor and had many inhabitants. **Conclusion**: Maternal survival is protective of death and increases childhood longevity. Our findings can be used to inform policy and implementation strategies on exact geographical locations where most deaths occur, with the aim of reducing childhood and maternal deaths due to HIV/TB. This method of analyses which adjusts for spatial confounding and produces mortality risk maps is useful for policy makers, interventions and future studies.

0211-S

SPATIAL HETEROGENEITY OF $PM_{2.5}$ CHEMICAL CONSTITUENT LEVELS. *K. Ebisu1, R.D. Peng2, M.L. Bell1 (1-Yale University, New Haven, CT 06511; 2-Johns Hopkins University, Baltimore, MD 21205)

Studies of the health impacts of airborne particulates' chemical constituents typically assume spatial homogeneity and estimate exposure from ambient monitors. In another words, the estimated exposure for a given community is equal to the spatially averaged ambient pollutant level. However, factors such as local sources may cause spatially heterogeneous pollution levels, which could affect results of epidemiological analysis. This work examines the degree to which constituent levels vary within communities and whether exposure misclassification is introduced by spatial homogeneity assumptions. Analysis considered $PM_{2.5}$ elemental carbon (EC), organic carbon matter, ammonium, sulfate, nitrate, silicon, and sodium-ion (Na+) for the U.S., 1999-2007. Pearson correlations and coefficients of divergence were calculated and compared to distances among monitors. Linear modeling related correlations to distance between monitors. Spatial heterogeneity was present for all constituents, yet lower for ammonium and sulfate. Lower correlations were associated with higher distance between monitors, especially for nitrate and sulfate. Analysis of co-located monitors revealed measurement error for all constituents, especially EC and Na+. Exposure misclassification may be introduced into epidemiological studies of $PM_{2.5}$ constituents due to spatial variability. The reliance on the monitoring networks is likely to continue given concerns of data availability, cost, and the relative ease of use. To avoid exposure misclassification, denser monitoring networks would be ideal, but may not be practical due to cost. When assessing health effects of PM constituents, new statistical methods are needed for estimating exposure and accounting for exposure error induced by spatial variability.

0212

THE GROCERY GAP: ACCESS TO HEALTHY FOOD IN THE BOSTON AREA COMMUNITY HEALTH (BACH) STUDY. *RS Piccolo (New England Research Institutes, Watertown, MA 02472)

Numerous studies have shown that access to healthy foods is a challenge for many Americans, particularly those living in disadvantaged neighborhoods. However, it is unclear whether social disparities in access to healthy foods are linked to the development of downstream health outcomes such as diabetes, hypertension (HTN), cardiovascular disease (CVD), and obesity. To investigate the relationship between availability of healthy food and health outcomes (diabetes, HTN, CVD, and obesity), we used the population-based random-sample BACH I cohort (2002-05) of 5,503 participants between the age of 30-79 y and their geo-coded residential addresses. We surveyed 4,415 of these subjects for BACH II (2007-10) for disease incidence. Geo-spatial analyses showed racial/ethnic trends in the location of supermarkets (3.5 supermarkets per 100,000 population in predominately black census tracts, 4.6 in racial mixed and 5.5 in predominately white census tracts) and socioeconomic trends in the location of fast food restaurants with the lowest income census tracts having twice as many fast food restaurants per 100,000 population (3.4) than the highest income census tracts (1.7). However, proximity to supermarkets, grocery stores, convenience stores and/or fast food restaurants did not have an appreciable risk on incident diabetes, HTN, CVD, or obesity. These results confirm social disparities in access to healthy food in the Boston metro area, but suggest that such disparities do not manifest themselves in adverse health outcomes over a 5-y period. Future analyses of the BACH cohort including analyses of individual-level dietary patterns and physical activity may offer information on pathways by which the local food environment can affect health and well-being. Supported by Award Number U01DK056842 from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) (NIH). Content is solely the responsibility of the authors and does not necessarily represent the official views of NIDDK or NIH.

0213

ASSOCIATION BETWEEN THE REGIONAL PREVALENCE OF CHRONIC JOINT SYMPTOMS AND TEMPERATURE AMONG U.S. ADULTS: FINDINGS FROM THE BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM. *Catherine A. Okoro, Amy Z. Fan, Yuna Zhong, Xiaopeng Qi, Chaoyang Li, Lina S. Balluz (Centers for Disease Control and Prevention, Atlanta, GA 30333)

To assess variations in the regional prevalence of chronic joint symptoms (CJS) and the impact of temperature. Data for the 48 contiguous states (N=379,883) who participated in the 2007 Behavioral Risk Factor Surveillance System were merged with monthly temperature data from the National Oceanic and Atmospheric Administration. CJS other than back and neck pain were self-reported. Temperature data were categorized by quintile. Binomial logistic regression analyses were performed to estimate prevalence ratios (PR) and 95% confidence intervals (CI). The unadjusted prevalence of CJS was estimated to be 33.1% (standard error [SE], 0.16%) and ranged from 31.9% (SE, 0.47%) in the West to 34.7% (SE, 0.29%) in the Midwest. After adjustment for age, sex, race/ethnicity, education, marital status, and body mass index, adults in the Northeast had a significantly lower prevalence of CJS than those living in the Midwest (PR 1.06; 95% CI, 1.04–1.09), South (PR 1.05; 95% CI, 1.02–1.07), or West (PR 1.06; 95% CI, 1.03–1.10). While cooler temperatures were significantly associated with an increased prevalence of CJS (p-value for trend: <0.01), further adjustment for temperature did not affect these findings. Significant differences in prevalence of CJS may exist between adults in different regions of the United States. Temperature variation may not account for regional differences in the prevalence of CJS. Further research is needed to examine the association between joint symptoms and climate.

0214

VARIATION IN SPATIAL RISK OF LEPTOSPIRAL INFECTION IN URBAN SLUMS. *Carvalho MS; Felzemburgh RDM; Ribeiro GS; Tassinari WS; Reis RB; Reis, MG; Ko Al (Ozwaldo Cruz Foundation, Rio de Janeiro, Brazil)

Leptospirosis, a zoonotic disease, has emerged as an important health problem in developing countries. Flooding, inadequate sanitation and drainage systems and accumulated refuse are widespread features of slum environments which favor rat-borne transmission. We mapped the spatial distribution for the risk for leptospiral infection of urban slum residents. Furthermore we developed models to evaluate whether specific environmental covariates explained the spatial variation of risk.Between 2004 and 2007, we performed four annual serosurveys of a cohort of 1264 subjects selected from an urban slum community, composed by four valleys, in the city of Salvador, Brazil. A Geographical Information System database organized all environment data. We fitted a generalized additive model which incorporated a bivariate smooth-spline term for each of the four valleys in order to map the spatial distribution of infection risk. We compared models which incorporated individual and environmental covariates to evaluate their effect on the spatial risk pattern.Among subjects, 81 (6.4%) had serologic evidence of one leptospiral infection and 10 of two infections. Significantly higher odds ratios were encountered at the bottom of valleys, where flooding occurs most often. Among the environmental covariates only the altitude of the subject's household was a significant risk factor. After including individual covariates and altitude, the spatial term lost statistical significance in three of the four valleys.Spatial risk for leptospirosis varies within slum regions possibly in relation to an interaction of poverty, geography and climate. However low altitude, a proxy for flooding, was the single important environmental factor which explained the spatial variation in risk. Therefore effective prevention of leptospirosis requires construction of proper drainage systems in marginalized urban communities.

0215-S

SPATIAL AND SPATIO-TEMPORAL RISK MAPPING FOR RARE DISEASE USING HIDDEN MARKOV MODELS. *L. AZIZI (INRA Clermont-Ferrand, France/INRIA Rhone-Alpes, France), F.Forbes(INRIA Rhone-Alpes, France), D. Abrial et M. Charras-garrido (INRA Clermont-Ferrand)

The goal of disease mapping is to identify homogeneous regionsin terms of risk and to gain better insights into the mechanisms underlying thespread of the disease.Traditionally, the region under study is partitioned into a numberof areas on which the observed cases of a given disease are counted and compared to thepopulation size in this area. It has also become clear that spatial dependencies betweencounts had to be taken into account when analyzing such location dependent data. Traditional approaches to disease mapping have some deficiencies and disadvantages in presenting the geographical distribution.Following the idea of using a discrete Hidden Markov random field (HMRF) model, we propose to replace the continuous risk field in the traditional approaches by a partition model involving the introduction of a _finite number of risk levels and allocations variables to assign each area under study to one of these levels. Spatial dependencies are then taken into account by modelling the allocation variables as a discrete state-space Markov _field, namely a spatial Potts model. One advantage of this model is that the clustering risk task is a part of our procedure and not performed in a post-processing step as in traditional approaches. We propose to use for inference, as an alternative to simulation based techniques, an ExpectationMaximization (EM) framework. The algorithm used is the EM mean-field algorithm. This algorithm is suffering from its high dependence to the starting values. To overcome this drawback, we present a novel strategy of initialization. The proposed model and strategy are illustrated using both simulated data and real data: the Bovine Spongiform Encephalopathy disease in France.To pursue our study we extend this spatial model to a spatio-temporal one in order to get comparable maps in space and time which can give valuable information not only about the present geographically localized disease problems but also on the evolution of these problems.

0216-S

SEASONALITY OF INFLUENZA IN THE UNITED STATES. *B. Malcolm and S.S. Morse. (Columbia University, New York, New York, 10032)

Seasonality has a major effect on the spatiotemporal dynamics of natural systems and their populations. It is also a driving force behind the transmission of influenza in temperate regions. Although the seasonality of influenza in temperate countries is widely recognized, inter-regional spread of influenza in the United States have not been well characterized. Here, the authors will study the seasonality of influenza throughout the United States by using influenza-related mortality and laboratory surveillance data to model between-region movement of seasonal influenza in the United States between 1968 and 2010. Ordinary least squares will be used in order to develop linear trend surfaces for each influenza season and to depict the main trend in the spatial progression of each influenza season. Spatial autocorrelation will be used to detect the dominant spreading process of seasonal influenza in the U.S. (e.g. contagious, hierarchical, or mixed process). In addition, the average time seasonal influenza takes to spread across the United States and the average time between regional peak and national peak by dominant influenza subtype and season will be determined. Identifying spatiotemporal patterns could improve epidemic prediction and prevention. The authors intend for this research to determine the spatial and temporal characteristics of seasonal influenza in the U.S. and show if these characteristics differ by dominant influenza sub-type.

0217

SPATIAL ANALYSIS OF AUTISM SPECTRUM DISORDERS IN CENTRAL NORTH CAROLINA USING GENERALIZED ADDITIVE MODELS. *Kate Hoffman, Amy E Kalkbrenner, and Julie L Daniels (Department of Epidemiology, University of North Carolina, Chapel Hill, NC 27599)

Environmental exposures are increasingly suspected to contribute to autism spectrum disorders (ASD) risk, but data remain limited. Regional services and social factors can also contribute to ASD diagnosis. We evaluated the geographic variability in the odds of ASD in central North Carolina to identify social and environmental exposure hypotheses that warrant future epidemiologic investigation. Children meeting a standardized case definition for ASD at 8 years of age were identified through active records-based surveillance for 11 counties in 2002, 2004, 2006, and 2008 (n=750). Vital records were used to represent the underlying cohort (15% random sample of children born in the same years as cases, n=15,057), and to obtain birth addresses for cases and the birth cohort. We used generalized additive models (GAMs) to predict the odds of ASD by smoothing over latitude and longitude. Unlike previous investigations of geographic variability in ASD, the use of GAMs allowed adjustment for known ASD risk factors (e.g. maternal age). Using permutation tests, we evaluated the overall importance of residential location at birth and identified regions with significantly increased and decreased odds of ASD recognized by surveillance. Maps revealed statistically significant variation in surveillance-recognized ASDs. Adjusting for potential spatial confounding by maternal age made little difference in the odds of ASD. In some regions the odds of ASD were 1.5 times higher than those in the study area as a whole. Considering differences in the physical and social environments in this area may generate environmental hypotheses for future epidemiologic study of ASD.

0218

HOW DO U.S. CHINESE OLDER ADULTS VIEW ELDER MISTREATMENT? FINDINGS FROM A COMMUNITY-BASED PARTICIPATORY RESEARCH STUDY. E-Shien Chang, MS; Esther Wong, ACSW; Bernarda Wong ACSW; Melissa Simon, MD MPH; (Rush Institute for Health Aging, Chicago, IL)

Objectives: This study examines the perception, knowledge, and help-seeking tendency toward elder mistreatment among Chinese older adults. Methods: A community-based participatory research approach was implemented to partner with the Chicago's Chinese community. A total of 39 Chinese older adults (age 60+) participated in focus group interviews. Data analysis is based on grounded theory framework of socio-cultural context recommended by the National Research Council. Results: A total of 39 Chinese older adults participated in four focus groups; 18 were men and 22 were women. The mean age was 74.7 years old. The majority of the participants emigrated from Mainland China, with a small portion from Hong Kong and Taiwan. Participants' average length of residence in the U.S. was 20 years. Chinese older adults mostly characterized elder mistreatment in terms of caregiver neglect, and identified psychological mistreatment as the most serious form of mistreatment. Other forms included financial exploitation, physical mistreatment, and abandonment. Chinese older adults have limited knowledge of help-seeking resources other than seeking assistance from local community service centers. Conclusion: This study has important practical implications for health care professionals, social service agencies, and concerned family members. Understanding how Chinese older adults define and perceive EM is crucial, especially when challenges in Chinese immigrant families are likely to increase the vulnerability of older adults. Our results further underscore the urgent need for educational initiatives and awareness programs that highlight the pervasive global public health and human rights issue of EM.Our results underscore the need for research and educational initiatives as well as community awareness programs that highlight the pervasive public health issue of elder mistreatment.

0219

PREVALENCE AND OVERLAP OF CHILDHOOD AND ADULT PHYSICAL, SEXUAL, AND EMOTIONAL ABUSE: A DESCRIPTIVE ANALYSIS OF RESULTS FROM THE BOSTON AREA COMMUNITY HEALTH (BACH) SURVEY. *GR Chiu, KE Lutfey, HJ Litman, CL Link, SA Hall, JB McKinlay (New England Research Institutes, Watertown, MA 02472)

Abuse is associated with a wide variety of health problems, yet comprehensive population-based data are scant. Existing literature on abuse tends to focus on a single type of abuse (e.g., sexual), abused population (e.g., women), or lifestage (e.g., childhood). Our objectives are to document the prevalence of physical, emotional, and sexual abuse by lifestage and gender; assess variation in abuse by gender and socio-demographics; establish overlap of abuses; and examine demographic and childhood abuse relationships with abuse in adulthood. Analysis of 2002-5 data from the Boston Area Community Health Survey, a racially/ethnically diverse community-based sample, ages 30-79 (N=5,503). The results show that prevalence of abuse ranges from 15% to 27% dependent on type, gender, and lifestage; women are more likely to report emotional abuse in adulthood and sexual abuse in either lifestage than men, while men report similar prevalences of emotional abuse in childhood and physical abuse to women in either lifestage; there are often differences in reports of abuse by race/ethnicity and poverty status, particularly in women; there is substantial overlap between all types of abuse in both genders and lifestages; and a history of any childhood abuse is associated with a greater risk (odds ratios ≥4.95; p-values <0.001) of reporting every type of abuse as an adult. The high prevalence of abuse needs to be taken seriously as a risk factor for a wide range of health outcomes. Types of abuse often overlap and victims of any abuse during childhood are at a greater risk for abuse in adulthood. Supported by Award Number U01DK056842 from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) (NIH). Content is solely the responsibility of the authors and does not necessarily represent the official views of NIDDK or NIH.

0220

COMPLETED SUICIDE IN ELDERLY POPULATION IN BRAZILIAN CITIES, 1996-2007. L.W. Pinto*, S.G. Assis, M.C.S. Minayo, T.P. Oliveira, C. M. F. P. Silva (Oswaldo Cruz Foundation, Rio de Janeiro, Rio de Janeiro, 21040-361)

Although suicide rates of Brazilian population are low (below 10/100,000 inhabitants), they are substantially higher when only the elderly population (over 60 years old) is considered. In some cases these rates are similar to the highest ones found in European and Asiatic cities. This work aims to determine the age-gender distribution of suicide mortality in elderly population in Brazil, investigating cities with high incidences. Suicide mortality data (ICD-10, X60-X84) of the population over 60 years old in 5,565 cities for the period of 1996 to 2007 was extracted from the Brazilian Mortality Information System database. These data were grouped into four study periods: 1996-98, 1999-2001, 2002-04, 2005-07. Then, age-gender rates were computed. The results showed that 297 cities (5.4%) had rates above 10/100,000 inhabitants in the four periods analyzed. Most of these cities are in the South (52.5%) and Southeast (23.3%) regions of Brazil, the more developed and industrialized ones. The median mortality rates ranged from 43.12 to 46.51/100,000 inhabitants in the elderly population in general, from 76.80 to 87.13/ 100,000 in older males and from 0.00 to 8.98/ 100,000 in elderly women. The median ratio of suicide mortality among gender (male/female) ranged from 2.5 to 3.1. However, for 25% of the cities that rate was above 5.0, reaching 22.0 in some cases. It was also observed that the methods most often used by both men and women were hanging, firearms and poisoning. Brazilian suicide rates, although low for the general population, are very high for elderly population, mainly older men.

0221

POPULATION-BASED ASSOCIATIONS OF SEXUAL IDENTITY OR SAME-SEX BEHAVIORS WITH HISTORY OF EARLY LIFE SEXUAL ABUSE. Seth L. Welles, Thersa Sweet, (Drexel University School of Public Health, Philadelphia, PA 19145)

Associations of early life (<18 years) sexual abuse (ELSA) with sexual orientation, and same-sex behaviors and attractions were evaluated in a nationally representative sample of adults. Data from the 2004-2005 Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions were analyzed, including rates of ELSA for five groups defined by sexual orientation (gay/lesbian, bisexual) and same-sex behaviors and attractions (heterosexuals with same-sex partners, same-sex attractions, and without same-sex partners or attractions). Among 33,902 persons included for analysis, rates of ELSA ranged from 24.6% among bisexual women to 6.7% among heterosexual women and ranged from 15.2% among bisexual men to 1.4% among heterosexual men. After adjustment for confounding, bisexual men, gay men, and heterosexual men reporting with some same-sex partners had 11.2-fold [Odds Ratio (OR) 11.16 (95% confidence interval): 7.46,16.68)], 8.4-fold [OR 8.43 (6.81,10.45)], and 7.1-fold [OR 7.12 (5.94,8.55)]), risk, respectively, for ELSA occurring frequently/sometimes (vs. almost never/never) compared with heterosexuals not having same-sex partners or attractions. For women, bisexuals, lesbians, and heterosexuals with same-sex partners, similar elevations of risk for ELSA were seen (4.3-fold [OR 4.29 (3.42,5.39)], 3.2-fold [OR 3.19 (2.73,3.73)], and 2.4-fold [OR 2.84 (2.40,3.36)], respectively). High rates of ELSA were observed for sexual minority men and women in this national survey. To address this disparity among sexual minorities, our findings underscore the need for additional research to identify determinants of being targeted for ELSA and potential psychosocial mediators as intervention targets.

0222

RACIAL DISPARITY OF THE RELATIONSHIP BETWEEN COTININE AND AGE. Jae Eun Lee, Dr.PH*; JungHye Sung, ScD; William B Ward, Dr.PH; James Perkins, PhD (Jackson State University, Jackson, MS)

PURPOSE: Aging produces many physiological changes in the body. Thereby, effect of smoking on the body may vary with age, but not necessarily in a straight line. Previous studies assuming linearity identified a non-significant relationship between cotinine concentration and age. This study is aimed at determining whether there is a nonlinear association of serum cotinine concentration with age and whether there is any racial disparity in the association. METHODS: A Generalized Additive Model (GAM) was used to examine graphically possible nonlinear associations. The analyses utilized a valid sample of 2170 smokers aged ≥20 years from the National Health and Nutrition Examination Survey 2005-2008. RESULTS: The GAM demonstrated that the cotinine concentration went up steadily until age 67 at which cotinine was the highest and then dropped quickly (p>0.0001). Nonlinear pattern persisted even after controlling the daily cigarettes consumed (p=0.0088). The pattern differed little among racial groups. While it was peaked at the age of 51 among non-Hispanic whites, it was at 44 and 62 among non-Hispanic blacks. The initial and peak values of cotinine concentration were higher in African-Americans. The multivariate regression model suggested that nonlinear model fit the data better than a linear model did. CONCLUSIONS: A significant nonlinear relationship existed between cotinine concentration and age. The finding suggested that the effect of smoking on the human body may be greater among those aged 50-67 and African-Americans than their counterparts. This finding may be a partial explanation for the association of lung cancer mortality with age and race.

0223-S

ELDERLY HEALTH STATUS: RURAL THAILAND. *Tawatchai Apidecjkul (Mae Fah Luang University, Thailand)

These participatory action research aimed to study the life styles, health status, and self-health care among elderly people who live in the semi-urban area in Chiang Rai Province, northern Thailand. The study population were a people of 60 years old and above selected by a simple random sampling technique. Totally 212 persons were recruited in to the study. The instruments of the study were questionnaires; general questionnaire, WHOQOL (WHO quality of life), NRI (Nutrition Risk Index), and MHSE (Mental Health Status Examination), and had been tested for validity and reliability. Other instruments included a physical examination and blood screening profiles. Of 54.23% were female, 25.47% were 70-74 years, 39.6% had history of medical conditions, and 32.07% had had surgical operation. Everyone used the hospitals or public health centers for their illnesses. 86.32% lived within 2 km. of a hospital 98.15% used the state social welfare insurance. 56.13% of cares were their own relatives. 91.985 had average of income 500 baht/month, 48.58% were illiterate. 12.73% smoked , 59.25% had 41-50 years of smoking. 16.98 often drank alcohol, and 42.10% ate un-cook food. Biochemistry results showed that 17.55% had Cholesterol ≥ 251mg/dl, 26.75% had Triglyceride ≥171 mg/dl, 11.45% had Glucose ≥ 121mg/dl, and 19.08% had Uric acid ≥ 7.1 mg/dl. The determinants to develop the model of elderly health care in the rural area should consideration the risk behaviors, environmental management, health screening, and human resources management.

0224

EYE DISEASE AND DEPRESSION IN OLDER ADULTS. *EE Freeman [1,2], ML Popescu[1], H Schmaltz[3], MJ Kergoat[4], J Rousseau[4], S Moghadaszadeh[1], F Djafari1, H Boisjoly[1,2] ([1] Centre de Recherche, Hôpital Maisonneuve-Rosemont, Montréal; [2] Département d'ophtalmologie, Université de Montréal, Montréal; [3]Department of Geriatric Medicine, University of Calgary, Calgary; [4]Centre de Recherche, Institut universitaire de gériatrie de Montréal, Montréal)

Purpose: To examine whether patients with age-related eye diseases like age-related macular degeneration (AMD), Fuchs corneal dystrophy, or glaucoma are more likely to be depressed compared to a control group of older adults with good vision. Methods: We recruited 253 patients aged 65 years and older (61 with AMD, 45 with Fuchs, 79 with glaucoma, and 68 controls with normal vision) from the ophthalmology clinics of Maisonneuve-Rosemont Hospital (Montreal, Canada) from September 2009 until November 2010. Depressive symptoms were assessed using the Geriatric Depression Scale Short Form with a threshold of 5 suggesting depression, as prior research has validated. Cognition was examined using the Mini-Mental State Exam-Blind Version. Comorbidities were assessed by self-report of a physician diagnosis. Poisson regression with robust variance estimation was used to control for potential confounders. Results: There were 62 people who had symptoms suggesting depression (25%). AMD (Prevalence Rate Ratio (PRR)=3.3, 95% Confidence interval (CI) 1.3, 8.0), Fuchs corneal dystrophy PRR=3.0, 95% CI 1.2, 7.3), and glaucoma (PRR=2.4, 95% CI 1.0, 5.8) were all associated with depression after adjustment for age, gender, education, obesity, cognitive score, and limitations in activities of daily living. Conclusions: Visually limiting eye disease is associated with depression in older adults. Greater attention to the mental health needs of patients with eye disease is needed.

0225

STUDY OF NUTRITIONAL STATUS AND FOOD CONSUMPTION PATTERNS IN THE ELDERLY POPULATION ARAK CITY AND DEMOGRAPHIC, ECONOMICAL AND SOCIAL FACTORS WITH THEIR AT 2009. Magid Taheri (Arak University of medical sciences, Iran), Ahmad Amani*, Rita Zahiri, Dr Mehri Mohammadi

By use of civil and rural families list and under random method, the main clusters were determined. The first family was questioned on the right side and this was continued until preparation the questionnaires for 10 studied elderly persons. Consumption evaluation of food stuff was registered through direct visiting them at their homes' fronts in non- holidays and by use of 24-hours food remembering method for three continuous days and the results were registered via a food recalling (remembering) album.Results:In studying weight of the elderly, the average weight of civil elderly (both men and women) is 5.70 Kg more than the elderly people living in rural regions.Also, in studying the height of the elderly, it was found that the height average of the civil elderly (men and women) is 161.53 centimeters and this is 158.12 for the rural elder people, respectively.Thirty six point four percent of the men elderly people living in the city have the BMI between 25-30 but this rate is 27.5% for the rural men. Also, 41.3% of the civil women elder have the BMI higher 30. The same difference was observed among the civil and rural men and women elderly people. But, in the case of BMI, between 25-30 (appropriate weight) the condition of the rural elderly people is more ideal in comparison to the civil people.Eight one point five percent of the civil women elderly people and 74.7% of the rural women elderly people are receiving energy less than 90% of RDA per day. In the case of elderly people, the main received energy is result of consuming carbohydrate (71%) and the proportion of fat consumption is lower. Thirty one point three percent of the men elderly under 70 years old are receiving protein less than 90% of RDA but this rate is 49.1% in the same women group and this difference is evident in the rural men and women elderly people.

0226

THE EFFECT OF OLDER EDUCATION ON KNOWLEDGE ABOUT HEALTHY LIFESTYLES. A RANDOMIZED CONTROLLED TRIAL. *Magid Taheri (Arak University of medical sciences, Iran), Ahmad Amani, Rita Zahiri, Dr Mehri Mohammadi

This pre-post quasi-experimental study was performed in ten randomly selected villages (Intervention: n = 5; Control: n = 5) in rural Arak.The analyses include408participants (Intervention: n = 212;Control:n=196) who participated in both baseline and post-intervention surveys.The healthy lifestyles were assessed using a multi-dimensional instrument designed for elderly persons.A self-designed questionnaire on the basis of the goals of the study,whose content reliability had been approved by a number of efficient academic members was used.The mentioned questionnaires were filled out before educational intervention,and three month later after data collection in the first stage,action was taken with regard to educational intervention and then in the second stage(after the intervention),data was collected again.Results:Out of 408 elderly people in the sample 221(54.16%)were men and 187 women (45.83%).Almost were in the 60-65 age group(31.8%).The mean age of participants was 71.34 with SD=9.86.The majority of respondents were illiterate(43.9%).Results showed that the mean score of all parts of healthy lifestyles in experimental group after educational intervention compared to before intervention was increased significantly.The older people' mean knowledge grade increased from 28.6±7.4 to 35.9±6.8 (P<0.001)after education. Based on results of present study,before intervention37.3% of the elderly had weak knowledge,54.1% had average knowledge, and8.6% of them had good knowledge;but after intervention these percentages changed to13.2% (weak),37.4% (average),and49.4%(good)respectively.There was a significant difference between the level of knowledge pre- and post-education, statistically(P<0/000).

0227-S

ALCOHOL INTAKE IS ASSOCIATED WITH INCIDENT GOUT IN ARIC. *McAdams DeMarco, Janet Maynard, Josef Coresh J (Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, 21205)

Studies suggest that alcohol increases gout risk in white men. We quantified the association of alcohol intake and incident gout in a bi-racial population-based cohort. ARIC is a prospective cohort study of 15,792 individuals from 4 US communities, consisting of 4 visits administered 3 years apart. At visit 4, participants reported their gout status. We excluded those who did not attend visit 4 or had gout prior to visit 1. The % daily calories from alcohol intake was categorized into none, and quintiles of % alcohol intake (≤1.5, 1.5-3.1, 3.1-5.3, 5.3-9.8, >9.8). We tested the association (HR) of categorical alcohol intake and incident gout using a Cox Proportional Hazards model with age as the time scale (adjusted for sex, race, BMI, diuretics, eGFR, hypertension and intake of dietary factors). We adjusted for serum urate and tested for sex and race interactions. The study contains 10,799 participants; 6,495 (60%) abstained from alcohol and 275 developed gout. The study population was 57% female and 22% African American. The adjusted HR and 95% CI for alcohol intake were no intake (reference), quintile 1: 1.00 (0.60, 1.70); quintile 2: 0.93 (0.54, 1.63); quintile 3: 0.92 (0.53, 1.61); quintile 4: 2.26 (1.54, 2.29); quintile 5: 2.31 (1.57, 3.40), (p-value for trend<0.001). Serum urate did not substantially attenuate the HR for alcohol intake, suggesting an independent association of alcohol intake and gout. There was no interaction of alcohol intake with sex (p-value=0.8) or race (p-value=0.2). Participants in the 2 highest quintiles of alcohol intake had more than a 2-fold risk of gout, independent of confounders and serum urate. Gout is one of the many consequences of alcohol intake.

0228-S

ELDERLY MENTAL HEALTH IN A LOW SOCIOECONOMIC STATUS (SES) URBAN POPULATION. *F. Islam, J. Manson, & H. Tamim; (York University, Toronto, ON, M3J 1P3)

The objective of this study was to determine the correlates of mental health in community-dwelling individuals aged 65+ living in an immigrant-dense, low SES urban area in Toronto, Canada. A total of 63 participants (14 male; 49 female) were recruited. The mental health outcome measures used were the Medical Outcomes Study Short Form (36) Health Survey (SF-36) emotional health, Perceived Stress Scale (PSS), and Subjective Happiness Scale (SHS). Sociodemographic (age, sex, marital status, ethnicity, education, and income), behavior (overall physical activity and alcohol drinking), and health (SF-36 general health and SF-36 role of limitations due to physical health) variables acted as potential correlates. At the bivariate level, older age significantly predicted poorer emotional health. Being female, having better general health, and fewer limitations due to physical activity was significantly correlated with less perceived stress. Being in better general health and having fewer limitations due to physical health was significantly correlated with higher levels of happiness. According to the stepwise multivariate linear regression analysis, older elderly individuals experienced significantly poorer levels of emotional health. Elderly individuals with better general health perceived significantly less stress in their life. Not being married and having better general health was significantly associated with greater levels of happiness. Physical health is linked to emotional health: elderly individuals in better general health report higher levels of emotional well-being.

0229

SLEEP PREDICTS THE DEVELOPMENT OF UROLOGIC SYMPTOMS IN A LONGITUDINAL STUDY. *AB Araujo, RS Piccolo, JB McKinlay (New England Research Institutes, Inc., Watertown, MA 02472)

It is assumed that urologic symptoms and sleep are linked uni-directionally, i.e., that urologic symptoms lead to sleep disturbance. We tested the biologically plausible opposite–that sleep disturbance leads to development of urologic symptoms–in a 5-year longitudinal study. Analyses of 1610 men and 2535 women who completed baseline and follow-up phases of the population -based random sample Boston Area Community Health (BACH) survey. Short sleep duration (men only) defined as sleeping <5 hours/night and sleep quality defined as having restless sleep in the past week. Lower urinary tract symptoms (LUTS), urinary incontinence (UI) and nocturia were measured with validated questionnaires. Logistic regression models of incidence among those without baseline symptoms yielded odds ratios (OR) and 95% confidence intervals (CI) adjusted for age, race/ethnicity, diabetes, heart disease, alcohol use, physical activity and anti-depressant use. Further adjustments were made for body mass index (BMI) and C-reactive protein (CRP) to test for mediation. Mean age was 48 years. Prevalence of short sleep duration was 18% (men) and restless sleep was 34% (men) and 42% (women). Incident LUTS was related to short sleep duration among men (OR=1.97, 95% CI=1.02-3.78) and restless sleep among men (OR=2.03, 95% CI=1.26-3.28) and women (OR=1.66, 95% CI=1.10-2.49). Incident UI (OR=1.78, 95% =1.06-2.96) and nocturia (OR=1.90, 95% CI=1.26-2.88) were associated with restless sleep among women. Findings persisted with adjustment for BMI and CRP; ORs were altered with adjustment for CRP. This study identified sleep as a novel and modifiable risk factor that precedes urologic symptoms, perhaps operating through inflammatory and other pathways. This study was supported by award number U01DK056842 from the National Institute of Diabetes and Digestive and Kidney Disorders. The content is solely the responsibility of the authors and does not necessarily represent the official views of NIDDK or NIH.

0230

LOWER URINARY TRACT SYMPTOMS AND INCIDENT DIABETES AND CARDIOVASCULAR DISEASE. LONGITUDINAL RESULTS FROM THE BOSTON AREA COMMUNITY HEALTH (BACH) SURVEY. *V Kupelian, G Miyasato, M Fitzgerald, CL Link, JB McKinlay (New England Research Institutes, Watertown, MA 02472)

The objective of this study was to determine whether lower urinary tract symptoms (LUTS) are associated with the development of diabetes and CVD in a population-based sample of men and women. BACH is a cohort study of 4145 men and women age 30-79 at baseline, with a median follow-up time of 4.8 years between baseline and follow-up. CVD and diabetes were assessed by self-report. CVD was defined as self-report of myocardial infarction, angina, congestive heart failure, coronary artery bypass, or angioplasty stent. LUTS was defined as a score of 8 or above on the American Urological Association symptom index (AUASI). Analyses were conducted on 2,774 participants without diabetes or CVD at baseline. Logistic regression was used to estimate odds ratios (OR) and 95% confidence intervals (95%CI) and adjuste for potential confounders. A higher proportion of participants developed diabetes among those reporting LUTS (6%) compared to those without LUTS (3%) at baseline. A similar trend was observed for CVD, however the observed difference between those with and without LUTS was smaller (3.4% vs. 2.8%). After adjusting for age, gender, race/ethnicity, and BMI, we observed a two-fold increase in the risk of incident diabetes with LUTS at baseline (adjusted OR=1.96, 95%CI:1.37-2.79). The magnitude of the association of baseline LUTS and incident CVD was more modest but remained statistically significant (adjusted OR=1.47, 95%CI:1.03-2.11). The increased risk of incident diabetes and CVD associated with LUTS at baseline suggests that LUTS may be a marker of impending or preclinical disease. The project described was supported by Award Number U01DK056842 from the National Institute of Diabetes and Digestive and Kidney Diseases. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Diabetes and Digestive and Kidney Diseases or the National Institutes of Health.

0231

ASSOCIATION OF C-REACTIVE PROTEIN WITH INCIDENCE OF LOWER URINARY TRACT SYMPTOMS. LONGITUDINAL RESULTS FROM THE BOSTON AREA COMMUNITY HEALTH (BACH) SURVEY. *V Kupelian, C Roehrborn, RC Rosen, CL Link, JB McKinlay (New England Research Institutes, Watertown, MA 02472)

There is increasing evidence suggesting a role of inflammation in the etiology and natural history of lower urinary tract symptoms (LUTS). The objective of the present study was to determine whether serum C-reactive protein (CRP) levels are associated with the development of LUTS. BACH is a prospective cohort study of 4145 men and women age 30-79 at baseline. LUTS was defined as a score ≥8 on the American Urological Association symptom index (AUASI). Analyses were conducted among 1093 men and 1130 women without LUTS at baseline. CRP levels were categorized into three groups: <1 mg/L (referent), 1-3 mg/L, >3 mg/L. Association of baseline CRP levels and LUTS at follow-up were assessed using logistic regression to estimate odds ratios (OR) and 95% confidence intervals (95%CI) and adjust for age, race/ethnicity and BMI. About 8% of men and 12% of women developed LUTS over the follow-up period. Adjusted ORs (95%CI) of the CRP and LUTS association in men were 1.28 (0.66-2.52) for CRP levels 1-3 mg/L and 1.95 (1.07-3.54) for CRP levels with a trend-test p-value=0.03. A similar trend was not observed in women with ORs of 1.03 (0.25-2.37) for CRP levels 1-3 mg/L and 0.54 (0.25-1.18) for CRP levels >3 mg/L and a trend test p-value=0.12. The increased risk of incident LUTS with elevated CRP levels support the hypothesis of a role of inflammation in the etiology of LUTS among men but not in women. This in turn may lead to the speculation that the portion of male LUTS attributable to the prostate is influenced by inflammation rather the component attributable to the bladder. The project described was supported by Award Number U01DK056842 from the National Institute of Diabetes and Digestive and Kidney Disease. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Diabetes and Digestive and Kidney Diseases or the National Institutes of Health.

0233-S

GERIATRIC SYNDROMES AND INCIDENT DISABILITY IN OLDER WOMEN. AL Rosso*, CB Eaton, R Wallace, R Gold, JD Curb, ML Stefanick, JK Ockene, YL Michael (Drexel University, Department of Epidemiology)

Comorbid conditions are important risk factors for incident disability in older women; however, often chronic diseases and not geriatric syndromes (GS) are considered in assessment of comorbid conditions. Data from the Women's Health Initiative observational study were used to determine burden of geriatric syndromes and risk of incident disability over three years. 29,291 women age 65 and older who were cancer free and had no baseline disability were included in the analyses. Geriatric syndromes (syncope, sleep problems, depression, falls, osteoporosis, dizziness, urinary incontinence, visual or hearing impairment, and polypharmacy), number of chronic diseases based on a modified Charlson index, and disability measured as any limitation in activities of daily living (ADLs) were assessed at baseline. ADLs were assessed again at 3 years and relative risk (RR) of incident disability was estimated by log binomial regression after adjustment for age, smoking and income. At baseline, 21,759 (76%) women had at least one geriatric syndrome. After three years, 742 (2.5%) women developed disability. Geriatric syndromes increased risk of disability compared to women with no geriatric syndromes (1-2 GS: RR (95% confidence interval (CI)) = 1.4 (0.9, 2.0); 3-4 GS: RR(CI) = 3.9 (2.7, 5.8); 5+ GS: RR(CI) = 6.6 (4.1, 10.6); test for trend, p<0.0001). Associations were only somewhat attenuated after adjustment for chronic diseases. Burden of geriatric syndromes are predictive of incident disability over 3 years in older women, independent of chronic disease burden.

0234

25-HYDROXYVITAMIN D (25(OH)D) AND PERIODONTAL DISEASE IN POSTMENOPAUSAL WOMEN. *AE Millen, M Swanson, KM Hovey, MJ LaMonte, CA Andrews, RJ Genco, J Wactawski-Wende. (University at Buffalo, Buffalo, NY 14214)

Background: Minimal research has investigated associations between periodontal disease (PD) and 25(OH)D status, which has anti-inflammatory properties. No study has reported on this association using multiple measures of PD inclusive of alveolar crestal height (ACH). Purpose: We investigated cross-sectional associations between plasma 25(OH)D concentrations and three different measures of prevalent PD among 885 postmenopausal women in an ancillary study (1997-2000) of the Women's Health Initiative. Methods: Three measures were used to define presence of PD: 1) an ACH-based definition determined from standardized intraoral radiographs (660 cases), 2) a clinical case definition based on measures of clinical attachment loss (CAL) and probing depth (683 cases), and 3) whole mouth mean gingival index (GI) as the % of sites with gingival bleeding (233 had GI ≥50%). Logistic regression was used to estimate odds ratios (ORs) and 95% confidence intervals (CIs) for PD by quintiles (Q) of 25(OH)D in models adjusted for age and season. P-trend was estimated using 25(OH)D as a continuous variable. Results: No association was observed between 25(OH)D and PD using either the ACH-based or the clinical case definition (OR (95% CI) for Q5 vs. Q1=0.90 (0.56-1.47); p-trend=0.59 and 0.76 (0.46-1.24; p-trend=0.14, respectively). The OR (CI) for a more severe GI (≥50%) was decreased among women in Q5 vs. Q1 (0.61 (0.38-0.99), p-trend=0.002). Conclusion: In this sample of postmenopausal women, there was no association between 25(OH)D and chronic PD based on ACH or CAL and probing depth. However, an inverse association existed between 25(OH)D and GI (a marker of acute PD and oral inflammation).

0235-S

THE EFFECTS OF PHYSICAL AND MENTAL HEALTH STATUS ON TRANSITIONS IN LIVING ARRANGEMENTS: A LONGITUDINAL INVESTIGATION OF COMMUNITY-DWELLING MIDDLE-AGED AND OLDER CANADIANS. *C.L. Angus, S.A. Kirkland, and Y. Asada (Dalhousie University, Halifax NS Canada B3M 1X1)

As in many other countries, Canada's population is aging, and lifespans are expanding. Supporting quality of life during our aging population's extended years is a high priority in social and health policy, and understanding living arrangements and their determinants plays a critical role in such policy. To date, the literature focuses on the oldest old, is mostly limited to cross-sectional assessment, and rarely addresses the collective impacts of physical and mental health status. This research investigates, in a sample of middle-aged and older community-dwelling Canadians, how transitions in living arrangements vary by sex and age group, and how physical and mental health status influence living arrangements over time. This study uses data from 3 waves (Baseline, Year 5 and Year 10) of the Canadian Multicentre Osteoporosis Study (CaMos), a population-based prospective cohort study conducted at 9 sites across Canada beginning in 1995. The CaMos sample used in this study includes individuals aged 45+ at baseline, for a total of 8,513 participants (6,044 women and 2,469 men). We examine the effects of physical and mental health status (measured by SF-36) on living arrangements (living independently or not) longitudinally, after adjustment for sociodemographics, medical history, BMI, physical activity, and other factors, using multivariate generalized estimating equations (GEE) logistic regression models, and present sex-specific age-adjusted associations. The findings of this study provide population-based longitudinal evidence to inform social and health policy development to support 'aging in place' in Canada and elsewhere.

0236

PERCEPTION OF HEALTH STATUS IN DISADVANTAGED URBAN MOTHERS AND CUSTODIAL GRANDMOTHERS, *Priscilla Ryder, MPH, PhD (Butler University College of Pharmacy & Health Sciences, Indianapolis, IN, US)

To do the work of epidemiology it is necessary to think consciously about the meanings of 'health' and to understand its conceptualization in populations under study. Perceptions of health vary within and between populations and change over the lifecourse. This investigation considers perceptions of health in deprived urban mothers and grandmothers in Baltimore, Maryland. Caregiver clients (82 mothers and 68 grandmothers) of two programs for families at risk for child neglect were assessed using the Short Form-36 (SF-36); demographics, resources, depressive symptoms, everyday stressors, and family function were measured. Total and subscale SF-36 scores were compared. Logistic regression models were constructed to predict higher self-rated health (SRH) for generations collectively and separately. Participants were overwhelmingly poor African-Americana with low education. Mothers had lower annual incomes and more depressive symptoms. SF-36 scores did not vary by generation; however for mother, subscales for physical function were significantly higher and emotional well-being lower. For mothers, depressive symptoms were best single predictor of SRH; for grandmothers, energy level. Physical function (Odds ratio (OR)=1.02, 95% Confidence Interval (CI) 1.01, 1.04) , and pain (OR 1.02, 95%CI 1.001, 1.03) were significantly associated with higher SRH overall; for mothers depression, function, and pain were significant, for grandmothers, energy level, function and resources, controlling for depression, public assistance, and generation. Factors associated with perception of health in this vulnerable population differed for older and younger caregivers. Interventions should target different domains for older and younger caregivers.

0237-S

LIVING ALONE, HEALTH-RELATED QUALITY OF LIFE, LIFE SATISFACTION, SOCIAL SUPPORT, AND DEPRESSED MOOD: A POPULATION BASED STUDY AMONG THE RURAL AND URBAN OLDER ADULTS IN CHINA. *Hui Wang, Kun Chen, Biao Zhou (Department of Epidemiology and Health Statistics, School of Public Health, Zhejiang University, Hangzhou 310058, China)

Facing population aging which is one of the serious non-traditional security challenges among the world in the 21st century, we focus on the social determinants and health status among older adults. A cross-sectional study was conducted basing on a multistage cluster sample of 4995 older adults, aged 60 years and over, 2441 in rural area and 2554 in urban area of Zhejiang Province in China. SF-36 was used to assess heath-related quality of life in eight dimensions physical functioning (PF), role limitations due to physical problems (RH), bodily pain (BP), general health perceptions (GP), vitality (VT), mental health (MH), role limitations due to emotional problems (RP) and social functioning (SF) and physical component summary (PCS) and mental component summary (MCS). And a self-developed structured questionnaire was combined to investigate correlation of living arrangement and quality of life satisfaction, social support and depressed mood. Results suggested that these factor, including advanced age, female gender, rural residence, positive physical activity and low social support were the predictors of living alone status among the elderly. Comparing to older adults living with others, the living alone had significantly low quality ($P<0.05$) in dimensions PF, MH and PCS, MCS after adjusting social support and other socio-demographic variables. Our study also reported a significant relationship between living arrangements, depressed mood, physical assistance, emotional support and life satisfaction ($P<0.0001$). Older adults living alone companied by the characteristics of female gender (OR, 95%CI: 1.52, 1.07-2.18), life dissatisfaction (OR, 95%CI: 3.75, 2.59-5.45; 24.71, 10.53-57.97) and low emotional support (OR, 95%CI: 2.00, 1.06-3.76; 6.50, 2.17-19.51; 14.90, 2.17-102.16) had significantly depressed mood after adjustment. Living arrangement as one of the social determinant like social support partly explains the variance in health-related quality of life. There is existing significant association between living arrangement and life satisfaction, depressed mood and emotional support.

0238-S

LIFESTYLE AND BEHAVIOUR CHANGES TO IMPROVE HEALTH AMONG ELDERLY CANADIANS. *Jing Wang, Victor Maddalena, and Peizhong Peter Wang (Memorial University of Newfoundland, St. John's, NL, Canada, A1B 3V6)

Background and Objectives: In contract to the wealth of studies on health status and the factors associated with it, there is a lack of research in lifestyle/ behaviour changes towards improving health in general. Even less is known with respect to how and what elderly do to improve their health and what factors are associated with promoting and impeding healthy behaviour changes.This study aims to describe the changes of behaviors to improve health among elderly Canadians and to examine the factors that either enhanceor impede healthy lifestyle changes. Methods: The 2007 Canadian Community Health Survey (CCHS) data were used. In total, 40,677 individuals aged 65 or older were included in this study. CCHS has a list of behaviour changes questions, such as "increased exercise", "lost weight", "improved eating habits", and "quitted smoking". Participants were asked if they had made any behaviour changes to improve their health in the past 12 months. Those who reported "Yes" were asked to indicate the most important change they have made. Participants were also asked to report the barriers they believed preventing them from making changes. Descriptive statistics were performed to estimate the frequency of various health behavior changes. Analyses were weighted to represent the target population. Results: 47.86% of elderly people reported that they have made behaviour changes to improve their health. 44.94% reported there were barriers in making the improvement. The behavior changes to improve health between male and female participants were also examined to be different. Conclusion: The findings showed low rates of elderly people (both male and female) made behaviour changes to improve health. Increasing exercises, changing eating habits, and receiving medical treatments were the main factors enhancing the changes, whereaslack of will power, disability or health problem, and physical condition were the leading barriers of the improvement. Further efforts should be make to help elderly people in Canada to change their behaviours and relieve the barriers.

0239-S

FACTORS ASSOCIATED WITH SELF-REPORTED ORAL HEALTH IN BRAZILIAN ELDERS. FB de Andrade, ML Lebrão, JLF Santos, YAO Duarte, DS Teixeira (University of São Paulo/Public Health Faculty, São Paulo, São Paulo, 01246-904)

The aim of this study was to investigate the relationship between self-reported oral health and socioeconomic, general health and clinical oral health measurements in a sample of free living elderly people from São Paulo, Brazil. This was a cross-sectional study with a sample of 871, aged 65 and older, representing 606,071.25 people, enrolled in the Health, Well-being and Aging cohort study (SABE). Self-reported oral health was measured by a five-point-response-scale and categorized as: poor, regular and good. Participants underwent a clinical oral health examination, answered a questionnaire regarding socioeconomic and general health factors and completed the Geriatric Oral Health Assessment Index (GOHAI). Multinomial logistic regression analysis was used, estimating values for odds ratio (OR), considering a 5% significance level. A design effect correction was made using the Stata survey command to analyze data coming from complex samples. Mean age was 72.6, 61.1% were females, 42.98% had $\leq$3 years of schooling. Overall, 49.19% were edentulous, 41.64% needed prostheses, 20.42% self-rated oral health as regular and 5.22% as poor. Regular self-reported oral health was related with poor general health perception (OR 2.23; p=0.012), having no teeth (OR 2.04; p=0.008) and GOHAI score (OR 0.89; p=0.000). Poor self-reported oral health was associated with dental prosthesis necessity (OR 3.50; p=0.013), having no teeth (OR 5.03; 0.004), GOHAI score (OR 0.83; p=0.000) and dental attendance for treatment (OR 0.11; p=0.000) or prevention (OR 0.13; p=0.004). Clinical and subjective oral health measurements were the best predictors of self-reported oral health among elderly people.

0240

SUPPLEMENTAL VITAMINS AND VISUAL ACUITY IN THE PRESENCE OF EARLY AGE-RELATED OCULAR LESIONS. *M.S. Morris, P.F. Jacques, L.T. Chylack, Jr., S.E. Hankinson, W.C. Willett, A. Taylor (Jean Mayer US Department of Agriculture Human Nutrition Research Center on Aging at Tufts University, Boston, MA 02111, USA)

Antioxidants are thought to be of value in preventing cataract and age-related maculopathy (ARM). Studies have also suggested that treatment with multivitamin combinations preserves or improves vision when early-stage eye disease is present. How much of which vitamins might be effective is unknown, however. We evaluated associations between supplement use and visual acuity in eyes that had been assessed using the Lens Opacities Classification System III and the Wisconsin ARM Grading System. Nurses' Health Study participants residing in Massachusetts underwent eye examinations in 1993. The women had completed multiple food frequency questionnaires asking about supplement use since 1980. Two-thirds of the women had used multivitamins, and single -vitamin supplementation was also common. Analyses involved 915 eyes of 468 women who did not have diabetes, cataract, or late ARM. A multivariate-adjusted 1.1-point difference (P=0.006) in Baily-Lovie score (overall mean = 55.6) associated with multivitamin use versus non -use actually reflected a difference restricted to eyes with high nuclear opacity grades (n=189; mean=2.7; 95% CI=1.1-4.5) or ARM lesions (n=179; mean=3.5, 95% C=1.8-5.1). Better visual acuity in eyes with nuclear opacities was associated with vitamin A intakes ≥10,000 IU/d and vitamin C intakes ≥200 mg/d, independently of intakes of other vitamins. Among eyes with ARM-related drusen, better visual acuity was associated with vitamin E intakes that far exceeded the RDA, but high intakes of other vitamins or merely meeting versus not meeting the RDA for vitamin E was not associated with benefits.

0241

MORTALITY AFTER PRENATAL EXPOSURE TO THE DUTCH FAMINE OF 1944-45. *L.H. Lumey, P. Ekamper, Aryeh D. Stein, F. van Poppel (Columbia University, New York, NY)

Several studies have examined immediate and later health effects of famine exposure during pregnancy on the offspring. Little is known however about the role of maternal or fetal nutrition on adult survival. We selected men with prenatal exposure to the Dutch famine of 1944-1945 from military examinations records (n=408,015) for births 1944-1946 in the Netherlands. Selection was by date and place of birth to define famine exposure in relation to stage of pregnancy and weekly food rations distributed among the population. We included men exposed in the immediate post-natal period (n=8,225) and in the third (n=8,197), the second (n=6,809), and the first trimester of pregnancy (n=4,666). We also selected men exposed around conception (n=7,727). Additional men born before or after the famine without famine exposure in pregnancy were selected as time controls and men born outside the famine area as place controls. We first linked 82% of the selected sample population (n=45,000) to national population records from the Netherlands Statistical Office for 2004-2009. These provide current vital status and cause of death where applicable. Successful linking was unrelated to famine exposure status or to indicators of social class. At this stage, men classified as unfit or obese at military examination were somewhat more difficult to link to current records. The remainder of the sample is now being traced at the Netherlands Central Bureau of Genealogy for deaths that took place prior to 2004. To date, 89 % of the study population has been traced in either of these registries, covering deaths from 1967 to 2009. Among those traced, mortality until 2009 was 9 %. In 24 %, cardiovascular disease was the primary cause of death, in 50 % cancers, and in 26 % other causes. Our findings show that long term tracing of vital status and cause of death is possible in this environment.

0242-S

GENDER DIFFERENCES IN MOBILITY DISABILITY IN WEST AFRICAN YOUNG AND MIDDLE AGED ADULTS. Malgorzata Miszkurka*, Maria Victoria Zunzunegui1, Ellen E. Freeman, Seni Kounda, Slim Haddad (Universite de Montreal, Canada)

Objective: To assess the prevalence of mobility disability, the contribution of socio-demographic factors and chronic diseases and the extent to which these factors account for gender differences in mobility disability in three West African countries. Methods: Data were used from the World Health Survey done in 2002-2003 in adults 18 years and over from Burkina Faso (n=4,822), Mali (n=4,230) and Senegal (n=3,197). Those reporting that they had mild, moderate, severe, or extreme difficulty or were unable to move around were defined as having mobility disability. Sex and setting (urban/rural) prevalence distributions were estimated correcting for the complex sampling design. Logistic regression was used to estimate associations between socio-demographic factors, symptoms of arthritis, back pain, cardiovascular disease asthma and mobility disability. Results: Mobility disability was frequent, starting at young ages. In the 35-44 years old group, mobility difficulty was reported by 15% of men and 20% of women in Burkina Faso, 16% of men and 22% of women in Mali and 22% of men and 35% of women in Senegal. Women had higher odds of mobility difficulty at every age group in the three countries. The age adjusted odds ratios of women compared with men were 1.34 (95%CI 1.06;1.70) in Burkina Faso; 2.33 (95%CI 1.84;2.71) in Mali and 1.82 (95%CI 1.41;2.36) in Senegal. The fully adjusted odds of mobility difficulty in women compared with men were 0.94 (95% IC 0.70; 1.25) in Burkina Faso, 2.19 (95% IC 1.61;2.96) in Mali and 1.90 (95% IC 1.27; 2.84) in Senegal. Conclusion: Adults' functioning is compromised because of mobility difficulties, particularly among women. The gender gap seems to be partly explained by the higher prevalence of chronic conditions in women. Better knowledge on the causes underlying these high rates of mobility disability is needed if mobility is to be preserved in adulthood and old age.

0243-S

AN ASSESSMENT OF SUBDOMAINS OF FRAILTY IN COMMUNITY-DWELLING OLDER PERSONS *S Karunananthan, N Ahmadzai, H Payette, C Wolfson, N Sourial, B Zhu, F Beland and H Bergman (McGill University, Montreal, QC, H3A 1A2)

Frailty is a syndrome of increased vulnerability to adverse outcomes due to impairments in multiple physiological systems. Recently, there has been an interest in identifying subdomains of frailty by examining associations among its criteria. These subdomains may provide insight into hypothesised etiologies and pathways. Objective: To examine associations among seven candidate criteria for frailty: nutrition, mobility, strength, physical activity, energy, cognition and mood. Methods: This study was based on the analysis of 1,733 community-dwelling persons aged 68–82 years from the Quebec longitudinal study on Nutrition and Successful Aging (NuAge). Associations among frailty criteria were examined using exploratory factor analysis. Results: Weak correlations were found between all frailty criteria except energy and mood. The measure of nutrition did not correlate with any other criterion and was therefore excluded from the factor analysis. The principal factor analysis based on six frailty criteria revealed two factors with eigenvalues greater than 1.0, accounting for 51% of the variance. The first factor included energy and mood, with a high positive loading of 0.85 on energy and an inverse loading of -0.83 on mood, whereas the second factor included the four other criteria, with high loadings on strength (0.70), mobility (0.66), physical activity (0.50) and cognition (0.45). Conclusion: Overall, our results indicate that among healthy older persons frailty criteria are weakly associated, forming two subdomains: one for psychological criteria and the other for physical and mental criteria. Further research is needed to determine whether these results hold true in more frail populations.

0244

PROGRESSION AND REMISSION OF UROLOGIC SYMPTOMS: RESULTS FROM THE BOSTON AREA COMMUNITY HEALTH (BACH) SURVEY. *CL Link and JB McKinlay (New England Research Institutes, Watertown MA 02472)

The prevalence of urologic symptoms increases with age which may lead to the conclusion that symptoms only worsen as a person gets older. With the completion of the first follow-up of the Boston Area Community Health (BACH) survey we consider the progression and remission of urologic symptoms. BACH recruited 5502 Boston residents (2301 men and 3201 women; 1767 Black, 1876 Hispanic, 1859 White) aged 30-79 years at baseline (2002-5) and re-interviewed 4145 respondents (1610 men and 2535 women; 1327 Black, 1341 Hispanic, 1477 White) after a median follow-up time of 4.8 years (2006-10). Lower urinary tract symptoms (LUTS) were measured by the American Ur Urologic Association Symptom Index (range 0-35) which measures the frequency of seven symptoms; 0=none, 1-7=mild, 8-19=moderate, 20+=severe). Involuntary urine leakage (UI) over the last year was classified as none, less than once per week, or one or more times per week. Painful bladder syndrome (PBS) was defined as pain increasing as bladder fills and/or pain relieved by urination for at least 3 months. Overactive bladder (OAB) was defined as (urinary frequency and urgency) or urge leakage. The amount of progression/remission of urologic symptoms is similar to the prevalence of these symptoms at follow-up: (prevalence, progression, remission) LUTS (men: 27.3, 20.6, 15.8; women: 18.8, 19.7, 17.6), UI (men: 5.0, 15.3, 8.7; women: 10.9, 18.8, 17.4), PBS (men: 1.0, 3.5, 3.8; women: 2.4, 6.0, 5.2), OAB (men: 9.8, 24.2, 21.0; women: 20.8, 21.7, 25.7). There is considerable progression and remission of urologic symptoms. Those with more severe symptoms are more likely to remit and those with no or mild symptoms are more likely to progress. Supported by Award Numbers U01DK56842 from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) (NIH). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIDDK or the NIH.

0245

IS THE ASSOCIATION OF DEPRESSIVE SYMPTOMS AND UROLOGIC SYMPTOMS BI-DIRECTIONAL? RESULTS FROM THE BOSTON AREA COMMUNITY HEALTH (BACH) SURVEY. *CL Link and JB McKinlay (New England Research Institutes, Watertown MA 02472)

We have previously shown that depressive symptoms are associated with urologic symptoms (European Urology, 2007, Vol. 52(2), page 407-15). With the completion of the first follow-up of the Boston Area Community Health (BACH) survey we consider the question of directionality of this association. BACH recruited 5502 Boston residents (2301 men and 3201 women; 1767 Black, 1876 Hispanic, 1859 White) aged 30-79 years at baseline (2002-5) and re-interviewed 4145 respondents (1610 men and 2535 women; 1327 Black, 1341 Hispanic, 1477 White) after a median follow-up time of 4.8 years (2006 -10). Urologic symptoms were measured by the American Urologic Association Symptom Index (range 0-35) which measures the frequency of seven symptoms; 0=none, 1-7=mild, 8-19=moderate, 20+=severe). Depressive symptoms were measured by an abridged Center for Epidemiological Studies depression scale with eight yes/no questions. We find that progression of urologic symptoms (an increase of 3+ points) is associated with an odds ratio of 1.34 (no baseline urologic symptoms, p<.0001), 1.24 (mild, p<.0001), 1.24 (moderate, p=.0120), or 0.85 (severe, p=.2024) per baseline depressive symptom and 1.21 (p<.0001) per increase in depressive symptoms from baseline to follow-up when adjusting for gender, age decade, and baseline urologic symptoms. Remission of urologic symptoms (a decrease of 3+ points) is associated with an odds ratio of 0.86 (moderate urologic symptoms, p=.0026) per baseline depressive symptom. These results suggest that the association of urologic symptoms and depressive symptoms is bi-directional. Supported by Award Numbers U01DK56842 from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) (NIH). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIDDK or the NIH.

0246-S

ASSOCIATIONS BETWEEN FISH CONSUMPTION AND SEVERITY OF DEPRESSIVE SYMPTOMS. *C.A. Hoffmire, R.C. Block, K. Thevenet-Morrison, E. van Wijngaarden (University of Rochester, Rochester, NY 14642)

Fish is the primary source of dietary omega-3 poly-unsaturated fatty acids (n-3 PUFAs), which have been reported to reduce the risk of depressed mood in recent clinical trials. However, data from observational studies are less conclusive. We assessed the association between fish consumption and depressive symptoms in a nationally representative sample of 10,480 adult subjects (>20 years) from the 2005-2008 National Health and Nutrition Examination Survey. Depressive symptoms were classified by severity using the Patient Health Questionnaire (PHQ-9): no depression (0-4), mild depression (5-9), and moderate to severe depression (≥10). Four measures of fish meal consumption in the past 30 days were considered: all fish, non-breaded fish, breaded fish, and shellfish. Multivariable ordinal logistic regression controlled for age, gender, race, education, marital status, smoking status, health status, antidepressant use, and supplemental fish oil. After controlling for potential confounders, consumption of any fish (odds ratio (OR) = 1.05, 95% confidence interval (CI) = 0.93-1.19), any non-breaded fish (OR=1.02, CI = 0.90-1.14), or any shellfish (OR = 0.97, CI = 0.85-1.10) was not associated with depressive symptom severity, while consumption of any breaded fish showed an increased risk (OR = 1.35, CI = 1.08-1.68). No clear dose-response patterns with categorical measures of fish consumption emerged. Findings for fish oil supplementation were similar, indicating a lack of association (OR = 0.98, CI = 0.73-1.33). Although exposure misclassification is of concern, these findings do not support those from recent clinical trials reporting a benefit of fish consumption or n-3 PUFAs on depressive symptoms.

0247-S

DISENTANGLING THE ASSOCIATION BETWEEN ADULT SEXUAL ORIENTATION AND CHILDHOOD MALTREATMENT: EVIDENCE FROM A NATURAL EXPERIMENT INDICATES CHILDHOOD MALTREATMENT AFFECTS SEXUAL ORIENTATION. *Andrea L. Roberts, M. Maria Glymour, Karestan C. Koenen (Harvard School of Public Health, Boston, MA 02115)

Epidemiological studies find a strong association between childhood maltreatment and same-sex sexuality in adulthood, but conventional observational studies cannot disentangle the causal direction. Nascent same-sex orientation may increase risk of maltreatment; alternatively, maltreatment may shape sexual orientation. The present study uses instrumental variable (IV) models based on family characteristics that predict maltreatment but are not plausibly influenced by sexual orientation, e.g., having a step-parent, as natural experiments to test whether maltreatment increases likelihood of same-sex sexual attraction, partners, and identity. IV estimates were calculated using the nationally representative 2004-2005 National Epidemiologic Survey on Alcohol and Related Conditions (n=34,653). IV effect estimates were very similar to conventional effect estimates. For example, history of sexual abuse predicted increased probability of same-sex attraction of 2.0 percentage points[pp] (95% confidence interval [CI]=1.4, 2.5pp) in IV models and 1.6 pp (95% CI= 1.2, 2.0pp) in conventional models. Although IV estimates are based on strong assumptions, these findings suggest associations between maltreatment and sexual orientation are due to effects of maltreatment on sexuality, rather than the reverse. If IV estimates are causal, 9% of same-sex attraction, 21% of any lifetime same-sex sexual partnering, and 23% of homosexual or bisexual identity is due to childhood sexual abuse.

0248

PREDICTORS OF SIX-YEAR TRAJECTORIES OF DEPRESSION IN A NATIONAL CANADIAN SAMPLE. *I. Colman, K. Naicker, Y. Zeng, A. Ataullahjan, A. Senthilselvan, S.B. Patten. (School of Public Health, University of Alberta, Canada)

Depression is a prevalent and recurrent condition. The long-term prognosis of depression is highly variable; however, there is paucity of evidence on factors associated with a negative long-term course of depression. The aim of this study was to identify these factors. The sample included 585 adults from Statistics Canada's National Population Health Survey who experienced a major depressive episode in 2000/01. These individuals were followed up until 2006/07; the primary outcome was a trajectory of depression over four time points. Growth trajectory models were used to group individuals into similar depression trajectories. Over 20 demographic, mental health, physical health and stress factors were included in a multivariate logistic regression model comparing those with differing trajectories. Two trajectories of depression were identified: those who recover and remain well (45%) and those who suffer from repeated symptoms (55%). Smoking, low self-mastery and history of depression were significant predictors ($p<0.05$) of a negative depression trajectory. Smoking was significantly predictive in those with a history of depression but not in first-episode subjects. There were few differences in predictors between those with mild symptoms versus those with severe symptoms; however, being an immigrant was protective against a negative depression trajectory in those with severe symptoms. Those individuals presenting with major depression who are current smokers or display low levels of self-mastery are at an increased risk for experiencing chronic depression. Clinical guidelines should closely consider the promotion of early treatment for individuals in these potentially high risk groups.

0249

ASSOCIATIONS BETWEEN ZINC INTAKE AND DEPRESSIVE SYMPTOMS IN A POPULATION-BASED STUDY OF MEN AND WOMEN. *NN Maserejian, S Hall, JB McKinlay (New England Research Institutes, Watertown, MA 02472)

Prior studies indicate that lower serum zinc levels are associated with depression, but epidemiological data examining dietary sources of zinc in association with depressive symptoms are lacking. We tested the hypothesis that low dietary zinc was associated with depressive symptoms using cross-sectional data from the random population-based Boston Area Community Health survey (2002-2005). Current depressive symptoms were assessed by the abridged Center for Epidemiologic Studies Depression (CES-D) scale. Dietary data were collected by food frequency questionnaire. Multivariate regression analyses were conducted among 1,122 men and 1,746 women with dietary data, adjusting for age, race/ethnicity, body mass index, physical activity, total energy intake, antidepressant/antipsychotic drug (AD/AP) use, and in women, menopausal status and polyunsaturated fat intake. Results showed an interaction (P=0.03) between gender and dietary zinc. In men, there were no associations between zinc and depressive symptoms. Among women, low intake of dietary and supplemental zinc were strongly associated with depressive symptoms (e.g., dietary zinc quartile 1 vs. 4, odds ratio=1.96, 95% confidence interval:1.36-2.82, P-trend=0.003; supplemental zinc P-trend=0.02). Among the 381 women with depressive symptoms, a positive association between zinc and CES-D score was apparent only among non-users of AD/AP drugs ($B=0.49 \pm 0.19$, P=0.01; P-interaction=0.06). These findings importantly add to evidence from animal and clinical studies on serum zinc and zinc supplementation among clinically depressed patients, by indicating that inadequate dietary zinc intake may contribute to depressive symptoms in the general population of women. This work was supported by the National Institute of Diabetes and Digestive and Kidney Diseases (grants R21DK081844 and DK56842). The content of this work is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Diabetes and Digestive and Kidney Diseases or the National Institutes of Health.

0250

SIMILARITIES IN THE EPIDEMIOLOGY OF AUTISM AND OF SCHIZOPHRENIA. *MJ Dealberto (Queen's University, Kingston, ON, K7L3N6)

Introduction: Several authors hypothesize that both schizophrenia and autism are associated with a maternal vitamin D deficit. Aim: To examine the epidemiology of autism and that of schizophrenia in regards to the maternal vitamin D hypothesis. Methodology: Review of the literature on prevalence and incidence rates of autism and schizophrenia, and on factors associated with these rates. Results: The epidemiology of autism and that of schizophrenia share many traits, especially a relationship to maternal immigrant status and ethnic origin (1, 2). Other associated factors, such as increasing rates with higher latitudes and excess of winter births, are possibly related to a maternal vitamin D deficit. They are also associated with prenatal and perinatal complications and with maternal stress. Discussion: The epidemiology of autism and that of schizophrenia differ mainly in the association with socio-economic status (SES). Early studies found that autism was associated with higher SES, but later studies did not confirm this. The association between schizophrenia and lower SES is partly due to the consequences of this condition, as its strength is much decreased when considering the parents' SES. Conclusion: As autism and schizophrenia have different susceptibility genes, the marked similarities between the epidemiology of autism and that of schizophrenia point to similar environmental factors. Maternal vitamin D deficiency and maternal stress are possible candidates. References: 1. Dealberto MJ. Prevalence of autism according to maternal immigrant status and ethnic origin. Acta Psychiatr Scand, in press; 2. Dealberto MJ. Ethnic origin and increased risk for schizophrenia in immigrants to countries of recent and longstanding immigration. Acta Psychiatr Scand 2010;121:325-39

0251

SEX, STRESSFUL LIFE EVENTS, AND ADULT ONSET DEPRESSION AND ALCOHOL DEPENDENCE: ARE MEN AND WOMEN EQUALLY VULNERABLE? *Natalie Slopen, David R. Williams, Garrett Fitzmaurice, and Stephen E. Gilman (Harvard School of Public Health, Boston, MA, 02115)

Higher rates of major depression (MD) among females, and of alcohol dependence (AD) among males, are among the most routinely reported findings in psychiatric epidemiology. One of the most often pursued explanations for sex differences in both disorders emerges from stress-diathesis theory: that males and females have a differential vulnerability to stressors, which is manifested in sex-specific ways (MD for females, AD for males). However, existing evidence in support of this explanation is mixed. In the present study, we investigated sex differences in the association between stressful life events and MD and AD in a large national sample (n=32,744) using a prospective design. Logistic regression was used to estimate associations between stressful life events and both MD and AD; the stress-diathesis hypothesis was evaluated by testing interaction terms between sex and stressors in the prediction of both outcomes. The number of stressful life events was predictive of first onset MD (OR=1.14, 95% CI: 1.10, 1.20) and AD (OR=1.12, 95% CI: 1.06, 1.18). This was true for both males and females, and sex-by-stress interaction terms were not consistent with a stress-diathesis model for higher rates of MD among females and higher rates of AD in males. Our results do not support the hypothesis that sex-specific responses to stressful life events lead to sex differences in first onset of MD and AD among adults; new directions of research that bring together physiological and social aspects of vulnerability in the development of gender differences in MD and AD may be useful.

0252

MIGRATION FROM MEXICO TO THE US AND CONDUCT DISORDER: A CROSS-NATIONAL STUDY. *J. Breslau, G. Borges, N. Saito, D. Tancredi, C. Benjet, L. Hinton, K. Kendler, R. Kravitz, W. Vega, S. Auilar-Gaxiola, M. Medina-Mora (University of California, Davis)

Twin studies suggest that Conduct Disorder (CD) is under substantial genetic influence, which may be stronger for aggressive than for non-aggressive symptoms. Studies of migrating populations offer an alternative strategy for separating environmental and genetic influences on psychopathology. We examine variation in the prevalence of CD associated with migration from Mexico to the US and whether this variation is similar for aggressive and non-aggressive CD symptoms and symptom profiles. Data come from population surveys of adults conducted in both countries using the same diagnostic instrument. Compared with families of origin of migrants, risk of CD is lower in the general population of Mexico (AOR=0.54, 95% CI 0.19-1.51), higher in children of Mexican-born immigrants who are raised in the US (AOR=4.12, 95% CI 1.47-11.52) and higher still in Mexican-American children of US-born parents (AOR=7.64, 95% CI 3.20-18.27). The association with migration is markedly weaker for aggressive than for non-aggressive symptoms. These data suggest that the prevalence of CD increases dramatically across generations of the Mexican-origin population following migration to the US. This increase is of larger magnitude for non-aggressive than for aggressive symptoms, supporting the suggestion that non-aggressive symptoms are more strongly influenced by environmental factors than aggressive symptoms.

0253-S

COGNITIVE IMPAIRMENT AT AGE 7 AMONG SIBLINGS OF INDIVIDUALS WITH LATER PSYCHOTIC DISORDERS. *J Agnew-Blais[1] S Cherkerzian[2] J Goldstein[2,3,4] MT Tsuang[3,4,6] LJ Seidman[3,4] SL Buka[5]. ([1]Dept of Epidemiology HSPH; [2]Dept of Psychiatry & Medicine Harvard Medical School, Brigham & Women's Hospital; [3]Dept of Psychiatry HMS, Beth Israel; [4]Dept of Psychiatry HMS, MGH; [5]Dept of Community Health Brown University; [6]Dept of Psychiatry UCSD)

Deficits in cognition among family members of individuals with schizophrenia (Scz) have led researchers to hypothesize an endophenotype characterizing individuals with the disorder and their relatives. However, it is unclear if these deficits are present in 1st degree relatives of individuals with other forms of psychosis, such as affective (Aff) psychoses. We compared cognitive functioning among controls (N=108), cases with future psychoses (N=99) and their non-psychotic siblings (N=74) at age 7, as well as between siblings of individuals with later Scz (N=41) and later Aff psychoses (N=33). Full scale IQ was assessed, as well as domains of cognition (verbal ability, academic achievement, working memory/attention and perceptual motor functioning). Non-psychotic siblings (IQ=96.9) were significantly cognitively impaired compared to controls (IQ=106.8); in fact, siblings were equally impaired compared to future cases (IQ=97.0, p value=0.7). Siblings of those with later Scz (IQ=95.7) were more impaired than siblings of later Aff psychoses cases (IQ=99.2), although these differences did not reach statistical significance. That siblings were as impaired as cases was in contrast with other studies, which have found milder deficits among siblings. Siblings of those with later Scz showed more impairment than siblings of cases of Aff psychosis, suggesting that an endophenotype characterized by cognitive impairment may be more relevant for Scz than for psychotic disorders as a whole.

0254

DISPARITIES IN THE PREVALENCE OF PSYCHOLOGICAL DISTRESS BY REGION OF BIRTH: RESULTS FROM THE 2000-2008 NATIONAL HEALTH INTERVIEW SURVEY. *Florence J. Dallo, Tracy Snell (Oakland University, Rochester MI)

Serious psychological distress (SPD) affects 11.3% of the United States population. The purpose of this study is to: 1) Estimate the age and sex-adjusted prevalence of SPD among individuals (> 18 years of age) by region of birth and 2) Examine the association between SPD and region of birth. We use data from 2000-2008 from the National Health Interview Survey (NHIS). The main outcome measure is SPD measured using Kessler and colleagues' K6 scale. The K6 asks how often the participant felt: sad; nervous; restless; hopeless; that everything was an effort; or worthless during the past 30 DAYS. Participants were instructed to choose from the following 5-point Likert scale: 1) ALL of the time; 2) MOST of the time; 3) SOME of the time; 4) A LITTLE of the time; and 5) NONE of the time. Item scores are summed to generate a total symptoms score ranging from 0 to 24. A cut-off > 13 is considered having SPD and can identify DSM-IV disorders. The main independent variable is region of birth. The unweighted sample size was 259,799. The overall prevalence of SPD is 3.0% (±0.05). Immigrants from the Middle East report the highest estimate [5.3% (±1.1)]. The Indian Subcontinent and Asia report the lowest estimates [~1.0% (±0.02)]. In the unadjusted regression model, and compared to non-Hispanic whites, individuals from the Middle East were 1.7 times (95% CI=1.12, 2.64) more likely to report having SPD. All other immigrant groups were less likely (odds ratio < 1) to report having SPD. When controlling for confounders, the odds ratios were attenuated, but still statistically significant. This is the first study to examine the prevalence of SPD among immigrants. Future studies should include more variables related to acculturation and use of health services. However, the current information is pivotal in understanding the necessity of education and allocation of mental health services for immigrants.

0255-S

PREVALENCE OF K2 USE AMONG COLLEGE STUDENTS. X Hu, B A. Primack, T. Barnett, and *R L. Cook (University of Florida, Gainesville, FL, 32603; University of Pittsburgh, Pittsburgh, PA, 15261)

Smoking K2 (also known as "spice") is increasingly becoming a popular legal substitution for smoking marijuana and has been linked to adverse health events. However, the actual prevalence of K2 use is not known, and it is not clear whether this product is only being used by other drug users. The primary objectives of this study are (1) to describe the prevalence of K2 use among college students and characteristics of persons who use K2; and (2) to assess associations between K2 and other drug use. Using an online data collection system, we obtained anonymous surveys from students enrolled at the University of Florida in September 2010 (36% response rate). The questionnaire assessed demographic characteristics, smoking history/behavior, marijuana use and K2 use. The average age of the 852 participants was 21 years (SD = 5) and 36% were female. Overall, 35% of participants reported ever smoking marijuana. Eight percent of respondents reported having ever smoked K2, and marijuana use was ubiquitous (91%) among these K2 users. In multivariable logistic regression analyses, greater use of K2 was significantly associated with status as a first-year student (vs. 3rd year or above, Odds Ratio (OR) =3.7, 95% Confidence Interval (CI) =1.6-8.5), ever marijuana use (vs. no previous marijuana use, OR=9.9, 95% CI=3.4-28.4) and ever hookah use (vs. no prior hookah use, OR=3.7, 95% CI=1.6-8.6). Greater K2 use was not significantly associated with gender, race or cigarette smoking. K2 use was common among this sample of college students, especially those just entering college. Most K2 users also smoked other substances. Longitudinal data are needed to determine which smoking product was used first in this younger population.

0256

TREATMENT DELAY AND FIVE YEAR OUTCOMES IN PSYCHOTIC DISORDERS. *R. Norman, R. Manchanda, D. Windell, R. Harricharan, S. Northcott (University of Western Ontario, London, Canada)

Psychotic disorders are among the most costly forms of mental illness in terms of personal suffering and social and economic costs. There has been much interest the possible benefits of earlier intervention in improving treatment outcomes for such disorders. Past research on the relationship between treatment delay and outcomes for first episode psychosis have primarily focussed on the role of duration of untreated psychotic symptoms (DUP) in predicting symptomatic outcomes up to two years. In the current study we examine the influence of both DUP and the duration of any untreated psychiatric (duration of untreated illness or DUI) on symptoms and functioning at five year follow-up while controlling for other characteristics of early illness. One hundred and thirty-two patients with first episode psychosis and treated in an early intervention program were prospectively followed up for five years. Outcomes assessed included positive and negative symptoms, overall functioning, weeks on disability pension and weeks of full-time competitive employment. While DUP showed a significant correlation with level of positive symptoms at follow-up, this was not independent of premorbid social adjustment. DUI emerged as a more robust independent predictor of negative symptoms, social and occupational functioning and use of a disability pension. Delay between onset of non-specific symptoms and treatment may be a more important influence on long term functioning for first episode patients than DUP. This suggests the possible value of treating such signs and symptoms as early as possible regardless of the effectiveness of such interventions on likelihood or severity of psychotic symptoms.

0257

COMPARISON OF MULTIPLE ESTIMATES OF DEPRESSION PREVALENCE USING THE PATIENT HEALTH QUESTIONNAIRE –9 AND REPORTED REASON FOR USE OF ANTIDEPRESSANTS: NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY: 2005-2008. *LA Pratt, DJ Brody, Q Gu. (National Center for Health Statistics/CDC, Hyattsville, MD 20782)

Hypertension is often defined as a high measured blood pressure or use of anti-hypertensive medication. Depression is defined using various instruments, but does not include use of anti-depressant medication. This is because the drug data is not collected, and/or because antidepressants can be used for other illnesses besides depression. The 2005-2008 National Health and Nutrition Examination Survey (NHANES) used the Patient Health Questionnaire–9 (PHQ-9) to measure depression. NHANES collects data on medications used and verbatim reason for use. We examined four possible measures of depression prevalence using reported reason for use of antidepressants: PHQ-9 depression, PHQ-9 depression plus use of antidepressants for depression, plus use for any psychiatric reason, and plus any use of antidepressants. Sociodemographic characteristics of persons with depression by each definition were examined. The prevalence of depression measured by the PHQ -9 alone was 6.8% in persons 18 years and older. The prevalence of depression when use of antidepressants for depression was included was 12.3%, 14.4% when use of antidepressants for any psychiatric reason was included, and 16.3% when use for any reason was included. The prevalence of depression was significantly higher when persons taking antidepressants for depression were included. Prevalence estimates based on using antidepressants for any reason were significantly higher than estimates using antidepressants for depression only. Considering reason for use of antidepressants makes a significant difference when calculating depression prevalence estimates.

0258

DEPRESSIVE SYMPTOMS AND LIMITATIONS IN DAILY ACTIVITIES IN MIDLIFE WOMEN. *J. T. Bromberger and L. L. Schott (University of Pittsburgh, Pittsburgh, PA, 15213)

Most studies have examined the association between depression and functional limitations among the elderly and in cross-sectional designs. The extent to which this relationship exists over time among midlife women, is independent of menopausal symptoms and is similar across multiple ethnic groups is unknown. Using data from the multi-site Study of Women's Health Across the Nation (SWAN), we examined the association of depressive symptoms and limitations in daily activities (LDA) every 2 years during 7 years of follow up in a community sample of 2423 White, African American, Chinese, and Japanese women aged 46-56. Demographic, health and psychosocial data were collected annually. Depressive symptoms were assessed with the Center for Epidemiologic Studies Depression (CESD) Scale; scores $\geq$ 16 defined high symptom levels. LDA were assessed with the 10-item subscale of the SF-36 questionnaire. The bottom 25% of the computed score identified significant LDA. Generalized Estimating Equations were used to determine the relationship between CESD $\geq$ 16 and LDA adjusting for age, ethnicity, education, menopausal status, psychotropic medication use, hot flashes/ night sweats, and number of medical conditions. Results showed that a CES-D $\geq$ 16 was significantly associated with a higher odds of reporting LDA independent of confounders including number of self-reported medical conditions (Odds ratio (OR)=1.74, 95%CI=1.49, 2.03). Chinese Americans were more likely than Whites to report LDA, but no other ethnic differences emerged. The inclusion of an interaction between ethnicity and CESD was not significant. These results indicate there is a consistent relationship between depressive symptoms and LDA over time that does not vary by ethnicity.

0259-S

ARE FRENCH AND ENGLISH VERSIONS OF THE PHQ-9 COMPARABLE? AN ASSESSMENT OF DIFFERENTIAL ITEM FUNCTIONING. *E. Arthurs, M. Hudson, M. Barron, B. Thombs (McGill University and Jewish General Hospital, Montreal, Quebec H3T 1E4)

The Patient Health Questionnaire-9 (PHQ-9) is a commonly used measure of depressive symptoms. It has been translated into 25 languages, including English and French. To combine English and French scores in analyses or compare PHQ-9 scores between English and French respondents, the equivalency of scores across English and French versions of the PHQ-9 must be demonstrated. This is typically done by testing for Differential Item Functioning (DIF), or whether English and French PHQ-9 respondents with similar levels of depressive symptoms respond similarly to PHQ-9 items. Objective: To determine whether PHQ-9 items exhibit DIF versus having equivalent measurement properties among English and French-speaking Canadians with scleroderma. Methods: Patients from the Canadian Scleroderma Research Group Registry completed the PHQ-9. MIMIC models in Mplus were used to identify items displaying possible DIF. Results: A one-factor model fit the PHQ-9 data well (Number of English respondents=635; Number of French respondents =204; Comparative Fit Index=0.98, Tucker Lewis Index=0.99, Root Mean Square Error of Approximation=0.07). Statistically significant DIF was identified in one item (anhedonia; $p<0.001$). However, the magnitude was small, and English-French differences in the latent depression factor were minimal and not statistically significant with adjustment for DIF (English - French =0.02, 0.18 standard deviation (SD)) or without (English - French =0.06, 0.18 SD). Conclusions: French and English PHQ-9 scores are on the same measurement scale and can be directly compared.

0260-S

PERSISTENCE OF ADHD SYMPTOMS FROM CHILDHOOD THROUGH ADOLESCENCE IN A COMMUNITY SAMPLE OF BOYS AND GIRLS. *JR Holbrook, RE McKeown, SP Cuffe, M Bottai, B Cai (University of South Carolina, Arnold School of Public Health, Columbia, SC)

Attention-Deficit Hyperactivity Disorder (ADHD) is most common in childhood, but symptoms often persist into adolescence. This community-based study examined ADHD symptom persistence and factors associated with elevated symptom counts. Elementary school children in a SC school district were screened with the teacher report Vanderbilt ADHD scale. High scorers and a random sample of remaining children were invited for interviews. Data were collected on ADHD symptom presence via the Diagnostic Interview Schedule for Children. We interviewed 481 parents at baseline (children aged 5-13 years) and invited them to three waves of follow-up, with 352 parents (73%) seen at least once over the next 3-6 years. Descriptive statistics and models were fit using SUDAAN to account for statistical weights and sampling design. A majority of baseline participants had at least one inattentive or hyperactive/impulsive symptom. Inattentive and hyperactive/impulsive symptom counts ≥6 (part of ADHD criteria) were present in 10.4% (95% CI: 8.3-13.1) and 24.4% (95% CI: 20.4-28.9) of the sample, respectively. In two waves of follow-up data, mean inattentive symptom count did not change ($t=0.66$, $p=0.51$), while mean hyperactive/impulsive symptom count decreased through developmental stages ($t=4.73$, $p<0.001$). Impairment domains showed a similar pattern. Adding the third wave of follow-up data will allow marginal models to identify the rate of symptom count decline and changes in impairment domains while adjusting for significant symptom predictors. ADHD symptoms, especially inattentive symptoms, persisted into adolescence. Understanding the rate and pattern of decline in different groups is important for understanding the natural course of ADHD and for treatment planning.

0261-S

PARENT-CHILD RELATIONSHIPS IN THE PRESENCE OF BEHAVIORAL DISORDER. *JR Holbrook, LL James, RE McKeown, SP Cuffe, KA Fiegel, JMS Place, HL Ranhofer, RE Horne, KA Storck (University of South Carolina, Arnold School of Public Health, Columbia, SC)

Parents of children with behavioral disorders often find associated symptoms difficult to manage and experience distress. This study examines aspects of parenting related to Attention-Deficit Hyperactivity Disorder (ADHD) or Conduct Disorder/Oppositional Defiant Disorder (CD/ODD) and the comorbid condition in relation to parent-reported parental support, involvement, communication, and limit setting. Elementary school children in a SC school district were screened with the teacher report Vanderbilt ADHD scale. High scorers and a random sample of remaining children were invited for interview. Presence of behavioral disorders was determined via Diagnostic Interview Schedule for Children. The Parent Child Relationship Inventory (PCRI) provided scores on the four outcome domains. We interviewed 481 parents (children aged 5-13 years); 441 had complete data. Descriptive statistics and multiple linear regression models were fit using SUDAAN to account for statistical weights and sampling design. ADHD (prevalence 9.3%) and CD/ODD (10.6%) were highly comorbid (15.1% had at least one). Parents of children with behavioral disorder had lower (unfavorable) mean scores than controls in all PCRI domains. Comorbid ADHD and CD/ODD was negatively associated with all PCRI scores (all $\beta<-1.23$, all $p<0.01$); CD/ODD alone with parental support ($\beta=-3.16$, $p<0.01$), communication ($\beta=-1.63$, $p=0.02$), and limit setting ($\beta=-4.60$, $p<0.001$); and ADHD alone with parental support ($\beta=-1.74$, $p=0.03$) and limit setting ($\beta=-3.06$, $p<0.01$). Comorbid ADHD and CD/ODD is consistently associated with challenging parent-child relationships. Findings identify specific aspects that are problematic and may inform programs that target improved parent-child relationships.

0262

HOUSING FORECLOSURE ASSOCIATED WITH GREATER SYMPTOMS OF DEPRESSIVE, POST-TRAUMATIC STRESS, AND GENERALIZED ANXIETY DISORDERS IN A REPRESENTATIVE SAMPLE OF URBAN RESIDENTS DURING THE RECENT FINANCIAL CRISIS. *A Nandi, KM Keyes, KA McLaughlin, KC Koenen, M Uddin, AE Aiello, and S Galea (McGill University, Montreal, QC CANADA H3J1A7)

Millions of US households have been foreclosed on during the recent economic crisis. Although foreclosures, like other stressful life events, are posited to adversely affect mental health, we are not aware of a single longitudinal study that has examined the relation between foreclosure and mental health problems. We used data from a representative sample of 1054 participants enrolled in the Detroit Neighborhood Health Study (DNHS), assessed at baseline in September 2008-April 2009 and followed-up one year later, to assess the relation between foreclosure and symptoms of depressive, post-traumatic stress, and generalized anxiety disorders. 25 (2.4%) respondents reported a foreclosure in their household between baseline and follow-up. At follow-up, the mean number of symptoms of depression [mean=2.5, standard error (SE)=2.5 for foreclosed; mean=1.1, SE=1.8 for non-foreclosed], post-traumatic stress disorder (PTSD) (mean=39.7, SE=21.6 for foreclosed; mean=30.4, SE=13.8 fore non-foreclosed), and generalized anxiety disorder (GAD) (mean=6.2, SE=6.0 for foreclosed; mean=2.8, SE=4.7 for non-foreclosed) were greater among the foreclosed relative to the non-foreclosed. In multivariable linear regression models, exposure to foreclosure was positively associated with the mean number of symptoms of depression [Beta=1.2, 95% confidence interval=0.1, 2.2] after accounting for socio-demographic characteristics (i.e., age, sex, marital status, race, education, income, employment status), past-year exposure to stressors, and lifetime history of psychiatric disorders. A foreclosure is a protracted process encompassing a chain of events, from delinquency to the loss of a home, that may be differentially associated with health. Further work should identify the characteristics of the foreclosure process that are adversely associated with mental health, as well as the mechanisms that link them.

0263-S

A SYSTEMATIC SEARCH OF ADHERENCE TO SELF-CARE TOOLS IN STUDIES OF SUPPORTED SELF-CARE FOR SYMPTOMS OF DEPRESSION OR ANXIETY. *R. Simco. J. McCusker (McGill University, Montreal, Canada)

There is some evidence for the effectiveness of supported self-care for symptoms of depression and anxiety,[1,2] which are proposed as part of stepped care models for the care of depression and anxiety. [3,4] Though these interventions include a small amount of support, they are considered self-administered, in that the patient is responsible to both read and put into practice the techniques provided in the tools. However, few studies report on adherence to the tools provided. This presentation will present a review of 23 articles that described the adherence to self-care tools for symptoms of depression or anxiety. A systematic search of the literature (EMBASE, MEDLINE, CINAHL, PSYCINFO) found less than half of supported self-care studies reported adherence; while reporting was not standardized, 19 studies reported self-reported or direct observation “percent completion”, indicating the percent of participants who read or watched all of the tools offered, ranged from 20% to 93%. Only 7 studies attempted to measure patient characteristics predicting adherence. 1.Bower P, Richards D, Lovell K. The clinical and cost-effectiveness of self-help treatments for anxiety and depressive disorders in primary care: a systematic review. British Journal of General Practice. 2001; 51: 838-45. 2.McKendree-Smith NL, Floyd M, Scogin FR. Self-administered treatments for depression: A review. Journal of Clinical Psychology. 2003; 59 (3): 275-88. 3.Scogin FR, Hanson A, Welsh D. Self-administered treatment in stepped-care models of depression treatment. Journal of Clinical Psychology. 2003; 59(3): 341-9. 4.Cuijpers P, Schuurmans J. Self-help interventions for anxiety disorders: An overview. Current Psychiatry Reports. 2007; 9(4): 284-90.

0264

ALBERTA PHYSICAL ACTIVITY AND BREAST CANCER PREVENTION TRIAL: INFLAMMATORY MARKER CHANGES IN A YEAR-LONG EXERCISE INTERVENTION AMONG POSTMENOPAUSAL WOMEN. *CM Friedenreich, HK Neilson, CG Woolcott, Q Wang, FZ Stanczyk, A McTiernan, CA Jones, ML Irwin, Y Yasui, KS Courneya (Alberta Health Services, Calgary, AB, T2N 4N2)

Chronic, low-grade inflammation is a hypothesized biologic mechanism that could explain how physical activity influences breast cancer risk. We conducted a two-centered, two-armed randomized controlled exercise intervention trial in 320 postmenopausal, inactive women living in Calgary or Edmonton, Canada. They were randomized to an exercise intervention (n=160) or a control group (n=160). The intervention group was prescribed 45-min aerobic exercise sessions 5x/wk for 12 months; the control group maintained their usual activity level. No change in diet was made for either group. Fasting blood samples were collected at baseline, 6- and 12-months. Direct chemiluminescent immunoassays were conducted to measure high sensitivity C-reactive protein (hsCRP) and enzyme-linked immunosorbent assays were used to measure interleukin-6 (IL-6) and tumour necrosing factor-alpha (TNF -α). Intention-to-treat analyses were done using linear mixed model methods. Statistically significant differences in hsCRP were observed between baseline and 12-months for exercisers vs controls (treatment effect ratio=0.87, 95% Confidence Interval=0.79-0.96, p-value=0.005)but not for IL-6 or TNF- α. A statistically significant trend (p=0.02)in hsCRP with increasing adherence to the exercise intervention and a greater effect on the intervention on women obese at baseline (body mass index (kg/m2)≥30) (p=0.06). This trial found that a moderate-to-vigorous intensity exercise can result in statistically significant decreases in some inflammatory markers hypothesized to be related to breast cancer risk.

0265

LIFECOURSE PREDICTORS OF ADULT BREAST TISSUE DENSITY: THE NEWCASTLE THOUSAND FAMILIES STUDY. *MS Pearce, PWG Tennant, T Pollard, L McLean, B Kaye, L Parker (Newcastle and Durham Universities, UK; Dalhousie University, Canada)

Dense breast tissue patterns are a strong predictor of breast cancer risk. A range of factors at different stages of life have been linked to breast cancer risk, although rarely studied simultaneously. We aimed to study whether birth weight and factors later in life were associated with breast tissue density (BTD) in the Newcastle Thousand Families cohort, which originally consisted of all 1142 babies born in May and June 1947 to mothers resident in Newcastle upon Tyne in Northern England. At age 50, 574 study members completed a questionnaire. 199 of the 307 surviving women who returned these returned a further questionnaire asking for details of routine mammographic screening and for details of their reproductive and contraceptive history. BTD patterns were coded into Wolfe categories (lowest, low, high and highest risks). This was analysed, by ordinal logistic regression, in relation to a range of variables at different stages of life. Increased standardised birth weight [adjusted odds ratio, aOR= 1.42 (95% CI: 1.08 to 1.87), p=0.01] and not having entered menopause [aOR, compared to peri-menopausal women=3.99 (95% CI: 1.78 to 8.97), p=0.001] were both significant independent predictors of being in a higher BTD group. In contrast, increasing body mass index was independently predictive of being in a lower BTD group [aOR=0.85 (95% CI 0.80 to 0.91), p<0.001]. After adjustment for factors acting throughout life, we identified a significant association between increased birth weight, standardised for sex and gestational age, and increased BTD in adulthood. This is consistent with previous research suggesting that heavier babies have an increased risk of breast cancer in later life.

0266

RELATIONSHIP OF PERI-LESIONAL MAMMOGRAPHIC DENSITY TO PATHOLOGIC DIAGNOSIS. *G. Gierach, J. Johnson, B. Geller, P. Vacek, D. Weaver, R. Chicoine, J. Shepherd, J. Wang, S. Herschorn, L. Brinton and M. Sherman (National Cancer Institute, Bethesda, MD 20852)

Mammographic density (MD), which reflects the fibroglandular tissue content of the breast, is an established breast cancer risk factor. MD has typically been rated visually in broad categories or quantified as a percentage of the total breast area by computer-assisted technologies. These methods ignore spatial distribution of MD and breast thickness. We used a novel volumetric method to assess whether MD surrounding a suspicious lesion detected on mammography and/or sonography was related to pathologic diagnosis in a cross-sectional study of 465 women, ages 40 -65, who were clinically referred during 2007-2010 for an image-guided breast biopsy at the University of Vermont Breast Cancer Surveillance Consortium site. Peri-lesional and overall volumetric MD were assessed in craniocaudal views of pre-biopsy digital mammograms using single x-ray absorptiometry. Preliminary analyses of 308 women demonstrated that mean peri-lesional MD was 5.6% (95% confidence interval: 4.2-7.1%) higher than overall MD. In multivariate analysis of covariance models adjusted for age and body mass index, which are strongly and inversely related to MD, we found that the mean difference between peri -lesional and overall MD was 8.5% (95% CI: 4.8-12.3%) among the 49 women with incident breast cancer versus 5.1% (95% CI: 3.4-6.7%; p=0.10) among the 259 women with benign diagnoses. We suggest that large differences between peri-lesional and total volumetric MD may be associated with breast cancer. We are expanding the analysis to assess whether peri-lesional MD is a useful predictor of underlying pathology.

0267

ALCOHOL CONSUMPTION AND SURVIVAL AFTER BREAST CANCER. *PA Newcomb, E Kampman, A Trentham-Dietz, MN Passarelli, KM Egan, L Titus-Ernstoff, JM Hampton, WC Willett (University of Wisconsin Carbone Cancer Center, Madison, WI 53705)

Alcohol intake is consistently associated with increased risk of breast cancer (BC). In contrast, some studies have suggested improved BC survival in women who consumed moderate levels of alcohol prior to diagnosis. We assessed the association between pre- and post-diagnostic alcohol intake and BC survival in a prospective cohort of 19,967 women with incident invasive BC. These women, aged 20-79 years, were residents of Wisconsin, Massachusetts, or New Hampshire, and enrolled as cases in consecutive case-control studies from 1988-2006. All women reported on pre-diagnostic intake and a sub-sample of 5,669 reported on post-diagnostic intake. Women were followed-up for vital status through December 31, 2007. During an average 11.2 years of follow up, 2,992 deaths from BC occurred. Proportional hazards regression was used to estimate adjusted hazard ratios (HR) and 95% confidence intervals (CI). BC-specific survival was greater among women who consumed alcohol pre-diagnostically compared to nonusers (HR (CI) = 0.85 (0.75-0.97) for 3-6 d/wk, 0.85 (0.72-1.00) for 7-9 d/wk and 0.87 (0.74-1.01) for ≥ 10 d/wk; P-trend = 0.01). Reductions varied somewhat by type of beverage. This inverse association was limited to women with ductal BC (P-trend = 0.003), and was not apparent among those diagnosed with lobular tumors. Adjusting for pre-diagnostic alcohol intake, post-diagnostic alcohol consumption was also associated with improved survival from BC (P -trend = 0.04), as well as death from any cause (P trend < 0.001). Although consumption of alcohol increases BC risk, use of alcohol before or after diagnosis was associated with reduced risk of death from BC in this population-based study.

0268

CARDIOVASCULAR DISEASE SCREENING AMONG WOMEN WITH HISTORIES OF GESTATIONAL HYPERTENSION. *CR Robbins, PM Dietz, J Bombard, AL Valderrama (Centers for Disease Control and Prevention, Atlanta, GA 30341)

The association between hypertension during pregnancy (gestational-hypertension) and subsequent cardiovascular disease (CVD) is well established, but CVD screening practices among women with such histories is unknown. We used 2008 National Health Interview Survey data to estimate prevalence and adjusted odds ratios for recommended blood pressure screening within the past 2 years and cholesterol screening within the past 5 years by hypertension history among 11,970 women ≥20 years. We also examined health indicators (diabetes and CVD) and modifiable risk factors (smoking, obesity, physical inactivity) assessing differences in the distributions by hypertension history with Pearson chi square tests. Diabetes prevalence rates were patterned by hypertension history: 3% (95% confidence interval [CI] 3.0–4.0) with no hypertension, 13% (95% CI 8.6–17.8) with gestational-hypertension-only and 21% (95% CI 19.1–22.5) with other-hypertension ($p<.05$). Women with history of hypertension (gestational- or other-) had greater prevalence of obesity and physical inactivity than women with no hypertension ($p<.05$). Women with gestational-hypertension-only were no more likely to get recommended CVD screening than those with no hypertension, but women with history of other-hypertension had 2.5 greater odds of having their blood pressure checked (95% CI 1.8-3.4) and 2.4 greater odds of having their blood cholesterol checked (95% CI 2.0-3.0), controlling for potential confounders. Cholesterol screening rates in particular suggested missed opportunities: 72% of women with no hypertension (95% CI 70.4–73.2) and 75% (95% CI 68.5–81.1) with history of gestational-hypertension received recommended cholesterol screening, compared to 93% (95% CI 91.7–93.9) of women with history of other-hypertension ($p<.05$). CVD risk factors should be addressed with all women, but especially with those with history of any hypertension.

0269

THE ASSOCIATION OF BLOOD PRESSURE AND MORTALITY DIFFERS BY FUNCTIONAL STATUS IN OLDER LATINOS. *MC Odden, J Neuhaus, KE Covinsky, M Haan, (University of California, San Francisco, CA, 94143)

The relationship between blood pressure and mortality changes with age. We hypothesize that the association of blood pressure and mortality is modified by functional status in older adults. Study participants were 1,497/1,789 adults aged 60-101, from the Sacramento Area Latino Study on Aging. Functional status was measured by walking speed, and blood pressure was measured by automatic sphygmomanometer. There were 547 deaths from 1998 - 2009, and 46% were cardiovascular (CVD) (ICD10: I20-25, I50, I63, I64). Mean blood pressure levels varied across fast, medium, and slow-walkers: 136, 139, and, 140 mmHg (systolic), p=0.02, and 75, 76, and 77 mmHg (diastolic), p=0.08, respectively. After adjustment for potential confounders, higher systolic blood pressure was associated with increased mortality in fast walkers: hazard ratio (HR): 1.29 per 10 mmHg higher blood pressure (95% confidence interval: 1.07, 1.55), but not in medium: 1.00 (0.93, 1.08), or slow walkers: 0.94 (0.87, 1.01). We found similar results for CVD mortality; the adjusted HR was 1.31 (0.97, 1.76), 1.15 (1.02, 1.29), and 0.94 (0.84, 1.05) in fast, medium, and slow walkers, respectively. Higher diastolic blood pressure was associated with lower CVD mortality only in slow walkers; adjusted HR of 1.03 (0.51, 2.09), 1.03 (0.83, 1.28), and 0.75 (0.60, 0.93). The associations were similar when we excluded deaths in the first year of follow-up, and when we included antihypertensive use in the models. In high functioning older adults, elevated systolic blood pressure is a risk factor for CVD and all-cause mortality. In low-functioning adults, higher diastolic blood appears to be associated with lower mortality and may be a marker for physiologic vigor.

0270

FOOD GROUP AND NUTRIENT DIETARY INTAKES BY HISPANIC SUBGROUPS AMONG THE HCHS/SOL PARTICIPANTS. Siega-Riz AM*, Sotres-Alvarez D, Ayala GX, Ginsberg M, Himes JH, Liu K, Loria CM, Mossavar-Rahmani Y, Rock CL, Rodriquez B, Shor-Posner G, Van Horn L (UNC Chapel Hill, NC 27599)

Hispanic HANES, conducted in the 1980s, yielded extensive data on the lifestyle behaviors of Hispanic subgroups and their association with health outcomes. The Hispanic Community Health Study/Study of Latinos (HCHS/SOL) currently underway is a cohort study recruiting participants 18-74 yrs of age from 4 cities (Miami, Bronx, Chicago, and San Diego) with a goal of 16,000 participants. In this study we estimate the distribution of usual intakes (both food groups and nutrients) using a recent advancement in statistical methodology for estimation that accounts for the correlation between probability of intake and quantity of intake. This analysis describes results from 2168 participants who have provided 2 24-hr dietary recalls and completed a food propensity questionnaire adapted specifically for this population. The analyses adjusted for age and gender. Overall, Cubans (n=225) had higher intakes of total energy, macronutrients, folate and iron compared to the other subgroups. Dominicans (n=135) had lower intakes of total energy, fat, and calcium. Puerto Ricans (n=432) had lower intakes of carbohydrates, protein, folate, iron, vitamin A and fiber. Mexican Americans (n=952) had higher intakes of fiber and vitamin C. Food group data reflect nutrient intake with Cubans having higher intakes of refined grains, vegetables, red meat, oils and fats and Dominicans having higher intakes of fruits and poultry while Puerto Ricans had lower intakes of fruits and vegetables. Central/South Americans (n=424) are characterized by a higher intake of sweetened beverages compared to other subgroups. These variations in diet may help explain diet-related differences in health outcomes observed among Hispanics/Latinos.

0271-S

THE ASSOCIATION OF SOCIAL STRAIN AND C-REACTIVE PROTEIN AMONG PREGNANT AFRICAN AMERICAN WOMEN. *D. Johnson (Henry Ford Hospital, Detroit, MI, 48202), R. Peters (Wayne State University, Detroit, MI, 48202), A. Cassidy-Bushrow (Henry Ford Hospital, Detroit, MI, 48202)

Background: Chronic stress may lead to a dysfunctional inflammatory response. Increased C-reactive protein (CRP), a marker of systemic inflammation, is associated with prematurity and psychosocial stress during pregnancy. Residents in disadvantaged neighborhoods with decreased socioeconomic status (SES) and higher social strain experience more chronic stress. African Americans (AA) have more inflammation than other racial groups. The relationship between social strain and inflammation in pregnant women is unknown. Our purpose was to determine the association between social strain and CRP among pregnant AA women. **Methods**: February 2009-June 2010, 203 AA women in the 2nd trimester of pregnancy enrolled. Social strain was measured using: MacArthur Scale of Subjective Social Status (SSS) (self-reported) and the Messer Index of Neighborhood Deprivation (ND) (census-level). CRP was measured using standard methods. Linear regression models were fit to estimate the association of social strain measures with log-transformed CRP. **Results:** Participants were young (26.2±6.0 years), mostly high school graduates (84%), predominantly low-income (Median=$31,781) and obese (mean pre-pregnancy body mass index (BMI)=30.1±SD kg/m^2. Mean CRP was 4.4±3.1. ND scores ranged from -1.1 to 3.3, suggesting relatively deprived neighborhoods. The mean SSS score was 5.4±2.0 suggesting equal social status to their community. Neither ND nor SSS was associated with CRP (p=0.686 and p=0.778) after adjusting for age, education, income, and pre-pregnancy BMI. Women with higher pre-pregnancy BMI were more likely to have higher CRP levels (p<0.0001). **Conclusions**: In our sample we detected CRP levels consistent with moderate cardiovascular disease risk. As expected, BMI was associated with increased inflammation. We did not detect an association between social strain and inflammation however suggesting additional work needed examining other social status constructs and biomarkers of inflammation.

0272

THE PARADOX OF HYPERTENSION CONTROL IN WOMEN AND MEN: FINDINGS FROM THE CANADIAN HEALTH MEASURES SURVEY. *K. Wilkins (Statistics Canada, Health Analysis Division, Ottawa, ONT, Canada)

Consistent with observations elsewhere, Canadian survey findings indicate that awareness of hypertension (HPT) is significantly more common in women (86%) than in men (80%), but pharmaceutical treatment of the condition is less successful in women. In a preliminary investigation of the difference in treatment outcomes between the sexes, patterns in anti-hypertensive use were analyzed for adults with HPT (measured systolic blood pressure (BP) ≥140 mm Hg or diastolic BP ≥90 mm Hg, or self-reported recent medication use for high BP). Data were from the 2007-2009 Canadian Health Measures Survey, which involved a household interview and physical measures. The data were weighted to be representative of the Canadian population, and analyzed using SAS and SUDAAN. Anti-hypertensives used were grouped into four therapeutic categories: thiazides, beta-blockers, angiotensin-convertin enzyme (ACE) inhibitors, and calcium channel blockers. In persons using any anti-hypertensive drug, uncontrolled HPT was nearly twice as frequent in women (21%) as in men (11%). Thiazide use (alone or in combination with other medications) was significantly more common in women (42%) than in men (27%). Men were more likely to be taking beta-blockers (34%) than were women (23%). Differences in the use of calcium channel blockers or ACE inhibitors were not statistically significant. A higher percentage of males (50%) than females (44%) reported using more than one anti-hypertensive drug. In such persons, the percentage of uncontrolled BP was significantly higher in women (26%) than in men (11%). Differences observed between the sexes in therapeutic management of HPT should be further studied for their possible association with differences in clinical outcomes.

0273

PARENTAL OCCUPATIONAL EXPOSURE TO PESTICIDES AND CHILDHOOD BRAIN TUMOR RISK. *E. van Wijngaarden, S. Mlynarek, K. Thevenet-Morrison, G.R. Bunin (University of Rochester, Rochester, NY 14642)

Epidemiologic studies have shown suggestive associations of childhood brain tumors in relation to parental farm residence, pesticide use, and contact with farm animals. We examined the risk of childhood brain cancer in relation to parental exposure to classes of pesticides among 318 children diagnosed with medulloblastoma/primitive neuroectodermal tumors (MB/PNET) before 6 years of age in the United States and Canada between 1991 and 1997. Controls were selected by random digit dialing and were individually matched to cases by race, age, and geographic area. 2,048 jobs in the fathers' work history and 463 jobs held by mothers during pregnancy were assigned a probability and intensity of exposure to insecticides, herbicides, and fungicides by two expert raters. In addition, jobs were assigned exposure (any vs. none) to animal manure, farm animals, pigs and hogs, poultry, pets, and raw meat. Finally, 16 specific job tasks (e.g., welding and painting) were identified based on participants' responses in job-specific modules. None of the specific pesticide classes were associated with elevated MB/PNET risk, with odds ratios (OR) around the null. ORs differed little between expert raters. Similarly, there were no excess risks in relation to exposures to animals or animal products. Finally, ORs were elevated for three job tasks (working with plastics and sandblasting among fathers, and working with X-rays for mothers) but they were based on very small numbers and not statistically significant. Overall, our data do not support a role of parental exposure to pesticides, animals or animal products, or specific job tasks in the etiology of childhood MB/PNET.

0274

EARLY-LIFE EXPOSURE TO DIAGNOSTIC RADIATION AND ULTRASOUND SCANS AND RISK OF CHILDHOOD CANCER: A CASE-CONTROL STUDY. Preetha Rajaraman*, Jill Simpson, Gila Neta, Amy Berrington de Gonzalez, Pat Ansell, Elaine Ron, Eve Roman. (Division of Cancer Epidemiology and Genetics, National Cancer Institute, NIH, DHHS, Bethesda, MD, USA; University of York, York, UK)

Exposure to diagnostic radiographic examinations in utero has been associated with increased risk of childhood cancer, but the relationship is less clear for post-natal diagnostic radiation exposure. Results of existing studies are mostly based on data from parent interviews, which may be prone to misclassification. Using data abstracted from medical records, we examine childhood cancer risks associated with in utero and early infant (age 0-100 days) exposure to diagnostic radiation and ultrasound scans in 2,690 childhood cancer cases and 4,858 age-, sex- and region- matched controls from the United Kingdom Childhood Cancer Study (UKCCS). Results from logistic regression models conditioned on matching factors, and adjusting for maternal age and child birth weight indicated no evidence of increased risk of childhood cancer with exposure to in utero ultrasound scans. There was some indication of a slight elevated risk following in utero exposure to x-rays for all cancers (OR=1.14, 95% CI: 0.90 to 1.45) and leukemia (OR=1.36, 95% CI: 0.91 to 2.02), but this was not statistically significant. Exposure to diagnostic x-rays in early infancy (0-100 days) was associated with small, non-significant excess risks for all cancers and leukemia as well as a statistically significant increased risk of lymphoma (OR=5.14, 95% CI: 1.27 to 20.78) based on small numbers.

0275

ARE CHILDREN WITH BIRTH DEFECTS AT GREATER RISK OF DEVELOPING CHILDHOOD CANCERS? SE Carozza*, PH Langlois, and EA Miller (Oregon State University, Corvallis, OR 97331)

Background: Presence of birth defects may influence risk of childhood cancer development through shared genetic and/or environmental factors, through changes in organ structure or function, or through lifestyle adaptations related to the malformation. Methods: We conducted a retrospective cohort record-linkage study which included Texas children born between 1996 and 2005, with exposed subjects (i.e. with birth defects) identified through the Texas Birth Defects Registry and non-exposed subjects identified through birth certificate data linkage. Using probabilistic record linkage with Texas Cancer Registry data, we identified which children in the cohort developed cancer. Over 3 million records were included in the study; 115,686 subjects had one or more birth defects and 2,351 total cancer cases were identified. Incidence risk ratios (IRR) and 95% confidence intervals (CI) were calculated to evaluate risk. Results: Overall, children with a birth defect had a 3-fold increased risk of developing cancer during childhood (IRR=3.05, 95% CI:2.65,3.50). By childhood cancer group, germ cell tumors (IRR=5.19, 95% CI:2.67, 9.41), retinoblastomas (IRR=2.34, 95% CI:1.21, 4.16) and soft-tissue sarcomas (IRR=2.12, 95% CI:1.09, 3.79) had the highest risk estimates. All birth defect groups except for gastrointestinal and musculoskeletal had a 2- to 3-fold (or greater) increased cancer risk. Risk was also greater among infants under age 1 and for children with multiple birth defects. Conclusions: These results point to a strong relationship between birth defects and development of cancer in childhood. Untangling this relationship could lead to a better understanding of the genetic and environmental factors which affect both conditions.

0276

A SIBLING-AUGMENTED CASE-ONLY DESIGN FOR ASSESSING MULTIPLICATIVE GENE-ENVIRONMENT INTERACTION. *C.R. Weinberg, M. Shi, D.M. Umbach (National Institute of Environmental Health Sciences, RTP, NC)

Complex diseases arise through joint actions of environmental factors and genetic susceptibility variants. Family-based designs protect analyses of genetic effects from bias due to population stratification. Investigators have assumed that this robustness extends to assessments of interaction. Unfortunately, this assumption is not true for the common scenario where the genetic variant under study is related to risk through linkage with a causative allele. Lack of robustness also plagues other methods used for GxE interaction. When testing against a multiplicative joint effects model, the case-only design offers good power but is invalid if genotype and exposure are correlated in the source population. Four mechanisms can produce genotype-exposure dependence: 1. Subpopulations vary in both ancestry and cultural traditions; 2. Family history of disease causes people to avoid exposures perceived as risky; 3. Genotype influences propensity for exposure; or 4. Selective attrition produces correlation in older age strata. We propose a sibling-augmented case-only design, which is robust against the first two mechanisms and is therefore valid for study of a young-onset disease when genotype does not influence exposure. Our proposed design ascertains genotype and a dichotomous exposure on cases and exposure for one or more siblings selected randomly from the case's unaffected siblings. A logistic model permits testing of the exposure main effect and GxE interaction. We study likelihood-based testing and estimation for this design in comparison to competitors and we relate the approach to previously proposed robust analyses of interaction based on tetrads or on disease-discordant sib-pairs.

0277-S

TWO-PHASE SAMPLING FOR CORRELATED RESPONSES. *Michael McIsaac and Richard Cook (University of Waterloo)

Studies involving two-phase sampling schemes have seen widespread use in epidemiology. Much of this work, however, has been restricted to the case of responses which are independently distributed given covariates. The purpose of this talk is to describe a biomarker study in rheumatology in which interest was in assessing the effect of biomarkers on the rate of progression of joint damage in psoriatic arthritis. The response of interest was joint damage score for each of three locations of the spine, making a clustered response. The damage status and auxiliary covariates were available at phase one of this study for patients in a clinic cohort. The biomarkers were expensive to assess but stored sera could be used for their evaluation. It is, therefore, beneficial to determine how to optimally select sera for biomarker assessment given the available phase-one data. Maximum likelihood and estimating function approaches are considered for analysis, and for each approach the optimal strategies for sampling were derived. The precision of the estimators resulting from these optimal two-phase sampling strategies are compared those resulting from simple random sampling and a balanced sampling design.

0278

GENE BY ENVIRONMENT INTERACTION: BEST STRATEGIES. *Irva Hertz-Picciotto (University of California, Davis, CA)

A persuasive argument for studying geneXenvironment interactions is an enhanced power to identify associations of a health outcome with both the gene and the environmental exposure, as compared with separate studies examining marginal effects for each factor separately. It is, however, widely assumed that pursuit of interactions should be limited to exposures and/or genes that show an overall (marginal) effect in a population. The wisdom in each of these contradictory perspectives hinges on the state of nature, namely, the degree to which underlying interactions actually occur even when marginal associations are unremarkable. While it is difficult to surmise the frequency of such situations, conditions that produce them can be defined. Key factors are: (i) prevalence of gene; (ii) prevalence of exposure; (iii) association between gene and exposure; (iv) independent effect of gene (absent the exposure); (v) independent effect of exposure (absent the high risk polymorphism); and (vi) magnitude of the synergistic effect from joint presence. This presentation demonstrates results of a simulation study demarking the range of conditions most likely to lead to the scenario of small marginal effects, but substantial increased risk conferred by joint exposure. Several examples from autism research will provide context. A quantitative understanding of how these scenarios arise can be used to assess plausibility and hence best strategies. If these occurrences are rare, then an optimal approach could begin with separate searches for high-risk genes and environmental factors. If common, then GxE interactions would optimally be evaluated early on, for public health purposes, since modification of diet, lifestyle, and toxic exposures is likely to remain more feasible than modification of the genome for the foreseeable future.

0279

METHODS FOR ANALYZING SPARSE DATA IN GENETIC EPIDEMIOLOGIC STUDIES: AGNOSTIC AND HIERARCHICAL MODELING. *J.S. Witte, T.J. Hoffmann, N. Cardin (University of California, San Francisco, CA, 94158)

Epidemiologic studies are increasingly incorporating genetic measures as potential risk factors. Such studies have rapidly expanded from focused candidate gene efforts to genome-wide association studies to sequencing projects. This growth has paralleled our burgeoning understanding of the human genome and the rapid development of new genomic technologies. These studies, however, can generate sparse data: genetic variants that are rarely observed. How to appropriately analyze these data remains unclear; this issue is similar to that faced by any epidemiologic study of uncommon exposures. One solution is to simply combine the genetic variants together--based on existing information such as their functionality--and analyze them as a single group. But this requires one to make some assumptions about what to aggregate. Instead, we propose three approaches to most efficiently group rare variants. First, using multiple possible groupings based on existing information such as whether a variant changes a protein. Second, applying a hierarchical model where a prior distribution is placed on the genetic variants' potential associations to compromise between treating them singularly versus collapsing them together. The third is an agnostic step-up approach that determines an optimal grouping of rare variants analytically. We evaluated these approaches by simulation, and found that using prior information to group rare variants works well when there is reasonable existing information while the step-up approach works well across a broad range of plausible scenarios. These findings provide guidance for the legion of epidemiologists who are adding genetic information into their ongoing and new studies.

0280

DOSE-RESPONSE ANALYSIS IN EPIDEMIOLOGY FOR COVARIATES WITH SPIKE AT ZERO. Heiko Becher*[1], Eva Lorenz[1], Patrick Royston[2], Willi Sauerbrei[3] ([1]University of Heidelberg, Heidelberg, Germany, [2]MRC Clinical Trials Unit and University College, London, England, [3]IMBI Freiburg University Medical Center, Germany)

A common goal for a quantitative variable X is to assess the dose-response relationship. Often, these have a non-standard distribution. A common situation is that a proportion of individuals have exposure zero, and the others have some continuous distribution. We call this a "spike at zero". Typical examples include occupational exposures or tobacco consumption. A common procedure is to classify exposure into several groups with the unexposed as the baseline category. However, categorization results in biologically implausible step functions and raises the issue of the number of cutpoints and where to place them. Fractional polynomials (FP) have shown to be useful fo assessing dose-response relationships. Recently, we have suggested a method based on FPs to deal with the above situation (Royston, Sauerbrei, Becher, 2010). A binary variable for the unexposed fraction is added to an FP model and a two-stage procedure is used to assess whether the binary variable or the FP part is required to fit the data. The FP procedure generally requires to add a constant c to X to ensure positivity of all observations in order to allow all transformations as required in the procedure, for example the log or the inverse function. Here, we modify the procedure such that adding an arbitrary constant is no longer required. We present the properties of this procedure theoretically and show that under realistic situations, the inclusion of a binary variable XE denoting the binary exposure status (yes-no) plus a specific function of the continuous part of the variable yields the correct dose-response curve. For example, if the continuous part is log-normal distributed, the log-transformed variable must be included into the model. Finally, we illustrate the procedure and with data from two case-control studies on lung and laryngeal cancer and compare the results both of the previously suggested and the new modified procedure.

0281

LUNG CANCER RISK IN PAINTERS: RESULTS FROM THE SYNERGY POOLED ANALYSIS.*Neela Guha, Ann Olsson, Veronique Benhaim-Luzon, Kurt Straif on behalf of the SYNERGY study group (IARC, Lyon, France 69008)

The International Agency for Research on Cancer classified "occupational exposure as a painter" as carcinogenic to humans based on increased risks of cancers of the lung, bladder, and mesothelioma. Identifying the specific agent(s) contributing to the elevated risk of lung cancer has been difficult since painters are exposed to a mixture of known and suspected carcinogens, though these agents may be inferred through analyses by painter type. Data from the SYNERGY study, a pooled effort of 11 case-control studies in European countries and Canada, were used to evaluate the risk of lung cancer associated with ever working as a painter, duration of employment, and type of painter (classified according to ISCO and ISIC codes). Detailed individual data on smoking for 13389 lung cancer cases (462 painters) and 16384 age- and sex-matched controls (383 painters) were available. Multivariable logistic regression models were adjusted for age, gender, centre, tobacco pack-years, time since smoking cessation and lifetime occupational exposures to asbestos, crystalline silica, polycyclic aromatic hydrocarbons, chromium and nickel as assessed by a job-exposure matrix. An odds ratio of 1.18 (95% CI, 1.00-1.39) was associated with ever working as painter and the risk of lung cancer increased with increasing years of employment (p-value for trend = 0.02). Ever spray and repair painters experienced the highest lung cancer risk among all painters. Exposure-response trends were present for construction and repair painters. Results were similar by histological type and when restricted to never smokers. These results corroborate the evidence of an increased risk of lung cancer among painters and results by type of painter may help in identifying causative agents.

0282-S

OCCUPATIONAL EXPOSURE TO ENDOCRINE DISRUPTING CHEMICALS AND THE RISK OF TESTICULAR CANCER. S. de Wit, R. Bretveld, L. Wijers, C. van Veldhoven, M. van Tongeren, M. van Gelder, and *N. Roeleveld (Department of Epidemiology, Biostatistics and HTA, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands)

The worldwide incidence of testicular cancer (TC) doubled over the past 50 years and endocrine disrupting chemicals (EDCs) are thought to play a role in this increase. The objective of this case-referent study was to assess the effects of occupational exposure to EDCs on the development of testicular cancer (TC). TC cases were approached through the Comprehensive Cancer Centre East (IKO) in the Netherlands, while referents were men whose female partner delivered a child in the Radboud University Nijmegen Medical Centre. Cases and referents were asked to fill out a questionnaire to assess current and past exposure, including job history. A Job Exposure Matrix (JEM) was used to determine occupational exposure to ten different groups of EDCs. A total of 261 cases and 670 referents completed the questionnaire of which 63.2% experienced occupational exposure to EDCs. Adjusted odds ratios (ORs) with 95% confidence intervals (CIs) were increased for the JEM summary score (OR=1.4, 95%CI 1.0-2.1) and for 7 of the 10 EDC groups: polycyclic aromatic hydrocarbons (OR=1.5, 95%CI 0.8-2.6), polychlorinated organic compounds (OR=3.3, 95%CI 1.3-8.3), pesticides (OR=1.7, 95%CI 1.0-2.7), phthalates (OR=1.5, 95%CI 1.0-2.4), organic solvents (OR=1.4, 95%CI 0.8-2.5), alkylphenolic compounds (OR=1.6, 95%CI 1.0-2.5), and metals (OR=1.4, 95%CI 1.0-2.1). There seems to be an association between testicular cancer and occupational exposure to certain groups of endocrine disrupting chemicals, mainly occurring among farmers, carpenters, and electricians, but most risk estimates are small to moderate.

0283-S

MORTALITY EXPERIENCE OF WORKERS EMPLOYED AT A SPECIALTY-CHEMICALS RESEARCH FACILITY. *Laura L.F. Scott, Jeffrey H. Mandel, Gurumurthy Ramachandran, Yu Cheng Chen, Bruce H. Alexander (University of Minnesota School of Public Health, Division of Environmental Health Sciences, Minneapolis, MN)

To evaluate a potential excess of brain cancer in employees of a specialty-chemicals research and development facility, we conducted a retrospective mortality study on a cohort of 5,284 workers employed from 1963 to 2007. A nested case-control study was conducted to evaluate brain cancer risk associated with specific job and chemical exposures. Chemicals of interest were incorporated into the assessment on the basis of their ability to penetrate the blood-brain barrier, their carcinogenic capabilities, and/or their uniqueness to the facility. Five chemicals were ultimately selected including acrylates, bis (chloromethyl) ether, chloromethyl ether, isothiazolones, and nitrosoamines. Standardized mortality ratios (SMRs) and ninety-five percent confidence intervals (CIs) were estimated in reference to Pennsylvania rates. Conditional logistic regression models estimated risk with regard to each chemical exposure. A total of 486 deaths, including 14 brain cancer deaths were observed; all brain cancer cases were male. All-cause mortality was lower than expected (SMR=0.51, 95% CI=0.47-0.56); however, brain cancer mortality was elevated (SMR=2.02, 95% CI=1.11-3.40). With respect to work history and specific chemical exposures, there was no discernible pattern that could explain the brain cancer cases. Although an excess of brain cancer deaths among male employees of this facility was observed, no clear occupational etiology was identified.

0284-S

RACISM AND ADVERSE BIRTH OUTCOMES AMONG ROMA IN THE WESTERN BALKANS: USING QUALITATIVE DATA TO DEVELOP A CONCEPTUAL FRAMEWORK OF CAUSATION. *T. Janevic, P. Sripad, E. Bradley (Yale University, New Haven, CT, 06520)

Roma are the largest minority group in Europe and experience widespread racism and health disadvantage. Using qualitative data from Serbia and Macedonia, we developed a conceptual framework hypothesizing how three levels of racism—institutional, personal, and internalized—are associated with adverse birth outcomes among Romani women. Eight focus groups of Romani women aged 18-39 (n=71), as well as in-depth semi-structured interviews with gynecologists (n=8), and key informants from NGOs (n=8) were conducted on health knowledge and behaviors during pregnancy, living conditions and social environment, and experiences with the health care system. Transcripts were coded and emergent themes were used to construct hypotheses about the mechanisms by which racism increases the risk of adverse birth outcomes. Mechanisms by which institutional racism was hypothesized to affect adverse birth outcomes included: 1) social environment and resources, (segregation, social connections, patriarchal ideology, lack of social support), 2) health system accountability (lack of redress), 3) financial issues (lack of health insurance, informal payments, inability to buy medications), and 4) education (lack of health knowledge, illiteracy). Mechanisms by which personal-level racism affected adverse birth outcomes included: 5) perceptions and interactions with health providers and other non-Roma (perceived discrimination). Mechanisms by which internalized racism affected adverse birth outcomes included: 6) psychological factors (self-efficacy, fear). Biological mechanisms hypothesized from qualitative data were high rates of untreated vaginal infections, high rates of smoking, anemia, and physiological response to stress. The importance of qualitative data in designing global epidemiologic studies of racism and inequalities in adverse birth outcomes is discussed.

0285-S

RESIDENTIAL CONTEXT BUFFERS AGAINST PSYCHOSIS: MULTI-LEVEL INVESTIGATION OF ETHNIC MINORITY GROUPS LIVING IN ENGLAND. *J. Das-Munshi, Bécares L, Boydell J, Dewey ME, Morgan C, Stansfeld SA, Prince MJ (Institute of Psychiatry, King's College London)

Objectives: Using a nationally representative dataset from England, to: 1. Determine if people who live in areas of lower own-group ethnic density are more likely to report psychotic symptoms. 2. Assess whether the individual-level associations of discrimination, chronic strains, and social support with psychosis are modified by area-level ethnic density. Methods: Multi-level analysis of community-level data (n=4281) examining associations of own group ethnic density with the reporting of psychotic symptoms, in five of the main ethnic minority groups living in England (Irish, Indian, Pakistani, Bangladeshi and Black Caribbean people), and a White British group. Results: Per 10% point reduction in own-group ethnic density, Indian people were 1.38 times more likely to report psychotic symptoms (95% CI: 1.02 to 1.86; p=0.03 (trend)) and the total ethnic minority sample were 1.07 times more likely to report psychotic symptoms (95% CI: 1.01 to 1.14; p=0.03 (trend)). Similar trends were noted in all other ethnic minority groups. People living in areas of lower own-group density reported greater discrimination, poorer social support and greater chronic strains; all of which were associated with an increased risk of psychosis. Residential ethnic density also modified associations with psychosis risk as people reporting good social support enjoyed a much reduced risk of psychosis from living in areas of higher own-group density. Conclusions: Ethnically dense neighbourhoods may 'buffer' ethnic minority residents from social risk factors. Both individual and contextual factors should be considered in the aetiology of psychosis.

0286

CUMULATIVE NEIGHBORHOOD RISK AND ALLOSTATIC LOAD IN ADOLESCENTS. *K.P. Theall, S. Drury, R. Scribner (Tulane University, School of Public Health and Tropical Medicine, New Orleans, LA)

The mechanisms by which life stress affects human biology and is translated into negative health outcomes is not well understood. Accumulating evidence suggests an important role of biologically-mediated pathways such as allostatic load (AL)—cumulative wear and tear on physiological systems and organs due to chronic stress. Differential exposure to adverse environments may play an important role in producing and maintaining health disparities, and the cumulative impact of these conditions may be more important than a singular exposure. The objective of this study was to examine the impact of cumulative neighborhood risk exposure on AL among adolescents, and to determine whether this association is modified by race/ethnicity or sex. We conducted multilevel analyses, weighted for sampling, among 9887 adolescents (age 12 to 20) in the georeferenced National Health and Nutrition Examination Survey, 1999-2006. Even after accounting for cumulative household risk, adolescents living in neighborhoods with greater cumulative risk based on social and physical indicators had significantly higher AL based on available markers, and cumulative neighborhood risk explained a substantial proportion of the variance in AL (intraclass correlation coefficient = 3.8%). We also identified significant effect modification by both sex and race/ethnicity, with a greater impact of cumulative risk on AL for boys (β=0.0759, p=0.003) than girls (β=0.0021, p=0.7246) and for non-Hispanic whites (β=0.0817, p=0.0087) than minority groups (β=0.01943, p=0.2795). Differences in AL among adolescents may be partially explained by cumulative neighborhood risk, and differentially for sex and race/ethnic groups. Findings are consistent with the hypothesis that neighborhood experiences may affect a range of biological systems, resulting in cumulative differences in risks that in turn may affect health outcomes.

0287

SELECTION BIAS IN HEALTH INEQUALITIES RESEARCH. *LD Howe, B Galobardes, K Tilling, DA Lawlor (University of Bristol, UK BS8 2BN)

Scandinavian studies exploiting record linkage have shown that although cohort members tend to be healthy and affluent compared to the whole population, exposure-outcome associations are not biased by this selection, at least for certain well established relationships. It is not known whether this is true when estimating socioeconomic inequalities in health. Individuals of lower socioeconomic position (SEP) may be less likely to consent to participation at the start of a cohort study and more likely to drop out over time. We assess whether socially-patterned drop-out from a cohort affects the estimation of health inequalities using data from the Avon Longitudinal Study of Parents and Children. In this UK cohort, children of higher SEP (measured by maternal education) are more likely to continue participating as they get older. We estimate SEP inequalities in maternal and early life outcomes for which we have data on almost the whole cohort (birth weight and length, breastfeeding, preterm birth, maternal obesity and smoking during pregnancy, N~12000). We then restrict analyses to individuals who participated in subsequent data collections when the child was aged 9 (N~7000) and aged 15 (N~5000). Drop-out was related to SEP and outcomes, so under missing data theory analysis may be biased. For each of the 10 outcomes, SEP inequality was greatest in the full sample; the more selected the sample became, the more the inequality was underestimated; eg mean birthweight difference between highest and lowest maternal education was 116g (95% confidence interval 78,153) in the full sample, but only 93g (95%CI 45,141) and 62g (95%CI 5,119) in those attending at ages 9 and 15 respectively. We conclude that selection bias in cohorts may result in underestimation of health inequalities.

0288

COMPARING OBSERVED VERSUS EXPECTED TUBERCULOSIS CASES. *C.A. Winston, T.R. Navin, and J. E. Becerra (Centers for Disease Control and Prevention [CDC], Atlanta, GA 30333)

From 2000–2008, the average annual decline in tuberculosis (TB) case rate in the United States was 3.8%. However, in 2009, the decline was 11.4%, the largest single-year decrease since national TB surveillance began in 1953. To investigate the 2009 decline, we analyzed TB cases reported from 2000–2009 to the CDC's National Tuberculosis Surveillance System. We tabulated observed TB case counts by patient and clinical characteristics. We log-transformed counts for 2000–2008, and performed linear regression to calculate expected cases and 95% prediction intervals (PI) for 2009. Observations outside 95% PI were considered statistically significant. We obtained denominators from the U.S. Census Bureau Current Population Survey and calculated expected TB case rates and 95% PI using Poisson regression. The overall decline in reported TB cases in 2009 was 7.9% greater than expected. Among foreign-born persons, declines were greatest among persons who had been in the United States less than 2 years; among U.S.-born persons, declines were greatest among homeless persons and substance users. According to Census data, the population of U.S.-born persons in the United States increased 1.1% in 2009 compared with 2008; in contrast, the population of foreign-born persons fell 1.6% during this time. The rate of TB in 2009 among U.S.-born persons was 1.7, compared with an expected 1.9, per 100,000 persons (95% PI, 1.8 to 1.9). Among foreign-born persons, the rate of TB in 2009 was 18.7, compared with an expected 19.3, per 100,000 persons (95% PI, 18.8 to 19.9). Calculating observed versus expected provided effective epidemiologic assessment of unexpected TB declines, accounting for trends and population changes.

0289-S

IMPACT OF TUBERCULOSIS ON MORTALITY AMONG HIV-INFECTED PATIENTS RECEIVING ANTIRETROVIRAL THERAPY. *R. Chu, E. Mills, J. Beyene, C. Bakanda, J. Nachega, L. Thabane (McMaster University, Canada, L8N 3Z5; BC Centre for Excellence in HIV/AIDS, Canada, V6Z 1Y6; The AIDS Support Organization, Uganda; Stellenbosch University, South Africa, 7602)

To estimate the poorly understood effect of tuberculosis (TB) on all-cause mortality among HIV positive patients who received antiretroviral therapy (ART), we conducted a prospective cohort of 15,225 adult patients who initiated antiretroviral therapy between January 2004 and June 2009 at ten districts in Uganda. We estimated the relative risk (RR) and odds ratio (OR) of mortality relative to TB at the initiation of ART via four propensity score (PS) methods (including PS matching, PS stratification, PS as regression covariate, and PS weighting) to control for confounding bias. Conventional regression models were fit for sensitivity analysis. About 7.7% (1,177/15,225) patients were diagnosed having TB at ART initiation. TB patients were more likely to be male, suffer from AIDS, and have lower CD4 cell count and weaker immune system at baseline. The percentages of death were 10.8% (95% confidence interval [CI]: 9.0% – 12.5%) and 6.5% (95% CI: 6.1% – 7.0%) for those with and without TB, respectively. The adjusted RR for mortality comparing TB and no-TB patients on 1,173 propensity score matched pairs (RR=1.38, 95% CI: 1.07 – 1.79) was clinically relevant and less marked relative to the crude estimate (RR=1.65, 95% CI: 1.38 – 1.96). Other propensity score methods and the conventional regression models produced similar results. In conclusion, after controlling for important confounding variables, HIV patients who had TB at the initiation of ART had a marginally higher risk of overall mortality.

0290

ENVIRONMENTAL THREATS AND CHILDHOOD FEVER DURING THE RAINY SEASON IN DAKAR-SENEGAL: INTEREST IN USING HIERARCHICAL MODELS. *S. Dos Santos, I. Rautu, J-Y. Le Hesran, M. Diop, A. Mourtala, A. Ndonky, R. Lalou (Institut de Recherche pour le Developpement, Dakar, Senegal)

In African cities, a major cause of childhood fevers are water-related diseases, such as typhoid, or water-related vector, in particular mosquito-borne pathogens such as malaria, dengue and other arbovirus diseases. Apart from the individual and household characteristics, environmental factors can have an influence on those fevers especially during the rainy season. A household survey conducted in 2008 in Dakar, the capital-city of Senegal, was completed by a community questionnaire on environmental threats that could be factored into multilevel analyses. Using a data set of 7,300 children from 3,000 households dispatched within 50 neighborhoods, a three-level modeling process is presented. Recent fever incidence is modeled level by level according to individual factors (sex, age), to household factors (socio-economic variables) and to environmental factors at the neighborhood level (floods, shrub lands, water bodies, solid waste and wastewater management facilities, etc.). Rates of recent fever varied substantially from one neighborhood to another, ranging between 14 and 37%. The hierarchical organization of the data set in levels, fixed and random effects and cross-level interactions are considered. As expected, the findings indicate that the occurrence of fever is influenced by factors from all three hierarchical levels, with environmental factors playing a relatively lower role than the other two. Among the environmental threats, the effect of the neighborhood's salubrity is particularly significant.

0291

PERTUSSIS IN ONTARIO, CANADA: A TRANSMISSION DYNAMIC MODEL. *A. Tuite and D. Fisman (University of Toronto, ON, M5T 3M7)

Despite highly successful vaccination programs and high vaccine uptake, both endemic pertussis and periodic pertussis outbreaks continue to challenge medical and public health professionals. We constructed an age-structured compartmental model to describe the transmission of pertussis in the province of Ontario in both the pre- and post-vaccine era, with the aim of better understanding the transmission dynamics of pertussis in this population, in order to estimate the underlying burden of pertussis and to use as a tool for assessing the potential impact of different vaccination strategies. Natural history parameters were derived from epidemiologic studies and by model calibration. A time series of pertussis mortality in Ontario between 1880 and 1929 was used to derive estimates of pertussis incidence in the pre-vaccine era. For calibration in the post-vaccine era, we used data on laboratory-confirmed cases in Toronto, Ontario for the period between 1993 and 2004. Through model calibration to pre-vaccine pertussis incidence in children under 2 years of age, best-fit model estimates gave a basic reproductive number of 5.5, with a high degree of annual seasonal oscillation (range 4.2 to 6.7), and a duration of naturally-acquired immunity of 27 years. Model calibration to pertussis incidence in the presence of vaccination resulted in estimates of vaccine-induced immunity of approximately 6.5 years for individuals receiving all 5 recommended vaccine doses. This model reproduces observed pertussis epidemiology in children in the province of Ontario and represents a valuable tool for assessing the role of under-recognized pertussis infections in adolescents and older adults in sustaining pertussis transmission in a highly vaccinated population.

0292

A NOVEL FRAMEWORK FOR MODELING THE GLOBAL IMPACT OF CLIMATE CHANGE ON INFECTIOUS DISEASES. *A. G. Hoen, M. Keller, D. L. Buckeridge, and J. S. Brownstein (Children's Hospital Informatics Program, Children's Hospital Boston and Harvard Medical School, Boston, MA 02215; McGill Clinical and Health Informatics, McGill University, Montreal, QC H3A 1A3; and Mostrare project, INRIA & Université Lille 3, Lille, France)

The inevitability of global climate change has led to concerns about its effects on the incidence and distribution of infectious disease risk, but studies thus far have usually focused on one disease in a limited geographic region. Here we present the first results of a study aimed at broadly characterizing the global effects of climate on the risk and burden of a range of infectious diseases. Using dengue as an initial proof of concept, we developed subnational scale spatial risk models that predict established endemic areas and zones of ongoing emergence. We overcame limitations in the granularity of global surveillance information by coupling data from HealthMap, an automated surveillance system that collects event-based information at a global scale, with traditional dengue surveillance data. We estimated a surface of HealthMap dengue report density with a Gaussian mixture model and quantitatively compared this with established endemic zones to define and then cross-validate areas of expansion in Latin America, Sub-Saharan Africa and Southeast Asia. Future steps for this study include development of spatial models to characterize the effects of climate on dengue expansion and the application of long-term climate change scenarios for forecasting. The ultimate products of this study will be real-time, global risk assessments for a range of diseases useful for improving prevention and control efforts, resource allocation and arming clinicians and the public with enhanced epidemic intelligence.

0293

LATE-LIFE SOCIAL ACTIVITY AND COGNITIVE DECLINE IN OLD AGE. *Bryan D. James, Robert S. Wilson, Lisa L. Barnes, David A. Bennett (Johns Hopkins Bloomberg School of Public Health, Baltimore, MD 21201)

We examined the association of social activity with cognitive decline in 1,135 persons without dementia at baseline with a mean age of 79.6 (SD = 7.5) who were followed for up to 12 years (mean = 5.2, SD = 2.8). Using mixed models adjusted for age, sex, education, social network size, depression, chronic conditions, disability, neuroticism, extraversion, cognitive activity, and physical activity, more social activity was associated with less cognitive decline during an average follow up of 5.2 years (SD = 2.7). A one point increase in social activity score (range = 1-4.2, mean = 2.6, SD = 0.6) was associated with a 47% decrease in the rate of decline in global cognitive function ($p<0.001$). The rate of global cognitive decline was reduced by an average of 70% in persons who were frequently socially active (score = 3.33, 90th percentile) compared to persons who were infrequently socially active (score=1.83, 10th percentile). This association was similar across five domains of cognitive function. Sensitivity analyses revealed that individuals with the lowest levels of cognition or with mild cognitive impairment at baseline did not drive this relationship. These results confirm that more socially active older adults experience less cognitive decline in old age.

0294

PSYCHOSOCIAL INFLUENCES IN ONSET AND PROGRESSION OF LATE LIFE DISABILITY: THEORETICAL AND ANALYTICAL CONSIDERATIONS. *C.F. Mendes de Leon, K.B. Rajan, D.A. Evans (University of Michigan, Ann Arbor, MI 48109)

Although psychosocial factors have been linked with disability in older age, the exact role of these factors in the chronic disability process remains poorly understood. This study investigates whether specific psychosocial risk factors are differentially associated with onset of disability and progression of disability. We used nine waves of yearly disability data from a population-based, longitudinal study of older adults (N~5,800). The disability measure was a count of limitations in six Activities in Daily Living (ADL), and psychosocial factors included measures of social networks, social engagement, and depressive symptoms. We developed a two-part regression model with a logistic link for onset of ADL disability and a negative binomial link for progression of ADL disability, each with its own random effect. The two-part regression models were fit simultaneously using maximum likelihood techniques. Larger social networks, more social engagement, and less depression were associated with significantly lower ADL disability severity levels at baseline (p's<.001). Prospectively, larger social networks and more social engagement but not depression were associated with reduced risk of new onset of ADL disability ($p<.05$). Larger social networks, more social engagement and less depression were also significantly associated with more rapid progression of ADL disability (p's<.001), gradually attenuating the large differences in ADL disability severity associated with these psychosocial risk factors at baseline. This new statistical approach to the analysis of late life disability data suggests that the protective effect of social networks and engagement is limited to onset of late life disability.

0295

MEASURING WHAT PEOPLE DO DO INSTEAD OF WHAT THEY CAN DO: THE ENACTED FUNCTION PROFILE. *T.A. Glass, B.D. James, and B.S. Schwartz (Johns Hopkins Bloomberg School of Public Health, Baltimore, MD)

Standard tools for the assessment of functional status focus on the hypothetical tense (capability or difficulty) and poorly represent the enacted tense (actual performance). This fails to capture heterogeneity that arises from the impact of environments that either enable or constrain the functioning of older adults in real-world settings. Standard questionnaires designed to measure activities of daily living have also been subject to little psychometric scrutiny. This paper reports on the psychometric properties of the Enacted Function Profile (EFP), a new 20-item tool to measure actual performance in the community. Baseline data from a population-based cohort of 1141 older adults were used to test a measurement model of enacted function using confirmatory factor analysis. Construct validity of the new scales was demonstrated by showing associations with variables hypothesized to be related to functional status. A four-factor model proved to fit the data well. Subscale scores for social engagement, self-care, home maintenance, and community involvement were estimated along with a global summary score Enacted function was associated with depressive symptoms and disability in instrumental activities of daily living in the anticipated direction. Substantial gender and race/ethnic differences in enacted function were observed. As hypothesized, associations between new enacted function measures and self-reported neighborhood problems as well as objective features of the neighborhood were generally twice as strong as standard measures of IADL disability. The EFP appears to capture different aspects of functioning than standard disability instruments and shows favorable measurement properties.

0296-S

MEASUREMENT OF PHYSICAL FUNCTION IN POPULATION-BASED COHORTS OF AGING: THE QUEST FOR HARMONY. *S Karunananthan, *S Magalhaes, C Wolfson, I Fortier (McGill University, Montreal, Quebec, H3A 1A2)

Throughout the world, more and more studies of aging are collecting measures of Physical Function, producing a wealth of data to advance our understanding of transitions in Physical Function through old age, as well as predictors and consequences thereof. While each study can make a unique contribution, the synthesis of information from multiple studies has the potential to provide additional unforeseen insights: study to study comparisons can support the robustness and/or generalizability of findings; and merging data from multiple studies increases sample size, thereby providing opportunities to examine hypotheses that may otherwise be statistically underpowered. Despite these advantages, cross-study comparisons and data pooling are complex and may lead to erroneous inferences if methodological differences between studies are not appropriately considered. Data harmonization refers to a formal process by which data comparability is assessed and appropriate calibration is applied prior to data pooling. The DataSHaPER (DataSchema and Harmonization Platform for Epidemiological Research) is an international project with the principal aim of developing a scientific approach for data harmonization. A DataSHaPER consists of two components: a DataSchema, which is a comprehensive inventory of variables related to a given field of research, and a Harmonization Platform, which is a set of predefined rules to determine whether a study contains adequate information to generate a variable of interest. This presentation describes how the scientific approach of the DataSHaPER is being applied to develop a tool that supports the study of Physical Function and aging through the harmonization of population-based cohorts.

0297

META-ANALYSIS FOR LINEAR AND NON-LINEAR DOSE-RESPONSE RELATIONSHIPS: EXAMPLES, AN EVALUATION OF APPROXIMATIONS, AND SOFTWARE. Nicola Orsini, Donna Spiegelman*, Ruifeng Li, Alicja Wolk (Harvard University, School of Public Health, Boston, MA)

Two methods for point and interval estimation of relative risk for log-linear exposure-response relationships in meta-analysis of published ordinal categorical exposure-response data have been proposed. Here, we compared the results of a meta-analysis of published data using each of the two methods, to the results that would be obtained if the primary data were available, and investigated the circumstances under which the approximations required for valid use of each meta-analytic method break down. Finally, we extended the methods to handle non-linear exposure-response relationships. Methods were illustrated by studies of the relationship between alcohol consumption and colorectal and lung cancer risk from the Pooling Project of Prospective Studies of Diet and Cancer. In our examples, the differences between the results of a meta-analysis of summarized published data and the pooled analysis of the individual original data were small. However, incorrectly assuming no correlation between relative risk estimates of exposure categories from the same study gave biased confidence intervals for the trend and biased p-values for the tests for non-linearity and between-studies heterogeneity when there was strong confounding by other model covariates. The use of two publicly available user-friendly programs implementing meta-analysis for dose-response data in Stata and SAS is illustrated.

0298-S

RESULTS ON CAUSAL EFFECTS UNDER NON-DIFFERENTIAL MISCLASSIFICATION OF A BINARY CONFOUNDER. *Elizabeth Ogburn and Tyler VanderWeele (Harvard University, Boston, MA 02115)

Consider a 2 x 2 x 2 table characterizing a study with binary exposure X and outcome Y, stratified by covariate C. Suppose that C is measured with error and let C* be the measurement. We assume that the error is nondifferential, i.e. subjects are nondifferentially misclassified with respect to C. Epidemiologists have long accepted the unproven but oft cited result, frequently credited to Brenner (*Journal of Clinical Epidemiology* 1993; 46:57-63), that odds ratios, risk ratios, and risk differences which control for the mismeasured covariate, and thereby partially control for C, will lie between the crude and the fully controlled measures. We disprove this result via counterexamples for each of the three effect measures. We show that counterexamples can be found even when the confounder is binary and the sensitivity and specificity of the measurement are close to 1; that any ordering of the partially controlled measure, the fully controlled measure, and the crude measure is possible; and that the partially controlled measure can be closer to the crude measure than it is to the fully controlled measure (again even with sensitivity and specificity close to 1). We then present sufficient conditions under which Brenner's result is guaranteed to hold for the risk difference and risk ratio.

0299

PERFORMANCE OF CANCER CLUSTER Q-STATISTICS FOR CASE-CONTROL RESIDENTIAL HISTORIES: SIMULATION ANALYSES USING US AND DANISH STUDIES. CD Sloan[1], GM Jacquez[2], CM Gallagher[1], MH Ward[3], R Baastrup Nordsborg[4], O Raaschou-Nielsen[4], *JR Meliker[1] ([1]Stony Brook University; [2]BioMedware, Inc., [3]US National Cancer Institute, [4]Danish Cancer Society)

Few cancer clustering investigations have evaluated residential mobility even though exposure to environmental carcinogens may occur decades before a cancer diagnosis. Recently developed Q-statistics can be used to investigate disease clusters based on mobility histories by quantifying space- and time-dependent nearest neighbor relationships. Qik identifies which individuals are centers of spatial clusters through time; and Qikt shows where and when local clustering takes place. Using case-control residential histories from 2378 participants in a US study and 6594 participants from a Danish study, we created a series of simulated clusters to examine Q-statistic performance. Results suggest the intersection of cases with significant clustering over their life course, Qik, with cases who are constituents of significant local clusters at given times, Qikt, allows us to identify simulated clusters. Using this intersection approach, Q-statistics identified large true positive cluster regions with few false positives; true smaller cluster regions were difficult to differentiate from false positives. Specifically, if three or more significant (Qik, p=0.001, Qikt, p=0.05) cases are detected in the same cluster region then it may be considered a true cluster. Setting k-nearest neighbors equal to 10 or 15 consistently showed strong performance. This approach has potential for identifying clustering in mobile populations but given differences in mobility patterns, future work is required to investigate generalizability of this rule set to other case-control datasets.

0300

WHY RARE DISEASE MAKE UP MOST OF THE GLOBAL BURDEN OF DISEASE ESTIMATES -- THE IMPACT OF BEING COMMON. *H Carabin (University of Oklahoma Health Sciences Center, Oklahoma City, OK, 73104)

Previous global burden of disease estimates have demonstrated that chronic diseases had the incurred largest number of DALYs globally. Several critics have identified methodological issues in the estimation of DALYs. However, one element which has never been mentioned is the influence of imperfect test sensitivity and specificity. Data for prevalence and incidence for estimating DALYs often come from surveillance data for which the diagnostic tests are not perfect. The prevalence (or incidence) estimates are therefore derived from observed data which contain error. We used the Bayes' theorem to assess several realistic scenarios of true prevalence, sensitivity and specificity values of common and rare diseases to estimate the absolute (observed-true) and relative (ratio observed:true) differences in prevalences. For diseases with true prevalences between 40% and 60%, with diagnostic test sensitivity and specificity of 50% and 98%, respectively, which is not uncommon for intestinal helminthic infections, the prevalence would be underestimated by 19% to 29% for a relative value between 0.51 and 0.53. Conversely, for rare diseases with prevalences between 1% and 5%, and diagnostic test sensitivity and specificity of 80% and 60%, respectively, which could be the case of using fasting blood glucose for diabetes, the prevalence would be overestimated by 37% to 39% or a factor between 8.4 and 40.4. Even a better test (sensitivity 98% and specificity 95%) would result in an overestimate of about 5% with a ratio between 1.9 and 5.9. Adjusting future DALYs estimates for measurement errors could lead to changing the ranking in global burden of diseases.

0301-S

COMPETING RISK BIAS TO EXPLAIN THE INVERSE RELATIONSHIP BETWEEN SMOKING AND MALIGNANT MELANOMA. *CA Thompson, ZF Zhang, OA Arah (UCLA School of Public Health, Los Angeles, CA, 90095)

Smoking has been shown to be inversely associated with the risk of malignant melanoma in 3 large cohort studies, and 7 case-control studies, with associations persisting even after adequate control for an exhaustive set of suspected confounders. Smoking is a known risk factor for many other malignancies; it has been shown to be positively associated with other types of skin cancer, and there remains no clear biologic explanation for a possible protective effect on malignant melanoma. In this paper, we propose a plausible mechanism of bias from smoking-related competing risks that may explain the negative association between smoking and melanoma as spurious. Using directed acyclic graphs for formalization, and Monte Carlo simulation techniques, we demonstrate how published results might be compatible with selection bias resulting from uncontrolled or unmeasured common causes of competing outcomes of smoking-related disease and malignant melanoma. We present results from various scenarios assuming a true null as well as a true positive association between smoking and malignant melanoma.

0302-S

TIME-DEPENDENT BIAS ON NON-BINARY EXPOSURES: EXAMPLES IN PERINATAL EPIDEMIOLOGY. *Anthony P Nunes, Gregory A Wellenius, E Andres Houseman, Maureen G Phipps, Elizabeth W Triche (Brown University, East Providence, RI)

Epidemiologic studies frequently treat time-varying exposures as if they were time-invariant, either for analytic simplicity or because detailed data on exposure timing are unavailable. For binary exposures this approach can lead to health effect estimates that are on average biased downward. The direction and pattern of this bias when using non-binary exposure metrics has not been adequately addressed in the existing literature. Using examples from perinatal epidemiology, we performed simulation studies to evaluate the pattern of bias and to evaluate a potential method for preventing the bias when exposure timing is unknown. Specifically, we simulated effects of trimester-specific and average exposures on time to event, and compared the results from time-fixed logistic and survival analyses with those from a time-varying survival analysis. Time-fixed analyses were biased downward for all exposure metrics considered. Moreover, when using average exposure metrics, we observed an artificial non-linear dose response function. We propose and illustrate a method based on multiple-imputation of timing-specific exposure that can be used to avoid this bias when data on exposure timing are unavailable. Using this method, we treat time of exposure as a missing variable and multiply impute based on prior information of the functional form of the exposure timing distribution. This method is demonstrated in an example assessing the association between delayed prenatal care and preterm birth. Considering a true time-varying analysis to be the gold standard we found that the multiply imputed time varying analysis produced unbiased results while the time-fixed analysis produced results biased in the negative direction. In conclusion, treating time-varying exposures as time-invariant can bias health effect estimates and yield incorrect dose-response functions. Where timing-specific data are not available, multiple imputation of exposure timing may be a useful tool in obtaining unbiased effect estimates or performing sensitivity analyses. This method may be applied to other epidemiologic substantive areas.

0303-S

VALIDITY AND RELIABILITY OF MATERNAL RECALL OF PRESCRIPTION DRUG USE DURING PREGNANCY. *M van Gelder, I van Rooij, H de Walle, N Roeleveld, M Bakker (Radboud University Nijmegen Medical Centre, Nijmegen, Netherlands)

In case-control studies that assess associations between medical drug use and birth defects, detailed information on type of drug and timing of use is essential to prevent information bias. However, data on the accuracy of recall of drug use during pregnancy are scarce. Therefore, we validated a self-administered questionnaire by comparing it to pharmacy data which were checked for compliance by maternal interviews. Sensitivity, specificity, levels of agreement, and kappa statistics were calculated to quantify the validity and reliability of the questionnaire for any prescription drug use, groups of drugs, and individual drugs. In addition, we determined whether maternal characteristics influenced the reliability of the questionnaire. A total of 560 women were included. The sensitivity of the questionnaire for any prescription drug use was 57%, ranging between 12% (corticosteroids) and 83% (antihypertensives and thyroid therapy) for drug groups and between 0% (naproxen) and 73% (salbutamol) for individual drugs. Overall, specificity was high (93–100%). The sensitivity of the questionnaire for prescription drug use during the first 4 months of pregnancy was generally comparable or better than the sensitivity in the complete pregnancy period. Smoking during pregnancy and completing the questionnaire >1 year after delivery decreased maternal recall of prescription drug use. In conclusion, the validity of maternal recall of prescription drug use during pregnancy is generally moderate to poor. As reliability also differed according to some maternal characteristics, future retrospective studies on the teratogenic risk of drug use may need additional sources of data next to self-reported methods.

0304

THE PERILS OF ADJUSTING FOR GESTATIONAL AGE. *O Basso[1], AJ Wilcox[2], CR Weinberg[2], ([1]McGill University, Montreal, QC H3G1Y2. [2]NIEHS (NIH), Durham, NC 27709)

Gestational age is strongly correlated with neonatal mortality and is often adjusted for when assessing direct effects of a factor that shortens gestation. Adjustment implicitly assumes that no unmeasured factor affects both gestational age and outcome. There are, however, diverse pathologic factors that can cause early delivery and also independently increase mortality. (Severe birth defects and placental abruption are examples.) We use simulations to quantify potential bias in the odds ratio (OR) of a measured exposure X when trying to block the mediating effect of gestational age. We assume a quadratic baseline effect of immaturity on mortality. X reduces gestational age by 20 days and increases mortality both by reducing maturity at birth and via a separate direct effect (expressed by an OR of 1.7). We introduce three "unmeasured" factors: two rare factors (0.6%) that reduce gestational age by 50 days, and have high mortality ORs. The third factor is frequent (4%), reduces gestational age by 35 days, and has a weak direct effect on mortality. Adjusting for gestational age yields an OR for X of 0.75 – reversing the apparent effect (a similar reversal is seen in the relation between twinning and neonatal mortality, after adjustment for gestational age). Adjusting for only one of the two factors with a strong effect still results in substantial bias. Only by including both strong confounders does the adjustment yield an estimate close to the truth. Thus, if there is even one rare, unmeasured factor that strongly affects both gestational age and outcome, adjustment for gestational age as a mediating factor can severely bias the estimate of direct effects. Such factors can also cause apparent effect measure modification by gestational age.

0305

BEYOND BRENNER: PURSUING A NEW UNDERSTANDING OF THE IMPACT OF MACROECONOMIC FLUCTUATIONS ON POPULATION HEALTH. Lisa M Bates and Sandro Galea (Columbia University, New York, NY)

The seminal 1979 Lancet paper by Brenner1 helped to establish an enduring empirical question regarding the nature and degree of impact of macroeconomic fluctuations on population health. Brenner's analyses suggested negative short and long term effects on morbidity and mortality of economic cycles, with differential impact on the economically worst-off, but his findings were subsequently challenged by a number of papers highlighting key methodological limitations of his approach. As indicated by a flurry of newly published commentaries, literature reviews, and comparative empirical analyses, interest in this question has been revived in recent years in light of the current global economic downturn, the largest and most protracted economic recession since the Great Depression. However, evidence of the impact of macroeconomic change on overall mortality remains mixed and context-dependent, and is largely inconsistent with individual-level evidence and with mental health outcomes, including suicide, despite common hypothesized etiologic pathways. This proposed symposium will present and interpret the totality of evidence on this question, and will discuss the array of implications for a) methodological approaches to macro-level data analysis, b) models of social determinants of health as mediated by psychosocial stress and health behaviors, c) the social production and amelioration of health disparities, and d) policies to mitigate the impact of macroeconomic fluctuations on health.

1. Brenner MH. 1979. Mortality and the national economy: a review and the experience of England and Wales 1936-1976. Lancet, 2:568-573.

0306

CANCER EPIDEMIOLOGY: STATE OF THE ART. *Cornelia Ulrich (German Cancer Research Center, Heidelberg)

Cancer is a major public health problem worldwide. As a multifactorial disease, both genetic and environmental factors play a role in its etiology. However, not only are risk factors unique for each type of cancer, there may also be molecularly defined subtypes within tumors at the same organ site, which arise through different mechanisms. The field of molecular epidemiology has made substantial progress in defining cancer phenotypes and risk factors. This session will provide an overview of today's hot topics in cancer research, ranging from new cancer epidemics in the world to genetics and genomics and cancer risk. The speakers will present state-of-art research findings on cancer etiology and cancer prognosis.

Speakers:

The current state of cancer in the world
Paolo Boffetta (Mount Sinai Cancer Center)
Genetics and genomics in cancer epidemiology
Gloria Petersen (Mayo Clinic)
Diet and cancer – complex relationships
Susan Taylor Mayne (Yale University)
Linking cancer prevention to cancer survivorship
Cornelia Ulrich (German Cancer Research Center, Heidelberg)

Sponsored by: AACR and Molecular Epi Working Group of AACR

0307

COMMUNICATING EPIDEMIOLOGY - THE CHANGING LANDSCAPE. *Patricia Hartge (National Cancer Institute's Division of Cancer Epidemiology and Genetics)

Epidemiologists face new opportunities and challenges as they communicate research results. Peer-reviewed journals, the first audience for research findings, are undergoing a revolution in content and format. Science reporters must select noteworthy advances from a deluge of reports. Epidemiologists must learn how to present their work to lay audiences, even when strong competing interests interfere with the clear exposition of a scientific consensus. Four experts bring diverse perspectives to assess the challenging environment and suggest new ways to respond. **Myles Axton**, Editor of Nature Genetics, discusses "The rapidly evolving scientific journal", a snapshot of how premier science journals experiment with features that blur old distinctions: blogs, data repositories, standard-setting, and advance online publications. Axton, a geneticist and pioneer in genome-wide studies, highlights changes in communication across the biomedical sciences. **Roni Rabin**, a health reporter who has written for the New York Times, Washington Post, Newsday, and other publications, discusses "Choosing and telling science stories," a look at how science journalists synthesize meeting abstracts, articles, press releases and interviews with authors and commentators. Rabin, who also writes for Real Simple, More, and Glamour, explains how reports evolve in the web environment. **Jennifer Loukissas**, communications manager at the National Cancer Institute's Division of Cancer Epidemiology and Genetics, discusses "When epidemiologists talk to press and public". Many epidemiology departments now train scientists to speak more clearly to press and public. Loukissas evaluates recent examples to suggest which communication techniques work and how to teach them. **Jonathan Samet**, the Director of the USC Institute for Global Health, discusses "Communicating around conflict." Samet, an international authority on the effects of smoking and air pollution on health, considers real-world examples of meeting the communications challenge when political, commercial, or other interests work to obscure the information.

0308

EPIDEMIOLOGISTS AS EXPERT WITNESSES: EXPOSING THE INFLUENCE OF BIASED EPIDEMIOLOGICAL ASSESSMENTS IN TORT ACTIONS AND CONSEQUENCES FOR PUBLIC HEALTH. Colin L. Soskolne[1], Shira Kramer[2], David Egilman[3], Devra L. Davis[4], *Stanley H. Weiss[5] ([1]Department of Public Health Sciences, School of Public Health, University of Alberta, Edmonton, Alberta, Canada; [2]Epidemiology International, Inc., Hunt Valley, MD, USA; [3]Department of Family Medicine, Brown University, Attleboro, MA, USA ; [4]Environmental Health Trust, Teton Village, WY, USA; [5]Department of Preventive Medicine & Community Health, UMDNJ - New Jersey Medical School, and UMDNJ - School of Public Health, Newark, NJ, USA)

As industry funding of research has increased over time, the research agenda, priorities, methods, and reporting of results are shown to have been increasingly influenced by the vested interests of the sponsors instead of primary public health considerations. Examples of the failure to investigate important research questions and the biased application of methods serve to undermine the pursuit of justice in tort actions before the courts and ultimately to derail the fundamental role of epidemiology in protecting the public's health. Colin Soskolne will discuss Canada's Sydney Tar Ponds questioning whether conflicting interests resulted in a case of suppression bias and social injustice. Shira Kramer will present on refusing to look and failing to find: case studies in the systematic strategy to hide occupational and environmental exposure risks. David Egilman will discuss how corruption plays out: a review of big Pharma techniques in epidemiologic research. Devra Davis will discuss epidemiology in the courts: the case of cell phones and health damages. A discussion of the cases, moderated by Stanley Weiss, will conclude the symposium.

0309

CANADA'S SYDNEY TAR PONDS: CONFLICTING INTERESTS RESULTING IN A CASE OF SUPPRESSION BIAS AND SOCIAL INJUSTICE? *Colin L. Soskolne and Shira Kramer (Department of Public Health Sciences, School of Public Health, University of Alberta, Edmonton, Alberta, Canada)

In this case study from Sydney, Cape Breton Island, Nova Scotia, Canada, the wanton disregard for environmental safeguards - through coal mining, coking operations and steel production effluents discarded over many decades into the Sydney area and harbour ? has served to create the Sydney Tar Ponds. For many years, Sydney has remained one of Canada's worst industrially contaminated sites. The ownership of these industrial operations has been held in more recent decades by provincial and federal authorities whose jurisdiction also includes public health. This presentation exposes conflicting interests and raises profound questions of social injustice in Canada. Despite knowledge and awareness of carcinogenic hazards both to workers and the local community, no analytical health studies - normative at that time - were ever undertaken to our knowledge, thereby suppressing the opportunity to develop compelling evidence in response to expressed community health concerns. Justice now is being sought in Nova Scotia's first environmental class action law suit, a process that has taken some seven years thus far, but, as of early March 2011, it remains at the class action certification stage.

0310

HOW CORRUPTION PLAYS OUT: A REVIEW OF BIG PHARMA TECHNIQUES IN EPIDEMIOLOGIC RESEARCH. *D Egilman (Brown University, Rhode Island)

Researchers can manipulate epidemiological research. Researchers and reviewers can take steps to avoid unintended bias bias but there are limited actions that can be taken to prevent intentional abuse of epidemiologic studies. By controlling design, publications, and endpoints, Pharmaceutical companies are able to publish misleading findings to support sales and drug approval. Specific tactics include intentional use of selection bias, manipulation of study size, duration, adjudication, post-hoc changes to protocols and selective publication. Based on a review of information made available through litigation, including emails, drafts, memos and deposition testimony, I will describe some examples of methods pharmaceutical companies use to manipulate epidemiologic studies. I will also describe ethical issues related to seeding trials. I will suggest reform measures that may address these problems including FDA and academic sanctions against offending companies and individuals, changes in FDA disclosure rules, and publication of all protocol changes and data on the web.

0311

EPIDEMIOLOGY IN THE COURTS: THE CASE OF CELL PHONES AND HEALTH DAMAGES. *Devra Lee Davis, PhD, MPH, (FACE, Environmental Health Trust), with Monica Han, PhD

Under the Daubert rules, epidemiological evidence of established human harm has become the requirement to establish causation and take action to prevent future harm. The absence of general population increases in brain cancer has been erroneously invoked as proving the safety of cell phones. Chronic diseases such as brain cancer have been shown to have latencies of several decades, based on population -based studies of the atomic bomb survivors. Bradford Hills principles for inferring causation involve an assessment of the full body of evidence, including experimental findings, biological plausibility, along with the strength of findings in both experimental and epidemiological studies. When filed in the U.S. two decades ago, court cases alleging that cell phone radiation caused brain cancer failed, because they lacked sufficient evidence of human harm. New legal efforts are being mounted now that integrate the array of predictive information on this topic, including in vitro and in vivo experimental studies on cancer and reproductive harm, and detailed analyses of exposure to the human brain and body, along with recent reports from large case-control studies. Age-specific analyses of all brain tumors combined reflect unexplained increases in persons young enough to have used cell phones heavily. This presentation will highlight some of the remaining epistemological challenges to legal and public health analyses as they grapple with cell phones, brain cancer and reproductive impacts.

0312

EPIDEMIOLOGY IN THE EVALUATION OF MEDICAL PRODUCTS. K. Arnold Chan (Harvard School of Public Health and Ingenix Life Sciences, Boston, MA)

The objective of this symposium is to highlight the extensive use of epidemiology in the evaluation of medical products and the recent methodology development. Regulatory agencies have increasingly utilized epidemiology findings to guide regulatory decisions. In 2009 the U.S. FDA initiated the Mini-Sentinel project as preparation for the Sentinel Network, a national strategy for monitoring medical product safety. In addition, under the American Recovery and Reinvestment Act of 2009, more than one billion U.S. dollars have been allocated for comparative effectiveness research to evaluate different treatment modality, in which epidemiology plays a critical role. The proposed topics of the symposium will include 1) The role of observational studies in regulation of medical products; 2) Signal detection and active safety surveillance; 3) Statistical reasoning in very large data sources; and 4) Comparative Effectiveness.

Speakers:

Drug safety evaluation at the Center for Drug Evaluation and Research, Food and Drug Administration - David Graham (Office of Surveillance and Epidemiology, Center for Drug Evaluation and Research, FDA)
Overview of FDA's Mini-Sentinel Program - Sean Hennessy (University of Pennsylvania)
Statistical reasoning with very large datasets - Michal Abrahmowicz (McGill University)
Comparative Effectiveness - Sebastian Schneeweiss (Brigham & Women's Hospital and Harvard Medical School)

Sponsor: International Society for Pharmacoepidemiology

0313

MENTORING IN EPIDEMIOLOGY. *John Vena (University of Georgia) and *Pauline Mendola (CDC)

Mentoring is an advisory role in which an experienced `master' professional guides another individual in their professional development. The relationship is dynamic and reciprocal, with the mentor taking personal interest in helping the mentee or protégé develop into a successful professional. Mentoring or being a good mentee are of critical importance yet there have been few venues in the Epidemiology field to learn the principles and practice of mentorship. What are the features of effective mentoring relationships? What are the traits of a good mentor? What are the traits of a good mentee? Mentoring involves many stages and phases and development of the relationship is a gradual interactive process. This symposium will have an introductory presentation on the principles and practice of mentorship. The Congress 2011 award winner of The Alfred S. Evans Award for Excellence in Teaching and Mentoring Dr. Noel Weiss will give a featured keynote address on mentoring across the career lifetime. Examples of mentoring early career and senior professionals will be provided. A question and answer session will give attendees the opportunity to open the floor to topics of interest and address the speakers.

Speakers:

Principles and practice of mentorship
John Vena and Pauline Mendola
Mentoring across the career lifetime
Noel Weiss (Winner, Evans Award)
Mentoring students and young professionals
Stephen Buka
Mentoring at the senior career level
TBN

0314

OBESITY AMONG SOCIOECONOMICALLY DISADVANTAGED CHILDREN AND ADOLESCENTS IN THE US: IMPLICATIONS FOR HEALTH ACROSS THE LIFE COURSE. *Jorge Ibarra (University of Texas, El Paso) and *Claudia Kozinetz (Baylor College of Medicine, Houston, TX)

Purpose: Health disparities in the US are on the rise affecting low-income Americans, racial and ethnic minorities. The current unemployment crisis most likely will make health disparities worse. The purpose of this Symposium is to increase awareness among all professionals in the public health and epidemiology fields on health issues important to racial/ethnic minority populations. During the 3rd Epidemiology Congress, we would like to address issues related to the obesity among socioeconomically disadvantaged children and adolescents in the US, and its implications for health across the life course by leaders on the field. Since 1971, the prevalence of overweight among US children has increased by more than 100%, and this prevalence is expected to continue to increase. Overweight and obese children and adolescents are more likely to become overweight or obese adults. Overweight and obesity are a significant health problem among children and adolescents, since children and adolescents who are overweight or obese are more likely than those who are not to develop type 2 diabetes and other conditions placing them at risk of later cardiovascular disease. Reasons for racial and ethnic differences in childhood and adolescents overweight and obesity are not well understood. The purpose of this workshop is to disseminate and stimulate discussion about estimated racial/ethnic differences on overweight and obesity among rural and urban, low-income children and adolescents, their possible determinants of differences, and health impacts in the middle and long terms. Symposium speakers will present and discuss methods for assessing health disparities gaps on this health issues.

Speakers:
Differences in obesity-related metabolic outcomes in African-American and Latino Youth: Implications for Disease Risk - Rebecca Hasson (University of California, San Francisco)
Socio-demographic and environmental factors influencing adiposity and dietary patterns among US children and adolescents: The mediating role of depressive symptoms in adulthood and implications for cognitive aging in later life - May A. Baydoun, PhD (National Institute on Aging, NIH)

0315

DIFFERENCES IN OBESITY-RELATED METABOLIC OUTCOMES IN AFRICAN-AMERICAN AND LATINO YOUTH: IMPLICATIONS FOR DISEASE RISK. *Rebecca Hasson (University of California, San Francisco, Department of Family and Community Medicine, Center on Social Disparities in Health)

Obesity is a significant problem in ethnic minority children and adults with the most recent NHANES estimates suggesting a higher prevalence of overweight and obesity in African Americans and Latinos compared to non-Hispanic Whites. Obesity related complications such as type 2 diabetes also are more common between both ethnic groups (1.6 times higher prevalence in African Americans and 1.5 times higher prevalence among Latinos compared to whites). The lifetime risk of developing diabetes is almost 50% for African Americans and Latinos born in the year 2000. Despite a similar pattern of obesity, degree of insulin resistance, and risk for type 2 diabetes, there are marked differences in cancer incidence and fatty liver disease across race and ethnicity. African Americans have increased risk of certain forms of obesity-related cancers, whereas for some outcomes, Latinos appear “protected.” In contrast, risk for fatty liver disease reflects an opposite pattern, with Latinos at higher risk and African Americans appearing to be “protected”. Traditionally, biomedical researchers have turned to genetics to explain these differences in disease risk and prevalence, without fully examining the contributions of the social environment. Furthermore, behavioral interventions have traditionally focused on improving diet and physical activity while ignoring the social-contextual factors that influence health and health behaviors. This presentation aims to shed light on how traditional methods used to investigate racial/ethnic differences fall short of explaining disparities in health outcomes. In addition, cross-sectional and longitudinal data will be presented that examines how social-contextual factors contribute to obesity and subsequent disease risk in ethnic minority children and adolescents.

0316

PRESIDENT OBAMA'S $63,000,000,000 GLOBAL HEALTH INITIATIVE : THE CURRENT AND FUTURE ROLE OF EPIDEMIOLOGY IN THIS EFFORT. *Donna Spiegelman (Harvard University, Boston, MA)

Last year, the United States spent $8.3 billion on global health programs, and the President's Emergency Program for AIDS Relief (PEPFAR) has spent over $63 billion since its inception in 2004. This symposium will seek to address the following questions: • What role has epidemiologists and epidemiology played in the design, operations and evaluations of these massive efforts? What further contributions do epidemiology and epidemiologists have to offer? The Sydney Declaration (2007, Lancet) declared that 10% of all resources dedicated to HIV programming should be used for research towards optimizing interventions utilized and health outcomes achieved. To what extent has this directive been implemented and what are the barriers towards its full implementation? What role does epidemiology have to play in these efforts? What are the methodologic challenges facing the evaluation of these global health efforts? How have they been addressed so far? How can more experienced epidemiologists in the developed world partner with counterparts in the regions hardest hit by AIDS to apply our expertise to combat the global AIDS epidemic?

This Symposium will include experts from a number of institutions, including:
• Stanford Center for Health Policy
• Makerere University School of Public Health, Uganda
• East Africa-IeDEA Project, Indiana University School of Medicine
• Division of AIDS, National Institute of Allergy and Infectious Diseases
• Imperial College School of Public Health, London
• Harvard School of Public Health

The speakers will focus on a variety of topics, including the use of observational data to evaluate HIV care and treatment programs, the use of transmission dynamics models to design and evaluate the impact of large scale HIV prevention programs, and perspectives from those responsible for funding this important research as well as from our partners abroad.

0317

WHAT YOU DON'T KNOW WILL HURT YOU: A SERIES OF STUDIES ON THE IMPACT OF LOSS TO FOLLOW-UP IN MONITORING AND EVALUATION OF HIV/AIDS CARE AND TREATMENT PROGRAMS IN EAST AFRICA. Constantin Yiannoutsous (Indiana University School of Medicine, Indianapolis, IN)

The Human Immunodeficiency Virus (HIV) epidemic represents one of the most pressing public-health challenges of our time. In the developing world, over the most recent decade, an extraordinary effort scaling up antiretroviral therapy to combat the epidemic has been mounted. It represents the largest pharmacological intervention in human history. Evaluating the effectiveness of HIV care and treatment programs, to ensure that patient outcomes are optimized, is critical but is complicated by the high levels of losses to follow-up (LTFU) among individuals participating in these programs. In this talk I will present a number of biases arising from LTFU, which invalidate or, at least, render suspect, much of the published data arising from analyses of observational studies which do not take LTFU into account. I suggest statistical approaches, which can be used to provide adjustments to estimates in the presence of LTFU.

0318

THE USE OF TRANSMISSION DYNAMICS MODELS TO DESIGN AND EVALUATE THE IMPACT OF LARGE SCALE HIV PREVENTION PROGRAMMES. *Marie-Claude Boily (Department of Infectious Disease Epidemiology, School of Public Health, Imperial College London)

There is increasing recognition that to achieve equitable and effective HIV/AIDS interventions, more analytical support is required to help design large scale interventions and objectively evaluate their impact. However, as many prevention programmes are being scaled up simultaneously to entire populations in different parts of a country or the world, it becomes difficult to conduct randomised experiments to evaluate their impact. In this talk, I will illustrate how transmission dynamics models (epidemiological modelling) are currently being used to evaluate the impact of large scale HIV interventions using Avahan, the Bill & Melinda Gates Foundation-funded India AIDS Initiative, as an example. Avahan is a large-scale core group intervention programme targeted to high-risk population in the 6 highest HIV prevalence states in India. The objective of Avahan is to reduce HIV transmission among high-risk groups (core groups) and to subsequently reduce outwards transmission from these groups to the lower-risk general population. I will also briefly discuss how transmission dynamics models are increasingly being used at an early stage to optimise multi-components prevention package. I will also highlight the need to conduct modelling studies, prior to programme implementation, to help design evaluation studies.

0319

HAS ALL THIS MONEY TRANSLATED INTO IMPROVED HEALTH? *Eran Bendavid, (General Internal Medicine, Stanford University, and Associate, Stanford Center for Health Policy /Primary Care and Outcomes Research, Palo Alto, CA)

The Great Recession. Sovereign debt crisis. Budget deficits. Events outside the realm of medicine are changing the landscape for development assistance for health. The last decade's growth in spending on global health, culminating in the $63 billion US Global Health Initiative, is yielding to an era of flat funding for global health programs. At the same time, expansion of services and a proliferation of priorities in global health such as non-communicable diseases and neglected tropical diseases are forcing a rethinking of resource allocation and funding decisions. In this talk I will touch upon several non-intuitive aspects of the organization of US assistance for global health: the paradoxical relationship between disease burden and financing priorities, the promise and perils of cost-effectiveness analyses, and the ambiguities in choosing partner countries. I will then present data on an overlooked dimension of decisions in financing global health: do the investments improve the health of the individuals they aim to serve (and does it matter if they do)? I will conclude with opportunities for improving the decision-making process in resource allocation for global health.

0320

THE FETAL ORIGINS OF HEALTH AND DISEASE: CONCEPT, METHODS, AND CHALLENGES. *Courtney Lynch (Ohio State University)

The purpose of this symposium is to provide attendees with an overview of the fetal origins approach to studying health and disease throughout the lifespan. The symposium will begin with Dr. Klebanoff providing a history and overview of the approach and how it became popular. Dr. Klebanoff conducted a follow-up study of children born to mothers in the Collaborative Perinatal Project in Philadelphia and therefore has experience in this area, including how to query individuals regarding health events that have occurred in their lives since birth. Dr. Hertz-Picciotto will discuss the methodologic work that has been done in relation to the measurement of exposure and covariate data during pregnancy. Specifically, Dr. Hertz-Picciotto's work has focused on the optimal methods for collecting exposure and covariate data during pregnancy. Dr.Oken will finish up the presentations by discussing the conduct of Project Viva, a currently ongoing longitudinal study of children and their mothers, including the challenges facing investigators who undertake this type of research. Project Viva is one of the largest studies utilizing the fetal origins approach that has been fielded to date. At the end of the symposium, we intend to provide attendees a list of published papers to which they can refer for guidance should they wish to use the approach in their own work.

Speakers:
Historical Development of Fetal Origins of Health and Disease: How We Got to Where We are Now - Mark Klebanoff, MD MPH (Professor of Pediatrics, The Ohio State University)
Studying Prenatal Exposures and Consequences for Development: Timing, Pathways & Mechanisms - Irva Hertz-Picciotto, PhD MPH (Professor of Public Health Sciences, UC Davis)
Project Viva: a Study of Health for the Next Generation - Emily Oken, MD MPH (Associate Professor of Population Medicine, Harvard Medical School)

0321

THE ROLE OF PREDICTIVE MODELS IN CAUSAL INFERENCE. *Justin Lessler and Brian K Lee (Johns Hopkins School of Public Health, Baltimore, MD)

There are distinct differences in the way epidemiologists interested in causation and those in other fields, who are predominately interested in prediction, approach statistical modeling tasks. The former tend to favor models with low numbers of covariates and easy causal interpretation, while the latter may prefer complex models with high number of covariates and no clear causal interpretation. The perceived dichotomy between predictive models and causative models is striking, as ultimately we evaluate our casual hypotheses based on their ability to predict future events. However, the divergent approaches may be a necessary result of the difference between focusing on a particular risk factor versus looking for predictive patterns in general. In this symposium experts on causation and predictive models from epidemiology and computer science will discuss the role that predictive models have in epidemiological studies of risk factors and causation. In talks and subsequent discussion we will address such questions as: What role do predictive models have in controlling for poorly measured confounding and complex causal relationships? How might complex diagnostic models be useful in understanding disease causation, if at all? What role do agent based or deterministic models that make predictions based upon our mechanistic understanding of the disease process have in testing causal hypotheses? How do we translate casual inferences into predictions useful for setting health policy? After a series of short presentations the speakers will be asked to participate in a broad ranging discussion of the issue guided by the session chairs and audience questions.

Speakers:

The role of simulations in estimating population level effects for determinants of infectious disease - Justin O'Hagan
Towards Patient-Specific Treatment: Medical Applications of Machine Learning - Russell Greiner
Biases of purely predictive models in causal inference problems - Miguel Hernan

0322

CAUSES OF MENTAL DISORDERS: CONTRIBUTIONS FROM PSYCHIATRIC EPIDEMIOLOGY (A SYMPOSIUM IN HONOUR OF PROFESSOR LEE ROBINS). Rebecca Fuhrer (McGill University, Montreal, Canada)

The burden of disease related to mental disorders is very high in countries across the range of high, middle, and low socio-economic development. The health, social, and economic impacts of mental disorders on the individual, his or her family, and society, make them pervasive, and often underserved, public health problems. The epidemiological investigation of the causes, outcomes, and consequences of mental disorders is far below their share of the spectrum of diseases. This symposium will present an overview of the present state of knowledge on psychiatric epidemiology from the lens of the contributions on methods developed and championed and inspired by Professor Lee Robins during her career that spanned over 50 years in the field as one of the pioneers. Ezra Susser will present a life course epidemiological perspective on migration and the risk of schizophrenia. Andrew Pickles will discuss the epigenetic contributions to the development of psychopathology and present the role of gene*environment interaction and this may vary by gender. Jamie Robins will review causal models in psychiatric epidemiology. The discussant will provide a critical appraisal of the presentations in order to start the dialogue

Speakers:

Introduction - Rebecca Fuhrer, PhD, (Department of Epidemiology, Biostatistics, and Occupational Health, McGill University, Montreal, QC)
Migration and Psychosis: sensitive periods in the life course - Ezra Susser, M.D., Dr.PH. (Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY)
Of mice and men: can epidemiology map comparable epigenetic processes? - Andrew Pickles, Ph.D. (Institute of Psychiatry, King's College, London, UK)
Causal Methods for Confounding, Noncompliance, and Lost to Follow-up in Psychiatric Epidemiology - Jamie Robins, M.D. (Department of Epidemiology, Harvard School of Public Health, Boston, MA)

Discussant: TBN

0323

EPIDEMIOLOGY FOR HEALTH EQUITY IN A GLOBAL, DYNAMIC, AND UNEQUAL WORLD: PERSPECTIVES OF THE INTERNATIONAL EPIDEMIOLOGICAL ASSOCIATION (IEA). *Nancy Krieger, IEA North American Councillor (Professor, Department of Society, Human Development and Health, Harvard School of Public Health, Boston, MA, USA)

What contributions can epidemiology make to promoting health equity in a global, dynamic, and unequal world? This question has been at the core of the mission of the International Epidemiological Association (IEA) since its founding in 1954. In this symposium, current IEA leaders will present their views on the critical importance of – and obstacles to – developing a truly global epidemiology. A key challenge is for epidemiology to move meaningfully from beyond its historical base in the global North to be as much – if not more – of and for the global South. At one level, this entails equitably developing the capacity for epidemiologic research and population health data within diverse country contexts and improving the terms for conduct of egalitarian global collaborative research projects. Equally important is critically addressing the theoretical frameworks used, methodologies employed, and the extent to which the work addresses the societal determinants of health and health inequities.

Speakers:

Global Epidemiology in a Changing World - Neil Pearce (The current IEA President, New Zealand)
Monitoring inequalities in maternal and child health in low and middle-income countries: Countdown to 2015, the IEA, and findings from recent national surveys - Cesar Victor (The IEA President Elect, Brazil)
Non-communicable diseases in Latin America and the Caribbean: a new challenge to be met in overcoming health inequities - Maria Inês Schmidt (The IEA Latin American and Caribbean Councillor, Brazil)
IJE and health equity: what can we achieve - Jane Ferrie (Academic Editor of the International Journal of Epidemiology (IJE) (from UK; presenting co-author) and Shah Ebrahim, co-editor of IJE (from the UK and India))

0324

EPIDEMIOLOGY, SCIENCE POLICY, AND SOCIETY---REMOVING PUMP HANDLES MORE EFFECTIVELY WHEN THE FACTS DON'T SPEAK FOR THEMSELVES. Roger Bernier (Roswell, GA)

The authority of science has come under challenge with rising levels of public skepticism about epidemiology and science more generally. Examples of policy gridlock include climate change disagreements, battles over autism and vaccines, and failure to accept recommendations about mammography screening for women under fifty. Also, many proven effective interventions are not being translated into public health practice. Clearly, facts do not speak for themselves. Something more is needed. As applied scientists funded by society, epidemiologists have a responsibility to promote effective translation of their data and to prevent its misuse or neglect. The consequences of failure to translate data into scientifically sound and supportable policy translate nevertheless into preventable morbidity and mortality. This symposium is structured as a participatory panel discussion intended to deepen the understanding and ways of thinking about the process of data translation and to provide examples of innovative approaches being used to achieve it more effectively. Panel members will each be asked to provide their perspectives on data translation by answering three questions---

1) What conceptual framework works best to help epidemiologists understand and navigate the process of data translation?
2) What have we learned from our study and practice about what works to successfully translate data into action?
3) What promising approaches are being used today that can serve as models to make more effective use of data?

Following brief presentations in answer to these questions, the session will be open for discussion by the panel of the different perspectives offered, followed by discussion between the panel members and participants in the audience

Panel Members:
Kay Dickersin (Center for Clinical Trials, Johns Hopkins Bloomberg SPH)
Janesse Brewer (Director, Health and Social Policy, The Keystone Center)
Robert A. Hiatt (University of California San Francisco)
Stanley H Weiss (UMDNJ, New Jersey Medical School)

0325

META-ANALYSES: NEW INSIGHTS INTO HETEROGENEITY OF EFFECT-MEASURE ESTIMATES, DATA INTERPRETATION AND DECISION-MAKING. *Robert Platt (McGill University, Montreal, Canada)

Although the evidence-based movement suggests that meta-analyses represent the highest level of evidence, handling heterogeneous estimates remains a controversial topic. Furthermore, how heterogeneity affects beliefs about effects of treatments, exposures and other risk factors has received little attention. Dr. Poole will review descriptions of heterogeneity and differences between random and fixed effects approaches. Next, he will address important concepts related to reporting random effects distributions informatively, as well as strengths and limitations of different heterogeneity measures, stratification versus meta-regression, and omitting an overall summary measure altogether. Dr. O'Rourke will discuss bias modeling in meta-analysis. In brief, these models can incorporate variables related to methodological features (including weaknesses) that affect the parameters of interest. Because bias models are not identified, results are extremely sensitive to the structure as well as to other distributional features, while standard fitting methods and model summaries may fail in unusual ways. Finally, Dr. Shrier will discuss how meta-analysts interpret meta-analyses. When presented with meta-analyses based on simulated data of idealized (unbiased) experiments, meta-analysts usually provide estimates of effect and uncertainty that differ from the calculated fixed and random effects results. Their estimates, and the subsequent decision-making process appear dependent on heterogeneity of estimates.

Speakers:
Not just Another Random Face - Charles Poole (UNC Gillings School of Public Health, University of North Carolina)
Beauty is in the Eye of the Beholder - Ian Shrier (Centre for Clinical Epi and Community Studies, SMBD-Jewish General Hosp, McGill University)
Modelling Multiple Biases Explicitly and Quantitatively: Using Beautiful Models to Show off What's not at all Glamorous - Keith O'Rourke (O'Rourke Consulting, Ottawa, Canada)

0326

METHODOLOGICAL ISSUES IN THE ASSESSMENT OF ADVERSE CHILDHOOD CONDITIONS AND POTENTIAL BIASES IN RELATION TO ADULT HEALTH CONSEQUENCES. *Katherine Keyes ([1]Dept of Epi, Mailman School of Public Health, Columbia University, New York, NY; [2] Dept of Psychiatry, College of Physicians and Surgeons, Columbia University, New York, NY)

Adverse childhood events include such experiences as verbal, physical, and/or sexual abuse, neglect, witnessing interpersonal violence and/or substance use, and experiencing material deprivation. Recently, there has been a renewed focus on the association between these events and adult mental and physical health outcomes in the epidemiologic, psychiatric, and behavioral genetic literature. However, methodological issues preclude firm conclusions regarding the effect of adverse childhood experiences. In this symposium, we explore these biases and propose novel methods for mitigating three methodological issues pertinent to the study of early childhood: 1) Events often co-occur both with each other and with other adverse environmental exposures, creating difficulty in isolating the effect of each experience; 2) Events are not static but rather embedded in trajectories of accumulating risk which may be important for the prediction of health outcomes; and 3) Measurement is often based on retrospective report in adulthood, which is subject to substantial error and may be differential in nature. In this symposium, we examine the epidemiology of adverse childhood events, and will stimulate discussion on methodological tools relevant to the assessment and analysis of the associations between adverse childhood events and health outcomes in adulthood.

Speakers:
Childhood adversities and adult psychiatric disorders: Methodological issues and a strategy for accounting for exposure co-occurrence - Katie A. McLaughlin
A latent variables approach to estimating the associations between and among adverse childhood events and the internalizing/externalizing spectrum of psychopathology: strategies for coping with co-linearity - Katherine M. Keyes
Modeling lifecourse neighborhood exposures: accounting for trajectories of material deprivation in childhood in estimating risk of adult emotional distress - Magdalena Cerda
Exploring differences in retrospective and prospective assessments of childhood adversity in the 1958 British Birth cohort - Charlotte Clark

Discussant: Sandro Galea

0327

CHILDHOOD ADVERSITIES AND ADULT PSYCHIATRIC DISORDERS: METHODOLOGICAL ISSUES AND A STRATEGY FOR ACCOUNTING FOR EXPOSURE CO-OCCURRENCE. *Katie A. McLaughlin, Ph.D.[1]; Jennifer G. Green, Ph.D.[2]; Ronald C. Kessler, Ph.D.[3] ([1]Div of General Pediatrics, Children's Hospital Boston, Harvard Medical Sch; [2]School of Education, Boston University; [3]Dept of Health Care Policy, Harvard Medical School)

Substantial evidence suggests that exposure to adverse childhood experiences is associated with the later onset of physical and mental health problems in adulthood. The first wave of studies in this area examined associations between individual adverse events—such as parental death, physical abuse, neglect, and family violence—with adult outcomes. Subsequent assessments of adverse childhood experiences in population-based studies indicated that these exposures were highly co-occurring, suggesting that studies focused on a single adversity were likely to overestimate the association between specific experiences and health outcomes. These findings sparked a second wave of studies that examined the associations of adult outcomes with measures of the number of different adversities that had occurred in a respondent's childhood. These studies documented dose-response relationships between adverse childhood experiences and a wide range of adult outcomes. This approach assumes, however, that the associations between adverse childhood experiences and adult health outcomes are additive and precludes identification of specific adversities that are more strongly associated with poor health than others. We utilized an innovative modeling strategy to examine simultaneously the associations of both type and number of childhood adversities with the subsequent first onset of DSM-IV psychiatric disorders using data from the National Comorbidity Survey Replication, a population-based sample of adults (N=9,282). Results indicated that adversities related to maladaptive family functioning (abuse, neglect, family violence, parental criminality and psychopathology) were most strongly associated with psychiatric disorders. Multiple adversities had significant sub-additive associations with mental disorders. These findings highlight a novel approach for estimating the associations of co-occurring exposures with the onset of health problems.

0328

CHILDHOOD ADVERSITIES AND THE STRUCTURE OF COMMON PSYCHIATRIC DISORDERS. *Katherine M. Keyes, PhD MPH[1,2], Nicholas R. Eaton, MA, Robert F. Krueger, PhD, Katie McLaughlin, PhD, Melanie M. Wall, PhD, Bridget F. Grant, PhD PhD, Deborah S. Hasin, PhD ([1]Dept of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY; [2]Dept of Psychiatry, College of Physicians and Surgeons, Columbia University, New York, NY)

Existing literature suggests that various types of child maltreatment frequently co-occur and confer broad risk for multiple psychiatric diagnoses. However, it is unknown whether specific maltreatments effect latent psychopathology liability dimensions or instead effect specific disorders. We utilized a latent variable approach to study the associations of childhood maltreatment with latent dimensions of internalizing and externalizing psychopathology and to examine gender differences in these associations. Data were drawn from a nationally representative face-to-face survey of 34,653 adults in the U.S. general population. Lifetime DSM-IV psychiatric disorders assessed using the AUDADIS-IV. Physical, sexual, and emotional abuse and neglect were assessed using validated measures. Analyses controlled for other childhood adversities and sociodemographics. Results indicated that the associations of maltreatment with psychiatric disorders operated exclusively through a latent liabilities to experience internalizing and externalizing psychopathology, indicating that childhood maltreatment was associated with an underlying liability to express broad internalizing and externalizing psychopathology rather than with specific psychiatric disorders. Physical abuse was associated with the externalizing dimension among men only, and with the internalizing dimension among women only. Emotional abuse was associated with the externalizing dimension only among women. Neglect was not significantly associated with psychopathology dimensions. The association between childhood maltreatment and common psychiatric disorders operates through latent liabilities to experience internalizing and externalizing psychopathology, indicating that the prevention of maltreatment may have a wide range of benefits for many common mental disorders. Certain types of maltreatment have differential consequences for the expression of internalizing and externalizing psychopathology.

0329

MODELING LIFECOURSE NEIGHBORHOOD EXPOSURES: ACCOUNTING FOR TRAJECTORIES OF MATERIAL DEPRIVATION IN CHILDHOOD IN ESTIMATING RISK OF ADULT EMOTIONAL DISTRESS. *Magdalena Cerdá, DrPH.[1] MPH; Magdalena Paczkowski, MS[1], Arijit Nandi, PhD[2], Tyler Vanderweele, PhD[3], Briana Mezuk, PhD[4], Regina Shih, PhD[5], Sandro Galea, MD DrPH[1] ([1]Department of Epidemiology, Mailman School of Public Health, Columbia University; [2]Institute for Health and Social Policy, McGill University; [3]Department of Epidemiology, Harvard School of Public Health; [4]Department of Epidemiology and Community Health, Virginia Commonwealth University; [5]RAND Corporation)

Neighborhood socioeconomic context (NSES) in childhood may play an important role in shaping adult emotional distress. The bulk of studies on neighborhoods and emotional distress fail to prospectively examine the relative influence of childhood vs. adult NSES on adult distress. We examine the extent to which childhood NSES has a direct effect on adult emotional distress, relative to an indirect effect mediated by adult NSES. We use data from the Panel Study on Income Dynamics (PSID), a household panel survey of a nationally representative sample of US families, followed from 1968-2007. Our analytic sample consists of respondents born in 1968-1978, with parents who were part of the study since 1968, and who themselves became adult PSID respondents in 1997-2007 (n=1039). We use a composite measure of NSES, including the proportion of residents in poverty, receiving public assistance, in non-professional/managerial occupations, and median income. We estimate the average NSES from birth until the respondent left the parental household, and NSES in adulthood. Emotional distress is measured in adulthood using the K6. We use marginal structural models with stabilized inverse probability weighted Poisson repeated measures regressions to estimate the total, direct and indirect effects of childhood NSES on adult emotional distress. This study illustrates methodological issues involved in estimating the direct effect of early-life neighborhood exposures on health, when early-life neighborhood conditions strongly influence adult neighborhood exposures.

0330

EXPLORING DIFFERENCES IN RETROSPECTIVE AND PROSPECTIVE ASSESSMENTS OF CHILDHOOD ADVERSITY IN THE 1958 BRITISH BIRTH COHORT. *Charlotte Clark, Stephen Stansfeld (Centre for Psychiatry, Barts & the London School of Medicine, Queen Mary University of London, UK)

Experiencing adversity in childhood confers an increased risk of psychopathology in adulthood. However, assessment of childhood adversity is often based on retrospective recall in adulthood. This paper compares retrospective and prospective reports of childhood adversity in the 1958 British birth cohort, examining gender differences in prevalence and associations with psychopathology in adulthood. Data were from the 1958 British birth cohort, a 45 year study of 98% of births in one week (N=9377). Prospective childhood adversities reported by parents and doctors included parental absence, institutional care, illness, and neglect. Retrospective reports of 17 childhood adversities including sexual and physical abuse were assessed at 45 years. Measures of psychopathology across the lifecourse were available. There were no gender differences in the prospective reports of childhood adversities. Retrospectively recalled adversities showed significant gender differences: males were more likely to report an unaffectionate father and poverty; females were more likely to report fourteen out of the seventeen adversities, including sexual abuse, unaffectionate mother, and neglect. Both prospective and retrospectively assessed adversities showed associations with psychopathology, with stronger associations for the retrospective measures. Methods of assessing childhood adversity influence associations with psychopathology. This could reflect recall bias; gender differences in thresholds for reporting experiences as adverse; a greater sensitivity of retrospective measures to detect adversity; or the potential for retrospective measures to cue individuals to recall adverse experiences.

0331

ORGANOPHOSPHATE PESTICIDES & NEURODEVELOPMENT: BIOLOGICAL PLAUSIBILITY & FINDINGS FROM THREE CHILDREN'S ENVIRONMENTAL HEALTH CENTERS. Stephanie Engel, Virginia Rauh, Brenda Eskenazi (Mount Sinai School of Medicine)

Starting in 1998, NIEHS & EPA funded three Children's Environmental Health and Disease Prevention Research Centers to examine the influence of organophosphate pesticides in diverse exposure settings on childhood growth and development. Three independent birth cohorts were established, and the children from these cohorts were followed prospectively for 10 years, with periodic neurodevelopmental assessment. In 2001 and 2004 respectively, the residential use registrations for chlorpyrifos and diazinon were voluntarily cancelled. In this symposium, we will present pesticide-specific and non-specific organophosphate metabolite biomarker data in relation to neurodevelopment at 12 and 24 months, and psychometric intelligence at 7 years of age. The presenting Centers represent urban and rural/agricultural populations, with diverse exposure settings and demographics. We will incorporate a moderator-lead discussion on methodological issues and future directions of this research, as well as a synthesis of the findings.

Speakers:
Organophosphate Pesticide Exposure Assessment - Robin Whyatt
Prenatal Organophosphate Pesticide Exposure, PON1 and Neurodevelopment in the Mount Sinai Children's Environmental Health Center
Stephanie Engel
Prenatal Organophosphate Pesticide Exposure and Neurodevelopment in the CHAMACOS study of Children's Environmental Health
Brenda Eskenazi
7-Year Neurodevelopmental Consequences of Prenatal Exposure to Chlorpyrifos, a Common Organophosphate Pesticide
Virginia Rauh

Discussion leader: Robin Whyatt

0332

PLATFORMS AND PARTNERSHIPS FOR POPULATION STUDIES: CAN NEW COHORTS CONTRIBUTE? John McLaughlin (Cancer Care Ontario and the University of Toronto)

There is world-wide interest in large-scale cohort studies as a base for research on disease causes and determinants. This interest has contributed to a new era for epidemiology that benefits from collaborations and consortia, but which has also introduced new challenges now that studies must be conducted or pooled across diverse populations. The Canadian Partnership for Tomorrow project (CPTP) is a large-scale, pan-Canadian, prospective cohort that was launched in 2008 to serve as a platform for studies that advance knowledge of the risk factors for cancers, cardiovascular and other chronic diseases. Building on the experience of major cohorts internationally, the harmonization of methods and tools was a primary focus in the development of 5 regional cohorts that contribute to CPTP, which sets the context for this session on international roles and impacts of cohorts. The symposium examines whether new and emerging cohorts can make unique contributions, and the extent to which cohort platforms address local health concerns and contribute to scientific advances. The symposium also aims to inform the national/international research communities of the development and status of emerging cohorts including the CPTP, while inviting epidemiologists to make use of the platforms and to become actively involved through new grant-funded studies.

0333

TISSUE-BASED IMMUNE MARKERS AND CANCER. *Wenny Lin (National Cancer Institute, Division of Cancer Epidemiology & Genetics)

This symposium is for molecular epidemiologists interested in the most robust methods and techniques to study tissue-based immune markers and cancer. Immune cells of various subtypes represent the host-to-tumor reaction, and the current view is that some immune cells have both pro- and anti-tumor properties. Studies of various tumor sites have found that chronic inflammation may be associated with tumor development and progression, while other studies showed that the presence or absence of immune subsets may be correlated with patient prognosis and survival.

Our panel of speakers will provide their expertise in individual talks and audience discussions regarding:
1) Tissue-based markers in general, including the value of measuring immune responses in the tumor tissue and their usefulness in epidemiologic studies of etiology and prognosis
2) Techniques and technology for high-throughput measuring of immune markers in tissues, including issues of tissue selection, tissue heterogeneity, and the utility of computerized algorithms
3) Potential of these methods to evaluate progression and regression of precursor lesions in well-characterized epidemiologic studies

We aim to address the issues facing the molecular epidemiologist interested in designing a study to examine tissue-based immune markers and cancer.

Speakers:
The impact of host immunity on cancer outcomes - Brad H. Nelson, PhD (British Columbia Cancer Agency)
Sources of Bias and Misclassification in Assessing Protein Expression by Quantitative Immunohistochemistry - Bonnie E. Gould Rothberg, MD, PhD, MPH (Yale University)
Evaluating immune markers in epidemiologic studies - Jill Koshiol, PhD (National Cancer Institute, NIH)

0334

THE IMPACT OF HOST IMMUNITY ON CANCER OUTCOMES. Brad H. Nelson (British Columbia Cancer Agency)

Over the past decade, it has become increasingly clear that the immune system strongly influences clinical outcomes in human cancer. This is best documented by studies of tumor-infiltrating lymphocytes (TIL), which are present in a significant proportion of solid tumors. TIL consist of activated, clonally expanded populations of T cells and B cells that infiltrate stromal and epithelial regions of the tumor. TIL presumably arise through spontaneous recognition of abnormal gene products expressed by the tumor. In a broad range of cancers, TIL are associated with favourable responses to treatment as well as increased patient survival, strongly suggesting TIL can mediate anti-tumor activity. The most important TIL subsets underlying this activity are CD8+ T cells and CD20+ B cells. Other prominent cell types include CD4+ helper T cells and FOXP3+ regulatory (suppressor) T cells, although their association with patient survival remains incompletely understood. With better understanding of TIL, including their functional properties, mechanism of action, and interaction with standard treatments, it may be possible to enhance TIL activity through vaccination or immune-modulation, thereby engaging host immunity to further improve cancer outcomes.

0335

SOURCES OF BIAS AND MISCLASSIFICATION IN ASSESSING PROTEIN EXPRESSION BY QUANTITATIVE IMMUNOHISTOCHEMISTRY. *B.E. Gould Rothberg and D.L. Rimm (Yale University, New Haven, CT 06520)

Cancer survivorship research has expanded the scope of molecular epidemiology to include studies that evaluate the prognostic or predictive utility of differentially expressed proteins, as assessed by immunohistochemistry (IHC) or quantitative immunofluorescence (QIF), on formalin-fixed, paraffin-embedded tissue specimens. Innovations such as tissue microarrays, which allow assessment of large cohorts in a single experimental run, and automated quantification of results have enabled application of IHC or QIF on an epidemiologic scale. Although the REMARK, MISFISHIE and STROBE-ME guidelines outline the minimal methodologic rigor required for reporting quantitative TMA-based IHC data, none adequately address all sources of experimental uncertainty that can introduce bias or misclassification. We recognize five major sources for potential measurement error: 1) measurement or quantification method 2) tissue heterogeneity, 3) target probe (antibody) selection and validation, 4) detection technique, including antigen retrieval, titration of primary antibody and visualization technique, and 5) “pre-analytical” variables generated during surgical specimen handling from time-to-fixation through TMA sectioning and storage. Here, we will address the first two topics 1) quantification methods and 2) tissue heterogeneity on measurement error. We will compare QIF and IHC stain-based automated quantitative platforms with emphasis on the topic of compartmentalization – how the subset of reactivity that co-localizes with the cell type of interest is identified and measured. Then we will address heterogeneity by review of data supporting optimization of core location and quantity and requirements for whole slide assays.

0336

EVALUATING IMMUNE MARKERS IN EPIDEMIOLOGIC STUDIES. *Jill Koshiol (Division of Cancer Epidemiology and Genetics, Infections and Immunoepidemiology Branch, NCI/NIH/DHHS, Bethesda, MD, United States)

Analysis of immune-related markers can provide clues into how and why cancer develops, along with therapeutic response and survival. Although many studies of cancer and immunity have focused on the analysis of circulating markers, particularly cytokines, these measurements may not or may not reflect immune responses that are biologically and clinically relevant at the target organ. Consequently, assessment of local immune responses in target tissues may provide the clearest data related to etiology, pathogenesis, natural history, and biological behavior of cancers and their precursors. An increased understanding of these site-specific biological mechanisms will enhance the development of biomarkers that can be applied to screening, prevention, and treatment efforts. This session will discuss the promise of using routinely collected and processed formalin-fixed tissue specimens to understand immune factors in molecular epidemiologic studies to understand the relationship between immune factors and cancer development. We will explore the strengths and weaknesses of this approach and identify future directions for advancing this field of research.

0337

TO SCAN OR NOT TO SCAN? THE PEDIATRIC CT DEBATE. *A Berrington de Gonzalez (National Cancer Institute)

Worldwide radiation exposure from medical sources has approximately doubled in the last 15 years and in the US it has increased 6-fold since 1980. The primary reason for this increase is a dramatic rise in the number of CT scans performed. Whilst CT can provide great medical benefits its use also involves a risk of radiation-related cancer. These risks are likely to be higher for children because they have been shown to be more radiosensitive and have longer life-expectancy to accumulate risk. Both the benefits and the risks from the current levels of CT imaging in children have been hotly debated. The purpose of this symposium will be to discuss the risks and the benefits from the perspective of both epidemiologists and radiologists. Topics will include an overview of the ongoing epidemiological studies to evaluate cancer risks, trends in use, estimates of the potential future cancer risks, appropriate use criteria and efforts to reduce scanning levels and doses through public health campaigns like Image Gently.

Speakers:

Overview of Epidemiological studies and Trends in Pediatric CT Use - Mark Pearce, PhD (Institute of Health & Society, University of Newcastle, UK)
Projected Cancer Risks from Pediatric CT scans - Amy Berrington de Gonzalez, DPhil (Division of Cancer Epidemiology & Genetics, National Cancer Institute)
A Clinical Perspective of the Appropriate Use of CT in Children - Thomas Slovis, MD (Wayne State University School of Medicine)

0338

WHAT ROLE DOES THE EPIDEMIOLOGIST PLAY IN GENETIC EPIDEMIOLOGY? *C Avery and *K Monda (University of North Carolina, Dept of Epidemiology)

Genetics and epidemiology share historical roots dating back to the 1950s. As a discipline, genetic epidemiology did not blossom until the mid-1990s when technological advances facilitated interrogation of the human genome. This has allowed unparalleled abilities to examine large-scale genetic data at low cost, prompting assembly of large databases and multi-study/international consortia. Given the diverse disciplines represented in these consortia, the direction of the field will undoubtedly be influenced by numerous perspectives. As genome sciences continue to mature, what role does the epidemiologist play? Should epidemiologists reframe the genetic epidemiology paradigm to incorporate social, economic, and physical contexts into studies that examine the influence of genetic factors on human health? Ultimately how can epidemiologists incorporate lessons learned over the last 15 years to inform the direction of the field given the large amount of resources allocated and the lack of clarity regarding public health benefits? This symposium will address the evolving roles of epidemiologists in the rapidly advancing world of population genetics research.

0339

DEVELOPMENT OF A METHOD FOR ASSESSMENT OF RISK OF LUNG CANCER. *I. Karp, M. Abrahamowicz, K. Leffondre, J. Siemiatycki (University of Montreal, Montreal, Quebec, Canada, H2W 1V1)

Accurate assessment of risk of lung cancer represents an important part of health education, which can facilitate informed and rational decision-making regarding cigarette smoking cessation and lung cancer screening. To develop and validate a model for assessing the risk of lung cancer, we used data from a population-based case-control study conducted in Montreal, Quebec, Canada in 1996-2001. Individuals diagnosed with lung cancer (n=1205) and age-/sex-matched lung cancer-free subjects (n=1541) filled out detailed questionnaires documenting life-time cigarette smoking behaviour and occupational, medical, and family history. A multiple logistic regression model was fitted to the data, which were weighted by the inverse of age- and sex-stratum-specific "sampling fractions". In this model, incidence-density of lung cancer was represented as a function of age, sex, three dimensions of cigarette smoking history (time since cessation, duration of cigarette smoking, and the average number of cigarette smoked), family history of lung cancer, history of emphysema, pneumonia, and hay fever, and history of exposure to asbestos, fumes, benzene, fibers, pesticides, glues, and dry cleaning. Model overfitting was corrected using bootstrap cross-validation. Profile-specific incidence-density estimates were then converted to the corresponding risk estimates based on the exponential formula. The model was characterized by reasonably good fit and predictive ability, and has been made available on-line in a user-friendly format at http://episerve.chumontreal.qc.ca/calculation_risk/risk/riskadd.php. The developed risk assessment method may eventually become an important component of a comprehensive lung cancer control program.

0340

LUNG CANCER RISK AMONG SMOKERS OF MENTHOL CIGARETTES. W.J. Blot, S.S. Cohen, M. Aldrich, J.K. McLaughlin, M.K. Hargreaves, *L.B. Signorello (Vanderbilt University, Nashville, TN; International Epidemiology Institute, Rockville, MD; Meharry Medical College, Nashville, TN)

Menthol cigarettes, preferred by African American smokers, have been conjectured to be harder to quit and to contribute to the excess lung cancer burden among black men, but prospective data on this issue are limited. The FDA is currently considering whether to ban their sale in the United States. In a prospective study of 85,806 racially diverse adults enrolled in the Southern Community Cohort Study during 2002-2009, we compared lung cancer incidence and mortality risks and quit rates for menthol vs. non-menthol cigarette smokers. Among both blacks and whites, menthol smokers reported smoking fewer cigarettes per day [1.6 (95%CI 1.3-2.0) fewer for blacks; 1.8 (95%CI 1.3-2.3) fewer for whites] than non-menthol smokers. During an average of 4.3 years of follow-up, 21% of participants smoking at baseline had quit, with menthol and non-menthol smokers equally likely to quit [odds ratio, OR=1.0 (95%CI 0.9-1.2)]. In a nested case-control study of 463 incident lung cancer cases and 2,315 matched controls, the ORs for lung cancer for smokers of <10, 10-19 and ≥20 cigarettes per day (relative to never smokers) were 5.0, 8.7 and 12.2 for menthol smokers and 10.3, 12.9 and 21.1 for non-menthol smokers. This pattern was mirrored for lung cancer mortality. In multivariate analyses adjusted for pack-years of smoking, menthol cigarette type was associated with a lower lung cancer incidence [OR=0.65, 95%CI 0.47-0.90] and mortality [hazard ratio=0.69, 95%CI 0.49-0.95] than non-menthols. The findings suggest that menthol cigarettes are no more, and perhaps less, harmful than non-menthol cigarettes.

0341

ADIPOSITY AND RISK OF LUNG CANCER IN A LARGE POPULATION. *Y. Li, D. Baer, Stanton Siu, N. Udaltsova, G. Friedman, and A. Klatsky (Kaiser Permanente Medical Care Program, Oakland, CA)

Several previous reports suggest an inverse relation of adiposity to risk of lung cancer but residual confounding by smoking or existence of baseline illness have been suspected explanations. We performed a cohort study of 128, 874 men and women (mean baseline age 41.0 years) free of cancer history and with baseline data, including body mass index (BMI), at health examinations in 1978-85. Through 2008 lung cancer was subsequently diagnosed in 1852 persons. Cox proportional hazards models estimated relative risk (RR) of lung cancer adjusted for age, ethnicity, alcohol intake, education, and smoking. BMI was studied as a categorical and continuous variable. Adjusted RR (95% confidence intervals) vs persons with BMI < 25 kg/m2 was 0.8 (0.7-0.9; $p < 0.001$) for persons with BMI 25-29 kg/m2 and it was 0.6 (0.5-0.8; $p < 0.001$) for those with BMI ≥ 30 kg/m2. With BMI as a continuous variable the adjusted RR per BMI unit was 0.96 (0.95-0.97, $p < 0.001$). Increased BMI had similar inverse relationships in men, women, whites, blacks, and Asians, as well as for the major non-small cell histological LC cell types. The RR associated with BMI ≥ 30 in never smokers was 0.6 (0.3-1.0), in exsmokers it was 0.7 (0.5-0.9), in < 1 pack/day smokers it was 0.7 (0.5-0.9), and in ≥ 1 pack/day smokers it was 0.7 (0.5-0.9). A test for interaction of BMI and smoking was not statistically significant. The RR associated with BMI ≥ 30 was 0.6 (0.4-0.8) if lung cancer diagnosis occurred within < 10 years and 0.7 (0.5-0.8) if the interval was ≥ 10 years. We screened 15 major cancer sites for adiposity-related risk; five had significantly ($p < 0.05$) increased risk and only lung cancer was inversely related. We conclude that, independent of smoking and interval to diagnosis, adiposity has an unexplained inverse association with risk of lung cancer.

0342-S

TRENDS IN LUNG CANCER MORTALITY IN SOUTH AFRICA: 1995-2006. *Oluwafolajimi Fadahun, Braimoh Bello, Danuta Kielkowski, and Gill Nelson (National Institute for Occupational Health, National Health Laboratory Service, Braamfontein 2000, Johannesburg, Gauteng Province, South Africa)

Background: Cancer remains a major cause of morbidity and mortality worldwide. In developing countries, data on lung cancer mortality are scarce. Methods: Using South Africa's annual mortality and population estimate data, we calculated lung cancer age-standardised mortality rates for the period 1995 to 2006. The population structure for the year 2001 was used as the standard population. Scatter plots and regression models were used to assess linear trends in mortality rates. To better characterise emerging trends, regression models were also partitioned for defined periods. Results: Lung cancer caused 52,217 deaths during the study period. There were 4,525 deaths for the most recent year (2006), with men accounting for 67% of deaths. Overall, there was no significant decline in lung cancer mortality in South Africa from 1995 to 2006 (slope = 0.02, $p = 0.847$). In men, there was a statistically non-significant annual decline of 0.24 deaths per 100,000 persons ($p = 0.138$) for the study period. However, from 2001 to 2006, the annual decline of 0.81 deaths per 100,000 persons was statistically significant ($p = 0.005$). In women, the mortality rate increased significantly at an annual rate of 0.17 per 100,000 persons ($p = 0.031$) for the study period, and at a higher rate of 0.28 per 100,000 persons ($p= 0.008$) from 1999 to 2006. Conclusions: The more recent declining lung cancer mortality rate in men is welcome but the increasing rate in women is a public health concern that warrants intervention. Smoking intervention policies and programmes need to be strengthened to further reduce lung cancer mortality in men and to address the increasing rates of lung cancer in women.

0343

ESTROGENIC BOTANICAL SUPPLEMENTS, HEALTH-RELATED QUALITY OF LIFE, FATIGUE, AND HORMONE-RELATED SYMPTOMS IN BREAST CANCER SURVIVORS: A HEAL STUDY REPORT. *H Ma, J Sullivan-Halley, AW Smith, ML Neuhouser, K Meeske, R McKean -Cowdin, CM Alfano, SM George, R Ballard-Barbash, and L Bernstein (City of Hope National Medical Center, Duarte CA)

It remains unclear whether estrogenic botanical supplement (EBS) use has effects on breast cancer survivors' health-related quality of life (HRQOL), fatigue, or hormone-related symptoms. We examined the association of EBS use (overall, by number of EBS types, or by specific type) with HRQOL as measured by the Medical Outcomes Study short form-36 physical (PCS) and mental (MCS) component scale summary score, with fatigue measured by the Revised-Piper Fatigue Scale score, and with different hormone-related symptoms such as sleep interruption, hot flashes, and night sweats among 779 breast cancer survivors participating in the Health, Eating, Activity, and Lifestyle (HEAL) Study. 39.9% of breast cancer survivors reported having used at least one type of EBS since their breast cancer diagnosis. Neither overall EBS use nor the number of types of EBS used was associated with HRQOL, fatigue or hormone-related symptoms. However, analyses of specific types of EBS revealed that compared with non-EBS users, flaxseed oil users were more likely to have better overall mental health summary scores (OR = 1.91, 95% CI = 1.14-3.19) and were less likely to experience severe fatigue (OR = 0.60, 95% CI = 0.36-1.01). Compared with non-EBS users, ginseng users were more likely to experience severe fatigue (OR = 1.53, 95% CI = 0.94-2.47) and were also more likely to have different hormone-related symptoms. Alfalfa users were less likely to experience sleep interruption (OR = 0.30, 95% CI = 0.12-0.75) and DHEA users were less likely to have hot flashes (OR = 0.39, 95% CI = 0.15-0.98), although both statistically significant associations were based on small numbers of users. Our findings indicate that the importance of evaluating the effects of specific type of EBS in future studies.

0344

TOBACCO-RELATED CANCER RISKS AND MENTHOL CIGARETTES: A CASE-CONTROL STUDY. *S. D. Stellman (Dept. of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY 10032)

The Family Smoking Prevention and Tobacco Control Act of 2009 authorizes the FDA to regulate cigarette content. The FDA Tobacco Products Scientific Advisory Committee is weighing recommendations to regulate menthol, the best-known cigarette additive. Most lung cancer studies and one esophageal cancer study have shown no evidence of additional risk in menthol cigarette smokers. We assessed risks for 5 cancer sites in 13,677 persons in the 1984-98 American Health Foundation hospital-based case-control study conducted in the three major New York City cancer centers (Memorial Sloan-Kettering, Columbia Presbyterian, New York University) and other cities (Stellman SD, Ann Epidemiol 2003; 13:294-302). Cases were confirmed by histopathology. Controls with non-tobacco-related illnesses were frequency matched to cases on sex, age, hospital, and year of interview. A total of 8,522 smokers had never smoked menthol cigarettes, 1,187 had smoked menthol cigarettes exclusively, and 1,445 smoked both types. Mixed type smokers accumulated 56-80% of total pack-years on menthol. We classified a person as a menthol smoker if he or she smoked ≥1 menthol brand, and adjusted for total pack-years in logistic regressions. Adjusted odds ratios (ORs) for current smoking ranged from 3.9 (95% confidence interval, CI: 3.0-5.1) for bladder cancer to 40 (95% CI 18-92) for larynx cancer, with intermediate ORs for mouth, lung, and esophageal cancer, all significantly >1. In current smokers, adjusted odds ratios for menthol smoking were between 0.7 and 1.0 for all sites, none significant. These data do not provide evidence of increased risk of lung or other cancers in menthol brand smokers beyond the well-known risks of cigarette smoking.

0345

SMOKING AT TIME OF BREAST CANCER DIAGNOSIS AND SURVIVAL. * J. Brisson, S. Bérubé and J. Lemieux (URESP, Centre de recherche FRSQ du Centre hospitalier *affilié* universitaire de Québec, Qc)

This study examines the relation of smoking status at time of breast cancer diagnosis to survival among 5,936 women diagnosed with invasive breast cancer treated in a Canadian breast center between 1987 and 2008. Date and cause of death were identified through linkage to Quebec Mortality File. Women were classified as never, former or current smokers, and according to duration of smoking (≤ 20 or > 20 years) and cigarettes smoked per day (≤ 15 or > 15 /day). Cox proportional-hazards models were used to assess the independent effect of smoking on overall and breast cancer mortality taking into account potential prognostic factors. Overall mortality rate was higher among current (mortality ratio, RR=1.38, 95% confidence interval, CI: 1.20-1.59) and to a lesser extent among former (RR=1.19, 95% CI: 1.04-1.37) smokers, relative to never smokers. There was a trend of an increased overall mortality with duration of smoking (p-trend<0.0001) and with quantity smoked (p-trend<0.0001). The patterns of the associations between smoking status at time of diagnosis and breast cancer mortality were consistent with those based on overall mortality: breast cancer mortality was slightly higher among current (RR=1.14, 95% CI: 0.96-1.35) and former (RR=1.08, 95% CI: 0.91-1.28) smokers, relative to never smokers. Relative to never smokers, breast cancer mortality was 1.32 (95% CI: 1.07-1.63) times higher among current smokers who are smoking for more than 20 years and 1.21 (95% CI: 0.98-1.51) times higher among those currently smoking more than 15 cigarettes/day. Smoking at time of breast cancer diagnosis decreases life expectancy, and also seems to interfere with breast cancer prognosis.

0346

PHYTOESTROGEN FOOD AND SUPPLEMENT INTAKE AMONG WOMEN NEWLY DIAGNOSED WITH BREAST CANCER. *B. A. Boucher, M. Cotterchio, S. A. Harris, V. A. Kirsh, N. Kreiger, P. Goodwin (Cancer Care Ontario, Toronto, Canada M5G 2L7)

Phytoestrogens (PE) are found in foods such as soy (isoflavones) and flax (lignans), and in some supplements. Their role in breast cancer recurrence and treatment involving estrogen receptors (ER) is controversial, and it is unclear how this affects patient PE intake. A questionnaire was mailed to 417 newly diagnosed breast cancer cases identified using the Ontario Cancer Registry, to determine intake of PE foods and supplements in the last 2 months, changes since diagnosis, and differences by ER tumor status or hormonal treatment (HT). Of 278 (67%) patients who completed questionnaires, ER status was available for 72% and 67% reported HT. Fifty-six percent of cases reported consuming soy foods in the last 2 months, and 39% included important isoflavone foods (tofu, soybeans, soy milk, soy nuts). Most women reported non-soy foods high in isoflavones (86%) or lignans (70%). Among consumers, most PE foods were infrequently eaten; only soy milk, flaxseed and flaxseed bread were commonly consumed ≥1-2 times/week. Four percent of cases took isoflavone (e.g. soy, red clover) or lignan (flax) supplements in the last 2 months, and 17% started or stopped soy foods since diagnosis (most stopped). There was no difference in current PE food or supplement intake by ER status or HT. However, starting or stopping soy foods was more frequently reported by those receiving HT (20%; 95% confidence interval (CI): 14, 26) versus no HT (6%; 95% CI: 1, 12), and most reported stopping. Results suggest some important PE foods but few PE supplements are consumed after a recent breast cancer diagnosis; intake may not vary by ER status or HT, other than more frequently stopping soy foods with HT.

0347

USE OF SUPPLEMENTS CONTAINING ISOFLAVONES (PHYTOESTROGENS) AND BREAST CANCER RISK: CASE-CONTROL STUDY AMONG WOMEN IN ONTARIO, CANADA. *B.A. Boucher, M. Cotterchio, L.N. Anderson, V.A. Kirsh, N. Kreiger, L.U. Thompson (Cancer Care Ontario, Toronto, Canada M5G 2L7)

Phytoestrogen (PE) intake has been associated with reduced breast cancer risk, however, most studies have evaluated food sources only. The association between supplements containing isoflavones (a major PE) and breast cancer risk was evaluated using cases recruited from the Ontario Cancer Registry (n=3101) and controls identified through random digit dialing of Ontario households (n=3471) in 2003-2004. Multivariate logistic regression was used to evaluate associations for 28 supplements listing ingredients known to contain isoflavones (confirmed through laboratory analysis) and breast cancer risk. Several supplements were independently associated with reduced breast cancer risk (e.g., bioflavonoid, cranberry, wild yam). Considering all isoflavone supplements, breast cancer risk was reduced among women who ever used >2 supplements (age-adjusted odds ratio (AOR) = 0.68; 95% confidence interval (CI): 0.54, 0.86), and if total duration of use was greater than 5 years (AOR = 0.63; 95% CI: 0.50, 0.80). Considering only high potency supplements (>600 µg isoflavones/daily dose), ever use was also associated with reduced breast cancer risk (AOR = 0.72; 95% CI: 0.56, 0.91), as was use for 1 or more years (AOR = 0.53; 95% CI: 0.34, 0.83) or of >2 items (AOR = 0.65; 95% CI: 0.48, 0.88). Associations did not differ by hormone receptor status, but were stronger among postmenopausal than premenopausal women. Overall the results of this study suggest that ever use of supplements containing isoflavones may reduce breast cancer risk, particularly among postmenopausal women.

0348-S

MULTIPLE IMPUTATION IN SMALL CLINICAL DATASETS: A PREDICTION MODEL FOR LUNG CANCER. *SA Deppen; JB Putnam; T Speroff; J Nesbitt; E Lambright; MC Aldrich and EL Grogan (Vanderbilt University Medical Center, Nashville, TN, 37232)

No validated models exist to predict lung cancer in populations being evaluated by thoracic surgeons. Missing data plagues clinical datasets. Using only cases with complete data for analysis may introduce bias. We hypothesize that imputation can improve the accuracy of a model to predict lung cancer in a surgical population. A retrospective cohort of 268 patients underwent an operation for known or suspected lung cancer. Systematic chart review collected epidemiologic and radiologic data. All patients had pathologic tissue diagnosis. Multiple imputation with chained equations generated 10 datasets. Separate multivariate logistic regression models using complete and imputed data were developed to predict the risk of lung cancer. 92 of 268 patients had complete data across all 11 variables of interest. Overall lung cancer prevalence was 75% among all patients and 83% among those with complete data (n=92). Models using imputed and complete data both had areas under the receiver operating curve of 0.87 and were well calibrated. The predictive model using imputed data was more precise (95% confidence interval [CI]: 0.82-0.92) compared to the complete case model (95% CI: 0.78-0.97). Age (odds ratio [OR] 1.10, 95% CI 1.05-1.14), positron emission tomography result (OR 6.5, 95% CI 2-21), and nodule size (OR 1.07, 95% CI 1.02-1.13) were predictors of lung cancer in the imputed model. Our model predicts lung cancer in patients being evaluated for thoracic surgery and should be validated in an independent dataset. Multiple imputation is effective in small clinical datasets with missing data and improves the predictive model precision.

0349

HORMONE CONCENTRATIONS, FATIGUE, AND SELF-RATED HEALTH AMONG BREAST CANCER PATIENTS . *L Gallicchio, B Wood, R MacDonald, K Helzlsouer (The Prevention and Research Center, Mercy Medical Center, Baltimore, MD)

Purpose. To examine the associations between serum hormone, vitamin D and C-reactive protein (CRP) concentrations with self-rated health and fatigue among breast cancer patients. Methods. Baseline data from a cohort study of 100 breast cancer patients initiating aromatase inhibitor therapy were analyzed. Questionnaire data on demographics, medications, symptoms (including fatigue), and self-rated health were collected and blood was drawn. Blood specimens were assayed for testosterone, androstenedione, dehydroepiandrosterone sulfate, sex hormone-binding globulin, 25-hydroxyvitamin D, and CRP. Generalized linear models were used to examine the associations between the hormones, vitamin D, CRP, and the outcome variables of self-rated health and fatigue adjusting for age, body mass index, prior chemotherapy, prior radiation, and time since diagnosis. Results. In unadjusted analyses, lower vitamin D and higher CRP concentrations were associated with worse self-rated health and more fatigue. After adjustment for potential confounders, trends persisted but only the association between CRP and self-rated health remained statistically significant (excellent/very good self-rated health, mean CRP 1.8 mg/L; good self-rated health, mean CRP 3.0 mg/L; fair/poor self-rated health, mean CRP 4.0 mg/L; p-for-trend=0.049). Hormone concentrations were not associated with either outcome variable. Conclusions. Findings from this study suggest that vitamin D and CRP concentrations, but not hormone levels, may be associated with self-rated health and fatigue among breast cancer patients. This study was funded by NCI (CA132147-01A2), AstraZeneca, and Susan G. Komen for the Cure.

0350

CIRCULATING MARKERS OF INTERSTITIAL LUNG DISEASE AND SUBSEQUENT RISK OF LUNG CANCER. *MS Shiels, A Chaturvedi, H Katki, B Gochuico, N Caporaso, and E Engels (NCI, Rockville, MD 20892)

Pulmonary diseases and inflammation are associated with increased lung cancer risk. Circulating levels of surfactant protein-D (SP-D) and Krebs von Lungren-6 (KL-6) are elevated in patients with interstitial lung diseases, and may be useful markers of processes contributing to lung cancer. We conducted a nested case-control study (532 lung cancer cases, 582 matched controls and 150 additional controls with chest x-ray (CXR) evidence of pulmonary scarring) in a U.S. cancer screening trial. Serum levels of SP-D and KL-6 were measured using enzyme-immunoassay. Logistic regression was used to estimate the associations of SP-D and KL-6 with lung cancer and pulmonary scarring, adjusting for age, sex, smoking status, pack-years smoked, and years since quitting. Lung cancer risk increased with SP-D (p-trend<0.001) and KL-6 levels (p-trend=0.005). Compared to the lowest quartile, lung cancer risk was elevated in the highest quartiles of SP-D (odds ratio [OR]=1.9; 95% confidence interval [CI] 1.3-2.6) and KL-6 (OR=1.6; 95% CI 1.1-2.3). Above median levels of both markers were associated with twice the lung cancer risk (OR=2.0; 95% CI 1.4-2.8). Lung cancer was associated with SP-D at 2.0-4.0 and ≥4.1 years after blood collection, and with KL-6 at 0-1.9 and 2.0-4.0 years after blood collection. Associations were limited to adenocarcinoma and squamous cell carcinoma, and to current and former smokers for SP-D and current smokers only for KL-6. CXR scarring was associated with higher levels of SP-D (p-trend=0.05), but not with KL-6 (p-trend=1.0). Two markers of interstitial lung disease were associated with increased lung cancer risk. Our findings support a role for pulmonary inflammation and scarring in lung cancer etiology.

0351

SMOKING, BODY MASS INDEX AND GASTRO-ESOPHAGEAL REFLUX AND THEIR ATTRIBUTABLE FRACTION FOR ADENOCARCINOMA OF THE ESOPHAGUS AND THE GASTRO-ESOPHAGEAL JUNCTION. CM Olsen, *N Pandeya, AC Green, PM Webb and DC Whiteman for the Australian Cancer Study (Queensland Institute of Medical Research and the University of Queensland, Brisbane, QLD 4000)

Of the several risk factors identified for adenocarcinoma of the esophagus (EAC) and the gastro-esophageal junction (GEJAC), smoking, body mass index and gastro-esophageal reflux symptoms are the three major established independent risk factors that are potentially modifiable or controlled. We aimed to quantify the proportion of adenocarcinoma attributed to these risk factors by estimating the population attributable fractions. We used data from a population based case-control study in Australia during 2002-2005. Participants included 791 cases (365 with incident EAC, 426 GEJAC, and 1580 population controls). After adjusting for other confounding factors, ever smoking attributed for 29% of EAC [95% Confidence Interval (95%CI) 16% - 45%] and 43% of GEJAC [95%CI: 32% - 54%] and overweight/obese attributed for 36% [95%CI 23% - 53%] of EAC and 22% [95%CI 10% - 41%] of GEJAC. Together, ever smoking and being overweight/obese attributed for 50% of EAC and 48% of GEJAC, while also including reflux symptoms accounted for 76% [95%CI: 66% -84%] of EAC and 78% [95%CI 67% - 85%] of GEJAC. Partial population attributable fraction was highest among smokers who were overweight/obese and also experienced at least weekly reflux symptoms. Smoking, obesity and gastro-esophageal reflux symptoms accounted for more than two-thirds of cases of EAC and GEJAC in the population.Thus these cancers may be largely prevented by maintaining healthy BMI, avoiding smoking from the population, particularly among those experiencing regular reflux symptoms.

0352-S

RISK PREDICTION FOR BARRETT'S ESOPHAGUS: TOOLS FOR THE POPULATION AND CLINIC *A. P. Thrift, N. Pandeya, A. C. Green, P. M. Webb & D. C. Whiteman (Queensland Institute of Medical Research, Brisbane, Australia, 4029)

Barrett's esophagus (BE) is the only known precursor to esophageal adenocarcinoma. As BE is asymptomatic and diagnosis requires costly, invasive investigations, we sought to develop a risk prediction tool to aid clinicians in deciding whom to screen for BE. In a population-based case-control study, we collected data from 285 simple BE patients (without dysplasia), 108 dysplastic BE patients, and two control groups: 313 endoscopy controls and 644 population controls. We used two phases of stepwise backwards logistic regression to select an optimal subset of predictor variables: firstly including all significant covariates from univariate analyses; then fitting non-significant covariates from univariate analyses to identify those effects detectable only after adjusting for other factors. Model discrimination and calibration were assessed using ROC curves and the Hosmer-Lemeshow test, respectively. Models were internally validated using bootstrap techniques. We constructed an ordinal risk index by summing odds ratios for each risk factor. Final models included terms for demographic and lifestyle factors, medical history, medication use and gastrointestinal symptoms. For comparisons with population controls, the simple BE model had excellent discrimination (c-statistic 0.84, 95%CI 0.81-0.86) and adequate calibration (p=0.10). Bootstrap analysis confirmed internal validation. The ordinal risk index (range 9-36) performed well (sensitivity=70%) for the high-risk group (index ≥29). Results were similar for dysplastic BE and comparisons with endoscopy controls. These prediction tools appear to have reasonable clinical utility, however further validation in external datasets is necessary.

0353-S

EFFECT OF SERUM ENTEROLACTONE ON PROGNOSIS OF POSTMENOPAUSAL BREAST CANCER. Katharina Buck; Alina Vrieling; Aida Karina Zaineddin; Susen Becker; Rudolf Kaaks; Jakob Linseisen; Dieter Flesch-Janys; *Jenny Chang-Claude (German Cancer Research Center, Heidelberg, Germany)

Background: Lignans – plant-derived compounds with estrogen-dependent and -independent anti-carcinogenic properties – have been associated with postmenopausal breast cancer risk, but data are limited regarding their effect on survival. Methods: We assessed prognosis of 1,140 postmenopausal breast cancer patients aged 50-74 years and diagnosed between 2002 and 2005. Vital status was ascertained via local population registries up to the end of 2009, and deaths were verified by death certificates. Information on recurrences and secondary tumors was collected and verified by clinical records or treating physicians. Hazard ratios (HR) and 95% confidence intervals (CI) for post-diagnostic serum enterolactone in relation to overall survival (OS) and distant disease-free survival (DDFS) were assessed using Cox proportional hazards models stratified by age at diagnosis and adjusted for prognostic factors. Results: Median enterolactone levels for deceased and non-deceased patients were 17.0 and 21.4 nmol/L, respectively. The multivariate HR of the highest versus lowest quartile of enterolactone levels was statistically significantly decreased for OS (HR=0.58, 95% CI=0.34-0.99, Ptrend=0.04) and non-significant reduced for DDFS (HR=0.62, 95% CI=0.35-1.09, Ptrend=0.08). Although there was no significant heterogeneity by estrogen receptor (ER) status (p=0.09), the highest quartile of serum enterolactone was significantly associated with a better OS for ER-negative tumors only (HR=0.27, 95% CI=0.08-0.87, Ptrend=0.10). Conclusions: Postmenopausal breast cancer cases with high serum levels of enterolactone may have a better survival.

0354

SENSITIVITY/SPECIFICITY OF CERVICAL HPV TESTING FOR CIN2+ IN HIV-INFECTED WOMEN WITH ASC-US CYTOLOGY. *G D'Souza, RD Burk, JM Palefsky, H Minkoff, X Xie, AM Levine, T Darragh, X Xue, LS Massad, HD Strickler (Johns Hopkins, Baltimore MD, 21205)

ASC-US is a common cytologic finding in HIV-infected women. Testing for oncogenic HPV is recommended for triage of ASC-US in immunocompetent women. However, there is little data regarding the utility of HPV DNA testing to identify ASC-US likely to reflect CIN2+ in HIV-infected women. Cervical swabs and Pap smears were obtained semiannually between 2000-2008 in a large prospective cohort of HIV-infected women. Swabs were convenience specimens stored in an RNA preservative (for HIV testing) whose composition was not expected to interfere with HPV DNA testing. The study protocol called for all ASC-US cases to receive colposcopy. All 24 ASC-US cases with CIN2+ histology and a stratified random sample of 116 ASC-US cases without CIN2+ were selected for HPV DNA testing. All CIN2+ histology was centrally reviewed to confirm their diagnosis. Among HIV-infected women with ASC-US Pap results, oncogenic-HPV was significantly more common among women with CIN2+ histology than those with ≤CIN 1 (94% vs 36%, p<0.001). Oncogenic HPV was detected in 100% of CIN3/cancer, 92% of CIN2, 24% of CIN1 and 41% of women with normal histology. Overall, HPV testing had 94% sensitivity and 64% specificity for CIN2+. We note, thought, that only 80% of cervical swab speciments (stored in RNA preservative) were adequate for HPV PCR, based on amplification of human beta-globin. These data suggest that HPV DNA testing has high sensitivity but moderate specificity for CIN2+ among HIV-infected women with a cytologic diagnosis of ASC-US. Given the paucity of prior data, larger studies are warranted to assess sensitivity/specificity and cost effectiveness in HIV-infected women.

0355

TRENDS IN BREAST CANCER DETECTION, INVESTIGATION, TREATMENT AND RELATIVE SURVIVAL BETWEEN 1993 AND 2003 IN QUEBEC.*L Perron; D Major; N Vandal; J Brisson (Institut national de santé publique, Québec, Qc, G1V 5B3)

Breast cancer (BC) detection, investigation, treatment and survival in Quebec, between 1993 and 2003, were examined using three random samples of about 20% of all women diagnosed with BC (1993, n=912; 1998, n=1,143; and 2003, n=1,158). Cases were identified through national computerised databases. Two cancer registrars extracted data from the medical charts using a developed standardized form. Patterns of investigation and treatment were examined in light of international guidelines published in the late 1990's. Absolute differences observed between 1993 and 2003 and their 95% confidence interval (CI) were estimated using Sudaan software for proportions and using Bootstrap for percentiles. Relative survival was assessed using an adapted version of Ederer II method. Percentage of women aged 50 to 69 diagnosed with in situ BC increased 6 percentage points (CI: 1-12), from 8 to 15%, during study period. In women under 50 years with invasive BC, the proportion diagnosed with positive nodes (T1-3N+M0), locally advanced disease (T4M0) or metastatic disease (M1) increased by 17% (CI: 9-26). There was a substantial reduction of the gap between treatment according to guidelines delivered to the oldest (≥ 70) compared with that given to youngest cases. Wait time for 95% of patients to go from diagnosis to surgery increased 11 weeks (CI: 7-25) for in situ cases and 5 weeks (CI: 4-7) for invasive cases. Five-year relative survival increased 6 points (CI: -2; 11), from 77 to 83%, in node positive and 3 points (CI: -2; 7), from 94 to 97%, in node negative cases. Evolution of BC prognosis in women under 50 should be closely followed in Quebec. Lengthening delay to surgery should also be investigated.

0356-S

LONG TERM PREDICTION OF HISTOLOGICAL DISEASE OF THE CERVIX WITH HPV DNA TESTING AND CYTOLOGY: RESULTS FROM THE LUDWIG-MCGILL STUDY. *M Chevarie-Davis, AV Ramanakumar, S Ferreira, LL Villa, A Ferenczy, E Franco (McGill University, Montreal, Quebec)

Although many studies have compared human papillomavirus (HPV) DNA testing to cervical cytology for the detection of pre-invasive lesions of the cervix, most used cytology as an endpoint, thus being subject to outcome misclassification. Our objective was to use the gold standard of histopathology to ascertain lesion outcomes in a repeated-measurement, longitudinal study of HPV and cytology testing. A cohort study was conducted in Brazil and enrolled 2462 women for interviews, cervical cytology, cervicography, and HPV testing. HPV DNA testing and cytology were performed at each visit, i.e., every 4 months in the first year and every 6 months in subsequent years. Detection of high-grade lesions on cytology or cervicography prompted referral to colposcopy. The specificity, sensitivity and predictive values of HPV testing and cytology, cross-sectionally and as repeated longitudinal measurements, were summarized in receiver operating characteristic (ROC) analyses. Time-to-event analyses using Kaplan-Meier plots and Cox regression were also performed comparing screening modalities. When considering all subjects, those in whom a low grade squamous intra-epithelial lesion (SIL) or worse was detected had an 11 times higher risk of being diagnosed with cervical intraepithelial neoplasia (CIN) grade 2 or higher on histology, as compared with those who had atypical squamous cells of undetermined significance (ASCUS) or less. However, after stratification according to HPV status, the increase in risk was apparent only in women positive for high risk HPV. These results emphasize the importance of considering both HPV DNA testing and cytology for an optimal screening model.

0357

PARITY AND RISK OF LUNG CANCER IN WOMEN: SYSTEMATIC REVIEW AND META-ANALYSIS OF EPIDEMIOLOGICAL STUDIES. Issa J. Dahabreh, *Jessica K. Paulus (Tufts Clinical and Translational Science Institute, Boston, MA)

Multiple studies have assessed parity as a risk factor for lung cancer but results have been inconclusive. We identified studies investigating the association of parity with lung cancer risk allowing the calculation of dose-response trends. From each study we calculated per-child estimates of the relative risk (RR) for lung cancer using a linear dose-response model. We assessed between-study heterogeneity of the dose-response coefficients using Cochran's Q statistic and the I2 index. We used random effects meta-analysis to estimate summary per-child RR's with their 95% confidence interval (CI). Results: We identified 16 eligible studies (8095 lung cancer cases and 350,295 unaffected individuals) that provided data for meta-analysis. There was significant between-study heterogeneity ($p<0.001$; $I2=72\%$). The summary RR was 0.99 (95% CI, 0.95, 1.02), indicating no effect of parity on lung cancer risk. Results were consistent in case-control [RR=0.99 (95% CI, 0.94-1.04)] and cohort studies [RR=0.99 (0.95-1.02)]. There was some evidence that studies enrolling exclusively patients with tumors of non-small cell lung cancer histology found a protective effect of parity [RR=0.95 (95% CI, 0.89-1.01)] as compared to those including cases with small cell lung cancer [RR = 1.00 (95% CI, 0.98-1.03)]; this difference was borderline ($p=0.05$). Conclusions: Studies assessing the association between parity and lung cancer risk have produced heterogeneous results. Overall, there is little evidence of a dose-response relationship between increasing number of live births and lung cancer. Future studies should include analyses in well-defined histological subgroups of patients.

0358

ESTIMATING THE POTENTIAL EFFECT OF INTERVENTIONS ON FAIR-POOR SELF-RATED HEALTH AMONG BREAST CANCER SURVIVORS. *M. Schootman, A.D. Deshpande, S. Pruitt, R. Aft, D.B. Jeffe (Washington University, St. Louis, MO 63108)

To estimate the potential effect of changes in predictors on the incidence of fair-poor self-rated health (SRH) among a statewide sample of breast cancer survivors in Missouri. In 2007-2008, we interviewed 832 breast cancer survivors 1 year after diagnosis (baseline) and 1 year later. We estimated effects of potential changes in predictors on incidence of fair-poor SRH based on the theory of missing counterfactual observations. Predictors included: 1) sociodemographic factors, 2) access to medical care, 3) comorbid conditions, 4) psychosocial factors, 5) perceived neighborhood conditions, 6) cancer-related behaviors, and 7) clinical factors. First, multivariable logistic regression models estimated the association between the predictors and SRH. Second, we estimated the counterfactual probabilities of fair-poor SRH for each breast cancer survivor by calculating the participant-specific probabilities of fair-poor SRH. Third, by averaging the probabilities across all survivors and comparing to the current incidence of fair-poor SRH, we estimated the population-wide effect of potential changes in modifiable predictors on the incidence of fair-poor SRH. Bootstrapping calculated the confidence intervals around the population-level effect estimates. 7.4% of participants (92.4% white; mean age: 58.0 years) whose SRH was rated good-excellent at baseline reported fair-poor SRH one year later. The largest potential reduction in incidence of fair-poor SRH could be obtained by eliminating surgical side effects (27.8% reduction) and comorbidity (21.8% reduction) and with engaging in any physical activity (19.6% reduction)

0359-S

USE OF DIFFERENT COAL TYPES AND RISK OF LUNG CANCER IN XUANWEI, CHINA. *F. Barone-Adesi, R. Chapman, X. He, W. Hu, R.C.H. Vermeulen, N. Rothman, Q. Lan. (National Cancer Institute, Bethesda, MD, 20892)

Lung cancer rates in rural Xuanwei County, Yunnan Province, are among the highest in China, and have been causally associated with exposure to indoor coal emissions that contain very high levels of polycyclic aromatic hydrocarbons. This study evaluated the effect of lifelong use of two different types of coal, "smoky coal" (bituminous) and "smokeless coal" (anthracite), on lung cancer mortality. A cohort of 37,753 farmers, born from 1917 through 1951, was followed retrospectively from 1976 through 1996. During the study period, there were 9,845 deaths from any cause and 2,445 from lung cancer. Association of type of coal used with lung cancer mortality was analyzed with nonparametric survival analysis and multivariable Cox models. After adjusting for the presence of competing risks of death, the probabilities of death from lung cancer before 80 years of age for men and women using smoky coal were 18% and 20%, respectively, compared with less than 0.5% among smokeless coal users of both sexes. Before age 60, lung cancer alone accounted for about 40% of deaths among smoky coal users. Compared with smokeless coal, use of smoky coal was associated with a statistically significantly increased risk of death from lung cancer (men: Hazard Ratio [HR], 37; 95% Confidence Interval [CI], 22–51; women: HR, 121; 95% CI, 50–293). A monotonic increase in risk of lung cancer with longer time spent at home was observed among smoky coal users of both sexes. These findings suggest that the carcinogenic potential of household coal combustion products exhibits substantial variation by specific coal type. Use of less carcinogenic types of coal can translate in a significant reduction of lung cancer risk.

0360

A COMPARISON OF PROVIDER AND PATIENT FOLLOW-UP RECOMMENDATIONS GIVEN LATINAS AFTER AN ABNORMAL PAP TEST. *M. Sanderson, H.M. Brandt, M.E. Fernandez, K. Harbi, A.L. Coker, M.K. Fadden (Meharry Medical College, Nashville, TN 37208)

The Texas-Mexico border has one of the highest cervical cancer mortality rates in the United States. A possible explanation is the failure of Latinas to receive appropriate follow-up care after an abnormal Pap test. Few studies of follow-up care among Latinas have utilized information from providers in conjunction with information from patients. We used data from providers and their patients who participated in a prospective cohort study conducted among 460 Latinas who visited primary care clinics from February 2004 through May 2008 on the Texas-Mexico border. In-depth interviews were completed by telephone with 20 providers. Follow-up procedures recommended by most providers included colposcopy, biopsy, cryotherapy, loop electrosurgical excision procedure (LEEP) and repeated Pap tests. Many providers also mentioned HPV risk factors and prevention such as practicing safe sex and stopping smoking. At baseline, nearly all women reported their provider recommended taking a closer look at the cervix/colposcopy (95%), repeat Pap test (88%), or another procedure (biopsy/LEEP/cryosurgery) (88%). Lower percentages of women reported they had received prevention messages like don't douche (70%), tell partner you have HPV (67%), use condoms (66%), don't smoke (63%), stop having sex (58%) and treat warts (10%). Our findings suggest that although Latinas living on the Texas-Mexico border are aware they should receive appropriate follow-up care they may not be taking measures to reduce the spread of HPV, which may partially account for the higher rates of cervical cancer mortality in this population.

0361

ASSOCIATION BETWEEN LEPTIN CONCENTRATION AND OBESITY IN MEXICAN-AMERICAN WOMEN WITH BREAST CANCER. *Sexton KR, Avery T, Brewster A, El-Zein R, Bondy ML (MD Anderson Cancer Center, Houston, TX)

Leptin is a hormone produced by adipose tissue and increases with obesity. It has been shown in in vitro studies to have mitogenic effects and is positively associated with breast cancer risk. Obesity increases the risk of postmenopausal breast cancer while decreasing the risk of premenopausal disease. However, in our previous study of Mexican-American women, obesity was not associated with breast cancer risk, regardless of menopausal status. It is important to identify biologic factors that may explain the differential effects of obesity between the races. We conducted a retrospective study of 490 non-Hispanic white (NHW, N=172), African-American (AA, N=164), and Mexican-American (MA, N=154) women newly diagnosed with breast cancer. Blood samples were collected prior to treatment, and serum levels of leptin were measured by ELISA. Medical records were abstracted for body mass index, age at diagnosis, and tumor characteristics. The difference in mean levels of leptin was evaluated using the Kruskal-Wallis test. Leptin levels were significantly lower in MA women compared to NHW and AA ($p<0.001$). Among obese women only, MA had significantly lower leptin concentrations (41.8ng/mL) than both NHW (52.0ng/mL) and AA (60.4ng/mL, $p<0.001$). When stratified by menopausal status, leptin levels were significantly lower in MA compared to NHW and AA women in both pre- and postmenopausal obese women ($p=0.002$ in postmenopausal, $p<0.001$ in premenopausal). Although this was a small hypothesis-generating study, the data suggest that differences in leptin levels may play a role in the lack of association between obesity and breast cancer in MA women. Results will be validated in a case-control study of MA women.

0362-S

ACCELEROMETER MEASURES OF PHYSICAL ACTIVITY AND BREAST CANCER RISK: THE NCI POLISH BREAST CANCER STUDY. *C. Dallal, L. Brinton, C. Matthews, B. Peplonska, J. Lissowska, G. Gierach (National Cancer Institute, Bethesda, Maryland 20852)

Epidemiologic studies suggest that physical activity reduces breast cancer risk, but prior studies have relied primarily on self-reported activity. We evaluated the association between objectively measured activity and breast cancer risk, with the aim of assessing whether accelerometer-based measures are better discriminators of risk than self-report. This analysis includes 996 incident breast cancer cases and 1,164 controls, residents of Warsaw, Poland in 2000-2003. At the home visit (median=60 days postdiagnosis for cases), women ages 20-74 years were asked to wear an accelerometer (Actigraph 7164) for 7 days and complete a questionnaire including activity history. Activity monitor levels were averaged across valid days of wear and summarized by minutes spent per day in sedentary (0-99 counts), light (100-759 counts) and moderate-to-vigorous (760+ counts) behavior. Odds ratios (OR) and 95% confidence intervals (CI) were estimated using unconditional logistic regression. Time spent in moderate-to-vigorous activity was inversely associated with breast cancer risk after adjustment for breast cancer risk factors, and sedentary and monitor wear time (OR_{Q4vsQ1}: 0.38, 95%CI: 0.26-0.54; p-trend<.0001). Increased sedentary time was related to increased risk, independent of moderate-to-vigorous activity (OR_{Q4vsQ1}: 1.69, 95%CI: 1.16-2.45; p-trend<.01). Restricting days since diagnosis and treatment yielded similar results. Associations did not differ by histology, tumor size, grade, or nodal involvement. These findings were stronger than those based on self-reported activity in these women, suggesting that studies of physical activity can be improved by more objective measures.

0363-S

EXPOSURE TO ENVIRONMENTAL TOBACCO SMOKE AND RISK OF LUNG CANCER: EVIDENCE FROM A CASE-CONTROL STUDY IN MONTREAL, CANADA. *M. Al-Zoughool, J. Pintos, L. Richardson, M-É. Parent, P. Ghadirian, D. Krewski, J. Siemiatycki (University of Ottawa, Canada, K1N 6N5 - Centre de Recherche du CHUM, Montreal, Canada, H2W 1V1)

Objective: to examine the association between environmental tobacco smoke (ETS) and risk of lung cancer among never smokers, defined as subjects who smoked less than 100 cigarettes in their lifetime. Methodology. We conducted a population-based case-control study of lung cancer in Montreal, Canada (1996-2001) including 1,203 cases and 1513 controls. Interviews elicited socio-demographic, occupational, and lifestyle factors information, including lifetime active smoking, and lifetime history of ETS. The present analysis was restricted to the 36 cases and 439 population controls who had never smoked. Odds ratios (ORs) and 95% confidence intervals (CIs) were estimated between ETS and lung cancer, adjusting for age, sex, SES, and exposure to occupational lung carcinogens. Results: Overall there was no association between ever exposure to ETS and lung cancer (OR=0.77; 95%CI: 0.4-1.5). However there appeared to be some effect modification. Exposure to ETS seemed to be more strongly associated when it occurred after 20 years of age (OR=2.0; 95%CI: 0.7-6.3) compared to earlier in life (OR=0.41; 95%CI: 0.1-2.3), and when it took place outside the home (OR=2.2; 95%CI:0.7-6.7) rather than inside the home (OR=0.47; 95%CI: 0.1-1.6). Discussion: Despite the imprecision of our estimates, our results are compatible with previous research that shows that ETS exposure in adulthood may be associated with lung cancer, contrary to ETS exposure during childhood.

0364

VALIDITY OF SELF-REPORTED HISTORY OF CANCER IN A CANCER SCREENING COHORT. *Aesun Shin[1], Dong-Hun Lee[2], Jeongseon Kim[1] ([1]Cancer Epidemiology Branch, National Cancer Center, Goyang-si, Korea [2]School of Public Health and Institute of Health and Environment, Seoul National University, Seoul, Korea)

The self-reported cancer history is a main tool for epidemiological and clinical researches, since it is frequently used for identification of high-risk group for cancer, and determination of medical decision. Several previous studies have assessed the sensitivity and positive predictive value of self-reported cancer history using cancer registry data or medical records as a gold standard. The sensitivities of overall cancer history were between 0.27 to 0.93 and varied by cancer site, countries, gender, ethnicity, age, year data collected, time between diagnosis and questionnaire survey date, cancer stage at diagnosis, or method for data collection (self-administered vs. in-person interview). The purpose of the current study was to evaluate the sensitivity of self-reported cancer history among visitors of a cancer screening center in Korea. Study subjects were recruited from the Center for Cancer Prevention and Detection, the National Cancer Center, Korea between May 2002 and June 2009. The personal identification numbers of 23,142 participants were linked to the Central Cancer Registry database. Sensitivity of self-reported cancer history was calculated using the cancer registry data as a gold standard. Among 608 participants who had a record in cancer registry database before the questionnaire survey, 526 reported cancer history in the questionnaire. The sensitivity was 0.875 (95% confidence interval: 0.836-0.890). Sensitivity was lower in older age group compared to younger age group (0.840 for 60 and older vs. 0.956 for 39 and younger). Sensitivity did not differ by sex, educational attainment, duration between cancer registration and questionnaire survey, and the year of participants' recruitment. In conclusion, the sensitivity of self-reported cancer history in this cancer screenee population was in acceptable range.

0365

VITAMIN AND CALCIUM SUPPLEMENT USE AND BREAST CANCER SURVIVAL AND RECURRENCE. Elizabeth M. Poole[1], Xiao-Ou Shu[2], Bette J. Caan[3], Sarah J. Nechuta[2], John P. Pierce[4], Wendy Y. Chen[1] ([1]Harvard University, Boston, MA, [2]Vanderbilt University, Nashville, TN; [3]Kaiser Permanente Division of Research, Oakland, CA, [4]University of California San Diego, San Diego, CA)

Introduction: Although vitamin supplement use is common after a breast cancer diagnosis, little is known about effects on breast cancer survival. Supplements may be beneficial, but could interfere with treatment. We examined post-diagnosis supplement use and risk of breast cancer death or recurrence in the After Breast Cancer Pooling Project, a consortium of 4 cohorts of 17,013 breast cancer survivors. **Methods**: Supplement use (Vitamins A, B, C, D, E, multivitamins (MV), beta-carotene, calcium, folic acid) was categorized as none, MV use, single supplement use (i.e. calcium only), or unknown. Associations were analyzed in Cox proportional hazards models separately by cohort, with time since diagnosis as the time scale, and using left-truncation to account for the time between diagnosis and study enrollment. Heterogeneity between cohorts was evaluated using random effects meta-analysis. If no heterogeneity was found, the cohorts were pooled; otherwise the random effects meta-analysis estimates were used. **Results**: Single supplement calcium and vitamin D use were associated with decreased risk of recurrence: HR: 0.89 (95% CI: 0.80-0.98) and HR: 0.73 (95% CI: 0.59-0.90), respectively. No association was observed for other vitamin supplements or for breast cancer death. **Conclusion**: In this large consortium of breast cancer survivors, calcium and vitamin D use were associated with decreased risk of breast cancer recurrence. While these results should be confirmed in other cohorts, future studies should investigate timing, duration, and dose of supplement use.

0366-S

THE ASSOCIATION BETWEEN PAP (PAPANICOLAOU) SMEAR AND PELVIC EXAMINATION SCREENINGS AND THE DEVELOPMENT OF INVASIVE VAGINAL AND VULVAR CANCERS IN AN OLDER POPULATION. *EF Osterbur, KA Rosenblatt, D. Maduram, J Douglas. (University of Illinois at Urbana-Champaign, Champaign, IL 61820)

The efficacy of performing Pap smear and pelvic examination screenings in older women has been strongly debated by researchers and policymakers. We utilized a matched case-control design that detected incident vulvar (N(number)=1,103) and vaginal (N=328) cancer cases, respectively, from the SEER(Surveillance, Epidemiology and End Results)-Medicare database between 1991 and 1999. Population controls were selected from a random 5% sample pool of Medicare beneficiaries living in the same regions of the United States as the cases. We identified vulvar (N=8,825)and vaginal(N=2,624) cancer controls that were matched on age and geographic location. Stratified analysis suggest that Pap smear and pelvic examination screenings have a stronger negative association among regional (OR (Odds Ratio)=0.71, 95% CI (Confidence Interval)=0.51-1.00), distant (OR =0.68, 95% CI=0.27-1.70 and unstaged (OR=0.77, 95% CI=0.37-1.59) invasive vulvar cancers as opposed to localized cancers (OR=1.42, 95% CI=1.16-1.73). Similar findings were observed for vaginal regional (OR=0.78, 95% CI=0.40-1.51), distant (OR=0.31,95% CI=0.09-1.03) and unstaged (OR=0.86, 95% CI=0.43-1.70)cancers as opposed to localized cancers (OR=1.09, 95% CI=0.65-1.83. In addition, screening has a stronger negative association among women who are between the ages of 65 and 74 for vulvar (OR=0.55, 95% CI=0.31-0.97) cancers as opposed to older women (<=100 years old). Our findings suggest that Pap smear and pelvic examination screenings may reduce the risk of late stage vaginal and vulvar cancers in older women.

0367-S

EVALUATING THE EFFICACY OF CURRENT CLINICAL PRACTICE FOR ADJUVANT CHEMOTHERAPY (AC) IN POST-MENOPAUSAL WOMEN WITH HORMONE-RECEPTOR-POSITIVE, ONE TO THREE POSITIVE AXILLIARY LYMPH-NODES BREAST CANCER (HR+ 1-3 LN+ BC). *M. Hannouf, M. Brackston, B. Xie and G. Zaric (University of Western Ontario, London, ON, N6A 5C1)

To evaluate the current versus previous clinical practice for AC in post-menopausal women with HR+ 1-3 LN+ BC, we used the Manitoba Cancer Registry and Manitoba administrative databases to identify all post-menopausal women diagnosed with HR+ 1-3 LN+ BC during the periods of January 1995 to December 1997, January 2000 to December 2002, and January 2003 to December 2005 (n= 156, 161 and 171, respectively). Seven-year survival data were available for the earlier two cohorts (1995-1997 and 2000-2002). Clinical practice for AC was not found to differ during the time period of 2000 to 2005. Thus, the earlier two cohorts were only included in this analysis. There were 103 women (64%) of those who were diagnosed later (2000-2002) versus 44 women (28%) of those who were diagnosed earlier (1995-1997) who received AC (mean difference= 36%, 95% confidence interval= 31% to 40%, p = 0.01). Disease free survival (DFS) of patients diagnosed later did not differ significantly than those diagnosed earlier (DFS= 69% versus 64%, respectively, log–rank test p =0.42). In multivariate Cox regression analysis, patients in the later versus the earlier cohort were not significantly associated with incremental DFS benefit over 7 years (2000-2002 vs. 1995-1997, hazard ratio: 0.95; confidence interval = 0.64 to 1.4, p=0.78), after adjustment for comorbidity, and receipt of radiation therapy. The treatment standard of AC may not be effective for all post-menopausal women with HR+ 1-3 LN+ BC. These data suggest the need to use predictive biomarkers to identify those who could be spared AC in this population.

0368-S

FREQUENCY AND COST OF CHEMOTHERAPY-RELATED SERIOUS ADVERSE EFFECTS (CSAE) IN A CANADIAN POPULATION SAMPLE OF WOMEN WITH HORMONE-RECEPTOR-POSITIVE EARLY STAGE BREAST CANCER (HR+ ESBC) *M. Hannouf, M. Brackston, B. Xie and G. Zaric (University of Western Ontario, London, ON, N6A 5C1)

To characterize the risks and economic impact of CSAE among women in the Canadian general population treated with adjuvant chemotherapy (AC) for HR+ ESBC, we used the Manitoba Cancer Registry to identify all women (n=665) diagnosed with HR+ ESBC during the period from January 1, 2000 to December 31, 2002. One-year of follow-up information from diagnosis, including hospitalizations (HP) and emergency room visits (ERV) for all adverse effects that are typically related to AC, were identified by linking with the Hospital Discharge Database and the Physician Claims Database in Manitoba. 251 women received AC during the 12 months after the initial diagnosis with ESBC. We assessed the effect of AC on rate of CSAE using logistic regression, adjusting for menopausal status, lymph node status, type of AC, and comorbid indices. Women who received AC were more likely than those who did not to have HP or ERV for CSAE (2.6% versus 9%, mean difference =6.4%, 95% confidence interval (CI) =3.5% to 10%, p=0.01). In a logistic regression analysis, the rate of CSAE was found to be significantly greater for women with post-menopausal status (post- versus pre-menopausal, odds ratio 2.4; CI= 1.7 to 2.8) and 1-3 lymph node positive (1-3 LN+) (0 versus 1-3 LN+, odds ratio, 3.1; CI= 2.5 to 3.6). AC recipients incurred large incremental expenditures for CSAE (pre-menopausal LN-: $1100 per person per year; post-menopausal LN-: $1600 per person per year; post-menopausal 1-3 LN+: $2200 per person per year). The impact and costs of CSAE among HR+ ESBC population are much larger than predicted from clinical trials and vary by LN and menopausal status.

0369

PREDICTORS OF CHANGE IN PHYSICAL ACTIVITY DURING ACTIVE TREATMENT IN A PROSPECTIVE STUDY OF BREAST CANCER SURVIVORS. *ML Kwan, B Sternfeld, IJ Ergas, AW Timperi, J Kim Roh, CP Quesenberry, LH Kushi (Division of Research, Kaiser Permanente, Oakland, CA 94612)

Physical activity (PA) offers many benefits to breast cancer survivors including reduction in treatment-related side effects, better quality of life, and improved prognosis, yet PA research during the immediate period following a breast cancer diagnosis is limited. In a prospective cohort study of over 1,700 women recently diagnosed with invasive breast cancer in the Kaiser Permanente Northern California Medical Care Program from 2006-2009, we describe PA levels 2 and 6 months post-diagnosis and determine the effects of socio-demographic, treatment, and other clinical factors on changes in PA. Participants completed a PA questionnaire at baseline (2 months post-diagnosis) and follow-up (6 months post-diagnosis) on frequency, duration, and intensity of select activities. Predictors of PA change were determined by multivariate linear regression. Reductions in all PA levels from baseline to follow-up were observed ($p<0.0001$ from one sample t-test). Median (I-Q range) hours per week of sedentary, moderate, and vigorous activity at baseline were 17.6 (9.9), 3.0 (4.9), and 0.7 (2.3) and follow-up were 16.8 (9.6), 2.3 (4.1), and 0.4 (1.5). BMI at diagnosis, race/ethnicity, and chemotherapy were associated with declines in moderate-vigorous physical activity (MVPA), adjusting for age at diagnosis and cancer stage. Obese and Asian women were less likely to reduce their MVPA compared to normal weight and White women, while women on chemotherapy were more likely to reduce their MVPA compared to women not on chemotherapy. Associations with sedentary activity were also noted. Breast cancer patients reduce their activity levels during active treatment, and these changes are influenced by clinical and non-clinical factors.

0370-S

SMOKING, BODY MASS INDEX AND LUNG CANCER RISK. *M. El-Zein, M-E. Parent, B. Nicolau, A. Koushik, J. Siemiatycki, M-C. Rousseau (INRS-Institut Armand Frappier, Laval, QC, Canada, H7V 1B7)

The inverse association observed between body mass index (BMI) and lung cancer has been mainly attributed to residual confounding by smoking and/or pre-clinical effects of lung cancer. In a population-based case-control study conducted in the Greater Montreal, Canada, from 1996-2002, we first assessed the association between smoking and BMI among controls. We then aimed to clarify the role of BMI in lung cancer development. Cases included men and women with incident lung cancer, while controls were randomly sampled from electoral lists. Analyses were based on 1071 cases and 1431 controls. Continuous values of BMI, in kg/m2, were used as well as categorical: underweight (<18.5), normal (18.5-24.9), overweight (25.0-29.9), and obese ($\geq$ 30). Linear and logistic regression models were used adjusting for several a priori confounders including socio-demographic, lifestyle and occupational factors. Compared to never smokers, controls who currently smoked had a lower BMI. Among those who smoked 20-39 cig/day, the BMI was lower by 1.1 kg/m2 (95% CI=-1.8, -0.4). The BMI among controls who quit 5-9 years prior to interview was 1.1 kg/m2 (95% CI= 0.2, 2.0) higher than that of never smokers. Considering the association between BMI and lung cancer, underweight individuals had a two-fold increase in lung cancer risk (OR= 2.3, 95% CI=1.3, 4.1), whereas no association was observed among obese individuals (OR= 0.9, 95% CI=0.7, 1.3). In all analyses, stratifying by gender did not change the conclusions. Our results remain compatible with both possible explanations: residual confounding by smoking and weight loss from undiagnosed lung cancer.

0371

TWENTY-FIVE YEARS OF HIGH BLOOD PRESSURE FINDINGS AMONG MEXICAN AMERICAN ADULTS IN THE US. *C. Fryar (CDC, National Center for Health Statistics, Hyattsville, MD 20782)

To provide estimates and trends in hypertension among Mexican Americans – part of the rapidly growing Hispanic population in the United States (US), data was used from the Hispanic Health and Nutrition Examination Survey (HHANES 1982-84) and the National Health and Nutrition Examination Surveys (NHANES III 1988-1994 and NHANES 1999-2006) in which Mexican Americans were oversampled. Estimates were stratified by country of birth. Standard errors were estimated by Taylor Series Linearization, incorporating sample weights and survey design variables. Statistical tests of linear trends by survey were performed using orthogonal polynomial contrasts and tests of differences between population subgroups for age, gender, body mass index, poverty, and health insurance status, using t-tests at the $p<0.05$ level. Overall, the age-adjusted prevalence of hypertension for both US and non-US born Mexican American adults aged 20-74 years has remained stable over the past 25 years. However, Mexican Americans born in the US were significantly more likely to have a higher prevalence of hypertension than Mexican Americans born outside of the US. This finding was true for all survey periods: 1982-84 (24.5% vs. 20.1%); 1988-1994 (23.2% vs. 19.4%) and 1999-2006 (26.3% vs. 19.7%). Differences by country of birth were found for adults 40-59 years, males, and for those without health insurance for all survey periods. The prevalence of hypertension increased as age and body mass index increased regardless of country of birth for all of the survey periods. These findings may provide guidance for overall and targeted preventive efforts toward a condition that puts this rapidly increasing ethnic population at risk for more serious health consequences.

0372

MARIJUANA USE AND LONG-TERM MORTALITY AMONG SURVIVORS OF ACUTE MYOCARDIAL INFARCTION. *L. Frost, MD, K.J. Mukamal, MD, MPH, M.A. Mittleman, MD, DrPH. (Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA 02215.)

Background: Marijuana use can cause changes in heart rate and blood pressure that may lead to cardiac ischemia in susceptible individuals, and has been reported to increase short-term risk of myocardial infarction (MI) immediately after use. In a prior analysis of 1986 patients followed for 3.8 years, we found an increased risk of mortality in MI survivors who reported marijuana use, but this has not been examined in other studies. Methods: In the Determinants of MI Onset Study, 3886 patients hospitalized for MI in 64 centers nationwide from 1989-1996 reported their marijuana use prior to hospitalization. Using the National Death Index, we followed patients for mortality until Dec 31, 2007. Results: A total of 109 patients reported marijuana use (all aged <65 years), and 1433 died during follow-up of 11 to 18 years. Among patients <65 years old, after adjusting for lifestyle, medical, and socioeconomic factors in a Cox proportional hazards model, we found a hazard ratio (HR) of 1.41(95%CI,0.58-3.42) for less than weekly users and 2.00(95%CI,1.05-3.79) for weekly users at 5 years of follow up (p -trend 0.01). Over 10 years, those HRs decreased to 1.39(95%CI,0.69-2.81) for less than weekly users and 1.57(95%CI,0.94-2.62) for weekly users (p-trend 0.18). Conclusions: Marijuana use among patients who survive an MI is associated with a higher mortality rate over the ensuing 5 years, but this association wanes with longer follow-up. This may represent decreased use with aging and suggests that studies with repeated measures of marijuana use are needed to establish the magnitude of cardiovascular risk associated with smoking marijuana among patients with coronary heart disease.

0373

IMPACT OF PHARMACIST CARE IN THE CONTROL OF CARDIOVASCULAR DISEASE RISK FACTORS: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED TRIALS. *V. Santschi[1,2], A. Chiolero[1,2], B. Burnand [2], A.L. Colosimo[1,3], and G. Paradis[1] ([1]Department of Epidemiology, Biostatistics, and Occupational Health, McGill University, Montreal, Quebec, Canada; [2]Institute of Social and Preventive Medicine, CHUV and University of Lausanne, Lausanne, Switzerland; [3]McGill Library, McGill University, Montreal, Quebec, Canada.)

Background: Pharmacists may improve the clinical management of risk factors for cardiovascular disease (CVD) prevention. We conducted a systematic review to determine the impact of pharmacist-care on CVD risk factors. Methods: The MEDLINE, EMBASE, CINAHL, and Cochrane CENTRAL databases were searched for randomized controlled trials (RCT) that involved pharmacist-care interventions among outpatients with CVD risk factors. Mean changes in blood pressure (BP), total cholesterol (TC), LDL cholesterol and proportion of smokers were estimated using random effect models. Results: 28 RCTs (11,138 patients) were identified. Interventions were conducted exclusively by a pharmacist or implemented in collaboration with other health professionals. Pharmacist-care was associated with significant reductions in systolic/diastolic BP [18 studies (10,077 patients); -7.8 mmHg (95% CI: -9.9 to -5.6)/-4.0 (-5.6 to -2.3)], TC [8 studies (896 patients); -19.5 mg/L (-27.5 to -11.4)], LDL [6 studies (699 patients); -15.2 mg/L (- 25.3 to -5.1)], and a reduction in the risk of smoking [2 studies (196 patients); relative risk: 0.77 (0.67 to 0.89)]. While most studies tended to favor pharmacist-care compared to usual care, a substantial heterogeneity was observed. Conclusion: Pharmacist-care improves the control of CVD risk factors in outpatients. Pharmacists should be involved in CVD healthcare.

0374

20-YEAR SURVIVAL AND YEARS OF POTENTIAL LIFE LOST POST-MYOCARDIAL INFARCTION: THE ARIC STUDY. *RE Foraker, KM Rose, AM Kucharska-Newton, AR Folsom, CM Suchindran, PP Chang, WD Rosamond (The Ohio State University, Columbus, Ohio, 43210)

Coronary heart disease (CHD) is a major cause of death which results in a large number of years of potential life lost (YPLL). Data suggest that disparities in CHD mortality exist by race and gender. We assessed survival and YPLL following incident myocardial infarction (MI) among 1,188 black and white women and men from the Atherosclerosis Risk in Communities (ARIC) cohort (1987-2006) who did not have prevalent CHD at baseline. We used Cox proportional hazards regression to estimate hazard ratios and 95% confidence intervals (HR, 95% CI) for all-cause mortality following MI. Total YPLL was calculated for deaths occurring prior to age 65. By the end of follow up, 90 (51%) black women, 64 (44%) black men, 116 (37%) white women and 163 (30%) white men with MI died, and median survival was 8, 10, 13 and 16 years, respectively. Using white men as the referent category and with adjustment for baseline age, hypertension, diabetes, body mass index, current smoking and self-rated health, the hazards of all-cause mortality following MI were higher among black women (1.59, 1.38-1.83), black men (1.36, 1.17-1.59) and white women (1.30, 1.15-1.47). Mean YPLL per death was highest among black men (1.2) followed by black women (1.1), white women (0.7) and white men (0.6). In this biracial cohort, the hazard of death following incident MI was higher among all race/gender groups as compared to white men, while blacks had a higher mean YPLL per death than did whites. In these data, disparities in CHD survival and YPLL were more evident by race than by gender, suggesting that black patients are at highest risk for death and YPLL post-MI.

0375

RISK FACTORS FOR STROKE: UNMASKED BY AGE AND SEX. *NE Mayo, S Daskalopolou, L Nadeau, JJ Brophy, J Hanley, MS Goldberg (McGill University, Montreal, Quebec, H3A 1A1)

The incidence of ischemic stroke is declining and the incidence for women is rapidly approaching that of men. This study estimated in a representative sample of the population, differences between men and women on the risk of stroke associated with specific medical, lifestyle and psychosocial factors and differences for men and women under the age of 70 when stroke is considered preventable . A prospective cohort study was carried out using the 1992 and 1998 Santé Québec Surveys linked through to 2007 to health administrative data for hospitalization and services. Cox proportional hazards model (HR) was used to model the time to stroke in relation to information available at time of survey. A total of 17,805 persons were followed for average of 11 years, yielding over 200,000 person-years; 360 strokes were identified over this period and these people were on average 70 years at time of stroke.For men of all ages, heart failure (CHF) and peripheral vascular disease (PVD) were the strongest risk factors (HR: $\geq$ 2.0) but hypertension, heart disease (IHD), and diabetes also posed important and statistically significant risk. Women of all ages were at very high risk of having a stroke if they had diabetes (HR: 2.4) or renal disease (HR: 4.3); for preventable strokes (<70 years), the effects of these were even stronger (HR 4.1 and 5.8, respectively). Also in the younger population of women, PVD (HR: 3.7) and IHD (HR: 1.7) were of particular concern. Only men who were
indicates that greater tailoring stroke prevention approaches to men and women of different ages should be considered.

0377

ASSOCIATION BETWEEN ARTERIOLAR SCLEROTIC AND HYPERTENSIVE CHANGES IN RETINA AND CARDIOVASCULAR DISEASE RISK FACTORS AMONG JAPANESE URBAN WORKERS AND THEIR FAMILIES. *T. Namekata and M. Nakata (Pacific Rim Disease Prevention Center, Seattle, WA 98165), K. Suzuki and C. Arai (Japan Labor-Cultural Association, Tokyo, Japan)

The purpose of the study is to examine the association of arteriolar sclerotic and hypertensive (ASH) changes in retinal arteries with cardiovascular disease risk factors. Subjects were 7,272 employees and families who completed screening tests and filled out the self-administered questionnaire in major cities in Japan for 2006-07. Retinal photographs were taken and ASH changes were graded from 0 to IV, based on the criterion developed by Scheie (Arch Ophth. 1953; 49:177-138). To use logistic regression analysis ASH changes were transformed to binary variable: 0 for score 0 as normal and 1 for scores I-IV as abnormal. The results showed that ASH changes were associated with age (reference: age<40): 40-59 years old (odds ratio:10.1, 95% confidence interval:2.8-36.3) and >60 years old (49.1, 12.4-194.3), hypertension (28.5, 15.0-54.2), diabetes (34.0, 12.8-90.2), abnormally high cardio-ankle vascular index scores (2.5, 1.4-4.4) and smokers (2.3, 1.1-4.8) among women. The results for men were similar but additionally ASH changes were significantly and negatively associated with high density lipoprotein cholesterol and current smokers and positively with body mass index >27. Our results confirm that risk factors of atherosclerosis in small arteries are mostly shared by the same risk factors of atherosclerosis in large arteries as we previously reported. One predictive factor of stroke is considered to be ASH changes and thus we need to remove the above positive risk factors for preventing stroke if possible.

0378

PARENTAL DEATH DURING CHILDHOOD AND ADULT CARDIOVASCULAR RISK IN A DEVELOPING SOUTHERN CHINESE POPULATION: THE GUANGZHOU BIOBANK COHORT STUDY. *CM Schooling[1], CQ Jiang[2], TH Lam[1], WS Zhang[2], KK Cheng[3], GM Leung[1] ([1]School of Public Health, The University of Hong Kong, Hong Kong SAR, China; [2]Guangzhou Occupational Diseases Prevention and Treatment Centre, Guangzhou Number 12 Hospital, Guangzhou, China; [3]Department of Public Health and Epidemiology, University of Birmingham, UK)

In western observational studies childhood emotional adversity is associated with adult cardiovascular disease (CVD). The authors examined the association of a potential marker of childhood emotional adversity (parental death) with biological CVD risk factors in a developing population. Multivariable regression was used in cross-sectional analysis of older (≥50 years) men (n=7,885) and women (n=20,886) from the Guangzhou Biobank Cohort Study (2003-8) to examine the associations of parental death before 18 years (0, 1 or 2 deaths) with CVD risk factors, and with seated height and delayed 10-word recall as validation outcomes. Early life parental death was associated with shorter age- and sex-adjusted seated height. Adjusted for age, sex, socio-economic position, leg length and lifestyle, it was also associated with lower 10-word recall. Similarly adjusted, early life parental death was not positively associated with blood pressure, lipids, glucose or obesity. There was some sex-specific associations; among men death in early life of two parents was associated with lower waist-hip ratio (-0.007, 95% confidence interval -0.014 to -0.0001). These findings in a non-western developing context suggest that some of the observed associations in western populations may be socially rather than biologically based. Potential reasons for early adversity being negatively associated with CVD risk factors among men should be sought.

0379-S

QUALITY OF LIFE OUTCOMES AMONG HEART FAILURE PATIENTS WHO SMOKE. *NC Peiper, MM Donneyong, CA Hornung (Department of Epidemiology and Population Health, School of Public Health and Information Sciences, University of Louisville, Louisville, KY, 40202)

Cigarette smoking is an important risk factor for poorer quality of life in all age groups although few studies have directly addressed quality of life outcomes in smokers with heart failure. Using the Minnesota Living with Heart Failure Questionnaire, changes in overall, physical, and emotional quality of life were compared from baseline to six months among heart failure patients (n=280). Minimally important (i.e., clinically significant) differences in quality of life were determined by anchor-based and distribution-based methods for each dimension. Multivariate linear regression models were fit to analyze change scores among current smokers controlling for demographics, comorbidities, clinical features, and HF treatment variables. At month six, current smokers and patients with high social support had poorer overall and emotional quality of life. However, while differences among current smokers met the criteria for a minimally important difference and are therefore significant for the clinical management of patients, they were not statistically significant (i.e., $p > 0.05$).Cigarette smoking is a clinically significant risk factor for poorer quality of life outcomes among heart failure patients, directly corroborating population-based and clinical studies. Studies that address quality of life issues and modifiable risk factors are warranted as aging populations continue to grow.

0380-S

ALCOHOL CONSUMPTION AND LONG-TERM MORTALITY AMONG WOMEN SURVIVORS OF ACUTE MYOCARDIAL INFARCTION. *JI Rosenbloom; KJ Mukamal; LE Frost; MA Mittleman (Beth Israel Deaconess Medical Center, Harvard Medical School, Boston MA 02215)

Moderate alcohol consumption is associated with lower mortality rate among men with prior myocardial infarction (MI), however, the association in women has not been well studied. In the Determinants of MI Onset Study, 1199 women hospitalized for MI in 64 centers nationwide from 1989-1996 were eligible. All patients were followed for mortality through 12/31/2007. There were 245 deaths at 5 years and 422 deaths at 10 years. We created propensity scores for three categories of weekly alcohol consumption (low: 07) as compared to abstainers (0 drinks/week). Covariates used in the propensity score included age, body mass index (BMI) and BMI^2, first MI, history of cardiac and non-cardiac comorbidity, usage of cardiac medications, current and former smoking, exercise, income, education, and race. We used Cox regression to calculate hazard ratios (HRs) for all-cause mortality after 5 and 10 years of follow-up, with abstainers (n=821) as the referent group. Models were adjusted for propensity score, age, and clinical features of the MI. For 5 years of follow-up HRs were: low(n=281, deaths [d]=35) 0.69 (95% confidence interval [CI] 0.47,1.01), medium (n=50, d=6): 0.91, (95%CI 0.40,2.09), high(n=47, d=3): 0.28 (95%CI 0.07,1.20), p-trend 0.03. After 10 years HRs were: low(d=65) 0.67 (95%CI 0.51,0.89), medium(d=11): 0.86 (95%CI 0.47,1.60), high (d=8): 0.48 (95%CI 0.22, 1.07), p-trend 0.003. Results were similar in fully adjusted models without propensity scores. These results suggest that in women there is a dose-dependent negative association between alcohol consumption and long-term mortality after MI.

0381

PREDICTORS OF 1-YEAR SURVIVAL AFTER ISCHEMIC STROKE AND INTRACEREBRAL HAEMORRHAGE: RESULTS FROM THE STROKE MORTALITY AND MORBIDITY STUDY (THE EMMA STUDY). Goulart AC*, Fernandes TG, AP Alencar, Fedeli LMG, , Benseñor IM, Lotufo PA (University of São Paulo, São Paulo, São Paulo, 05508000)

Introduction: Socioeconomic status plays an important role for stroke trends in developing countries. We aimed to analyze predictors of 1-year survival after ischemic stroke (IS) and intracerebral haemorrhage (ICH) among participants of the EMMA study. Hypothesis: to verify if there are differences in predictors of 1-year survival according to stroke subtypes. Methods: we prospectively ascertained consecutive first-ever stroke (IS and ICH) registered between April 2006 and December 2008, using the standardized World Health Organization (WHO)´s stepwise approach to stroke surveillance, in a hospital located in a deprived area in the city of São Paulo, Brazil. Results: From a total of 430 first-ever stroke cases with mean age of 68 years-old, 84.9% were classified as IS and 15.1% as ICH. We adjudicated 108 stroke deaths [ischemic, 79.6%; haemorrhagic, 20.4%] during 1-year of follow-up. The age-adjusted 1-year case-fatality rates for IS and ICH were 16.3% vs. 25.4%, respectively. Patients with ICH had a poorer 1-year survival compared to those with IS (log-rank test P= 0.04). The Cox-proportional-hazard model including age, sex, education, living status and alcohol consumption found the following independent predictors of death within 1 year among IS: age ≥ 80 years-old (hazard ratio [HR], 2.56; 95% CI, 1.31-5.03, P=0.006) and none education (HR, 3.55; 95% IC, 1.33-9.46), P=0.01). For ICH, alcohol consumption and other variables did not represent predictors of death. Conclusion: Low education was the most important predictor of poor survival among individuals with ischemic stroke during the first-year of follow-up.

0382-S

DIFFERENCES IN CARDIOVASCULAR DISEASE RISK FACTORS BETWEEN ASIAN-INDIAN AND WHITE, NON-HISPANIC MEN IN THE CALIFORNIA MEN'S HEALTH STUDY *NR Ghai, VP Quinn, Reina Haque (Kaiser Permanente Southern California, Pasadena, CA 91101); AT Ahmed; SK Van Den Eeden (Kaiser Permanente Northern California, Oakland, CA 94612)

Cardiovascular disease (CVD) rates are higher in Asian-Indians compared to other race/ethnic groups. To compare lifestyle CVD risk factors between Asian-Indian and white, non-Hispanic (WNH) men, we evaluated participants from the California Men's Health Study (CMHS), a multi-ethnic cohort of 84,170 men, ages 45-69, enrolled between 2001-2002, who were members of Kaiser Permanente Southern and Northern California. Descriptive and multivariable statistics were used to evaluate data from a mailed survey. In the CMHS cohort, there are 51,901 WNH men and 602 Asian-Indian men. Asian-Indians were more likely than WNHs to live in low income households (22% v. 15%), yet had considerably higher educational attainment (77% v. 53%, with college degree). Asian-Indians more often reported a healthy BMI (18.5-24.9) [Adjusted Odds Ratio (AOR) = 1.8 (95% CI 1.5-2.2)] and more often consumed <30% calories from fat [AOR = 2.6 (95% CI 2.1-3.1)]. There were no differences for fruit and vegetable consumption; however, Asian-Indian men were more likely to have never smoked and to abstain from alcohol. While Asian-Indian men were less likely to report moderate/vigorous physical activity > 3.5 hours/week [AOR = 0.54 (95% CI 0.46-0.64)], there was little difference in sedentary activity time spent outside of work. We found Asian-Indian men had fewer CVD-related lifestyle risk factors compared to WNH men. These results suggest risk factors other than lifestyle behaviors may be contributors to CVD in the Asian-Indian population.

0383

SEX DIFFERENCES IN THE RELATION BETWEEN NEGATIVE SOCIAL PERCEPTIONS/INTERACTIONS AND STROKE RISK. *K Henderson, T Lewis, C Clark, N Aggarwal, T Beck, S Lunos, H Guo, D Evans, C Mendes de Leon, S Everson-Rose (University of Minnesota, Minneapolis, MN)

Psychosocial factors are associated with excess stroke risk, but few studies have examined whether associations differ for men and women. This study investigated sex differences in the association of psychosocial factors with incident stroke. Data are from 2,649 adults (54% black, 46% non-Hispanic white; 61% female; mean (SD) age=77 (6.3)) without a self-reported history of stroke from a longitudinal study of chronic conditions in the elderly. Over 6 years (SD=3.4) of follow-up, 470 incident strokes occurred (ascertained via linkage with Medicare claims files through 12/31/07). Prior analysis on six negative psychosocial measures revealed two factors labeled 'distress' (depressive symptoms, neuroticism, life dissatisfaction, perceived stress) and 'negative social perceptions/interactions' (hostility, perceived discrimination). A Cox model was conducted for each factor, testing the factor*sex interaction, and controlling for age, race, sex, education, systolic blood pressure, body mass index, physical activity, smoking, and chronic conditions. The negative social perceptions/interactions factor*sex interaction was significant (p=.015). In sex-stratified models, each 1-point higher score related to a 10% increased risk of stroke in women [hazard ratio (HR)=1.10; 95% confidence interval (CI)=1.02-1.19; p<.02], but not men (p=.77). The distress*sex interaction was nonsignificant (p=.13), but there was a main effect of distress [HR=1.04; 95% CI=1.01-1.08; p<.01]. Negative psychosocial factors contribute to excess risk of stroke in older adults, but women may have greater vulnerability to adverse effects of negative social perceptions and interactions.

0384

PHYSICAL ACTIVITY ON AND OFF THE JOB: CONFLICTING ASSOCIATIONS WITH LONG-TERM STROKE MORTALITY. U. Goldbourt (Wingate College of Sports and Exercise Sciences, Nethnay 42902, Israel)

Leisure time Physical activity has been demonstrated to antecede reduced coronary heart disease (CHD) and all-cause mortality. The Association with stroke remains less clear. We followed-up 9500 apparently healthy male civil servants and municipal employees, free of heart disease, stroke or cancer. The degree of physical activity was assessed by questionnaires, administered individually. Prediction of 34 year fatal stroke (1963 to 1997) was estimated using a Cox proportional hazard regression, with age at death of stroke as the time variable. Hazard ratios were calculated using the method by Breslau.Proportionality of hazard was evaluated by Schoenfeld residuals. Over 34 years the risks of fatal stroke, relative to those on totally sedentary jobs (47 % of the cohort) were 1.09, 1.19 and 1.38, respectively, for men who had reported mainly sitting at work; men standing or walking; and counterparts on tasks that demanded heavy labour (P trend-test=0.003). Conversely, the corresponding hazards of stroke mortality according to reported leisure time activity were 0.84, 0.81 and 1.01, respectively, among "sporadic", "light" and "energetic" off-job activity, relative to men who were not engaged in any physical activity. In multivariate analysis incorporating categories of both on- and off-job reported activity, hazards associated with occupational activity according to the categories listed above were modified only slightly to 1.10, 1.21 and 1.39 (P for trend=0.006), whereas those associated with the categories of leisure time activity were 0.88, 0.80, and 1.02. Additionally adjusting for socioeconomic status (SES) removed most of the statistical association of non-sedentary work with stroke. No other adjustment changed the results appreciably. No known mechanism or associated characteristics are available to explain the unexpected relationship of on-job reported physical activity with fatal stroke, in this cohort of migrants with extremely varied occupations.

0385

RELATIVE TELOMERE LENGTH AND CHANGE IN RELATIVE TELOMERE LENGTH IN ISCHEMIC STROKE:A NESTED CASE-CONTROL STUDY. *M. Schürks, J. Prescott, I. De Vivo, K. Rexrode (Brigham and Women's Hospital, Boston, MA 02215)

Background—Shortening of telomere length has been implicated in cardiovascular disease. Data on an association of relative telomere length (RTL) with ischemic stroke are scarce and data on an association of change in RTL (cRTL) and stroke outcomes are unavailable. Methods—We used a nested case-control design among women participating in the prospective Nurses' Health Study. Participants provided blood samples in 1990 and 2000. We considered 1990 as baseline and matched women with confirmed incident ischemic stroke to controls by age, smoking, postmenopausal status, and postmenopausal hormone use. Quantitative real-time PCR was used to determine RTL in genomic DNA extracted from peripheral blood leukocytes. We used conditional logistic regression to determine the risk of ischemic stroke associated with RTL in 1990 and cRTL between 1990 and 2000. We investigated RTL and cRTL as quartiles. Results–Data on baseline RTL was available from 509 case-control pairs and on cRTL from 90 case-control pairs. RTL was not significantly associated with risk of ischemic stroke; the odds ratio [OR] (95% confidence intervals [CI]) for the highest vs. lowest quartile was 1.01 (0.64-1.57); ptrend=0.88. In contrast, cRTL appeared to be inversely associated with ischemic stroke: highest vs. lowest change quartile OR=8.29 (95% CI 1.05-65.27) adjusted for baseline RTL; ptrend=0.04. However, estimates were nonsignificant in multivariable-adjusted models controlling for cardiovascular risk factors: OR=5.26 (95% CI 0.46-60.35); ptrend=0.20. Conclusion—Our study does not support an association between RTL and ischemic stroke in women. While there is some indication that cRTL might be inversely associated with the risk for ischemic stroke, power was limited.

0386-S

RISKS OF CARDIOVASCULAR DISEASE AMONG DIABETIC WOMEN WITH BILATERAL OOPHORECTOMY *D Appiah, CA Hornung and SJ Winters. (University of Louisville, Louisville KY 40292)

Cardiovascular Disease (CVD) is the leading cause of death in women and the risk is increased threefold in diabetics. In postmenopausal diabetics, the ovary responds to hyperinsulinemia by increasing secretion of testosterone precursors which increases the risk of CVD. We used data from the third National Health and Nutrition Examination Survey to test the hypothesis that a history of Bilateral Salpingo-Oophorectomy (BSO) would reduce the risk of CVD among postmenopausal diabetic women due to reduced androgen levels. Logistic regression was performed with adjusted odds ratios (OR) and 95% confidence intervals (CIs) calculated. Of the 2367 postmenopausal women (81.4% non-Hispanic whites) included in the study, 33% had diabetes and 24% reported a history of BSO with 82% of these having the surgery before age 50. Diabetics were more likely to be older, live a more sedentary lifestyle and had higher prevalence of stroke and myocardial infarction than non diabetics. After controlling for age, sex, race, poverty income ratio, age at menarche and menopause, hormone therapy, hysterectomy, abdominal obesity, physical activity, high-density lipoprotein cholesterol, triglycerides, smoking and hypertension in models with progressive degrees of adjustments, BSO was protective in diabetics but not statistically significant (OR= 0.83, CI: 0.31-2.2). However, there was a significant interaction between BSO and controlled diabetes (OR= 0.03, p=0.005), whiles interactions of BSO with undiagnosed diabetes (OR= 0.32, p=0.07) and uncontrolled diabetes (OR=1.18, p=0.76) did not meet statistical significance. Our finding makes evident that BSO has a protective effect on the risk of CVD in women with controlled diabetes.

0387

CORONARY ARTERY DISEASE IN MIDDLE-AGE AFTER PRENATAL EXPOSURE TO THE DUTCH FAMINE OF 1944-1945. *L.H.Lumey, Lauren H. Martini, R.Prineas, M.Myerson, Aryeh D. Stein (Columbia University, New York, NY 10032)

Possible long-term effects of prenatal exposure to famine on coronary artery disease (CAD) have been examined previously with varying conclusions. We here compare CAD prevalence and future CAD risk from Framingham risk estimates in adults identified at birth in three clinics with exposure to the Dutch famine of 1944-1945 and in unexposed controls. We conducted standardized interviews and clinical examinations in 1,075 men and women at mean age 58 years, including 407 subjects with prenatal famine exposure, 344 subjects born in the same clinics before or after the famine as time controls, and 324 same-sex siblings of either of the above groups as family controls. CAD was defined as a history of myocardial infarction (MI), a history of angioplasty or bypass surgery, CAD positive symptoms using the Rose Questionnaire, or ECG Q wave abnormalities at examination. The 10-year future risk for MI and CHD death was estimated from the Framingham risk score based on gender, age, systolic blood pressure, total and HDL cholesterol, and current smoking status. There were 22 participants with CAD among the hospital controls (6.4%), 19 among the sibling controls (5.9%), and 29 among those with famine exposure in pregnancy (7.1%), The odds ratio (OR) for famine exposure in any week of pregnancy relative to controls was 1.11 (95% CI: 0.64 to 1.92; p=0.71). The median risk for a future CAD event was 10% in men and 2% in women and the risk did not differ by exposure group. (OR for exposure 1.06; 95% CI: 0.84 to 1.33) There were no differences in age at onset CAD onset between study groups. In this study we found no relation between prenatal famine and adult CAD prevalence or risk, but the number of CAD events was limited. More sensitive markers of future CAD risk should therefore be considered for future studies.

0388

ELECTROCARDIOGRAPHIC MARKERS OF SUBCLINICAL CARDIAC DISEASE IN MIDDLE AGE FOLLOWING PRENATAL EXPOSURE TO THE DUTCH FAMINE OF 1944-1945. *Ronald J. Prineas, Lauren H.Martini, Aryeh D. Stein, Merle Myerson, L.H.Lumey (Wake Forest University School of Medicine, Winston Salem, NC)

The long-term consequence of prenatal famine exposure for cardiac disease in adulthood has been examined with inconsistent conclusions. We here compare differences in subclinical markers of cardiac dysfunction in adults identified at birth in three clinics with exposure to the Dutch famine of 1944-1945 and in unexposed controls. We completed standardized examinations of a birth series of 942 people at a mean age of 58 years, including 353 study subjects who had been exposed prenatally to famine, 287 unrelated births who were born before or after the famine in the same clinics to serve as time controls, and 302 same-siblings of the groups above to serve as family controls. From triplicate electrocardiograms (ECG's) we calculated the QT index, resting heart rate, heart rate variability (HRV), and the root mean square of successive N-N interval differences and the standard deviation of N-N intervals as two ECG time-domain measures of HRV. These measures serve as sub-clinical electrocardiographic continuous measures of cardiac autonomic neuropathy (CAN). We also evaluated ST segment deviations, minor T wave abnormalities, and other ECG indexes of sublinical disease such as the QRS/T frontal plane angle for comparisons between exposure groups. All markers were selected as they independently predict future coronary artery disease and total mortality. In our analysis, we found no significant relation between any of the ECG based subclinical markers of future cardiac disease in middle age and in-utero exposure to famine. All markers were independently related to coronary artery disease risk factor levels in the direction of increased risk as expected from other studies. In conclusion, we found no relation between prenatal exposure to famine and a variety of subclinical ECG markers of cardiac disease, shown in other populations to infer poor prognosis.

0389

MAJOR AND MINOR ECG ABNORMALITIES AND LEFT VENTRICULAR SIZE IN MIDDLE AGE AFTER PRENATAL EXPOSURE TO THE DUTCH FAMINE OF 1944-1945. *Merle Myerson, Lauren H. Martini, Ronald J. Prineas, Aryeh D. Stein, L.H.Lumey (Columbia University, New York, NY 10032)

The long-term consequence of prenatal famine exposure for cardiac disease in adulthood has been examined with inconsistent conclusions. We here compare selected electrocardiographic (ECG) risk measures in adults identified at birth in three clinics with exposure to the Dutch famine of 1944-1945 and in unexposed controls. We completed standardized examinations of a birth series of 942 people at a mean age of 58 years, including 353 study subjects who had been exposed prenatally to famine, 287 unrelated births who were born before or after the famine in the same clinics to serve as time controls, and 302 same-siblings of the groups above to serve as family controls. In our study groups, we compared major and minor ECG abnormalities as defined by selected Minnesota and Novacode categories and left ventricular size as defined by Cornell voltage (CV). Ninety-one (9.7%) participants had major ECG abnormalities and 275 (29.2%) had minor ECG abnormalities. There were no differences among exposure groups. The Cornell voltage was 1292 (SD 523) among famine exposed subjects, 1301 (SD 492) among time controls and 1188 (SD 523) among sibling controls. Adjusting for gender, age, and clustering within sibships, the difference in CV among subjects exposed to famine at any week during gestation was 11 (95% CI: -56 to 78; p=0.75). This study does not support an association of prenatal famine exposure with selected discrete and continuous ECG indicators of adult cardiac disease risk.

0390-S

RESIDENTIAL RADON AND NON-LUNG CANCER MORTALITY IN THE AMERICAN CANCER SOCIETY COHORT. *Michelle C. Turner, Daniel Krewski, Yue Chen, C. Arden Pope III, Susan Gapstur, Michael J. Thun (University of Ottawa, Ottawa, Ontario, Canada, K1N 6N5)

Radon gas is a known cause of lung cancer. Previously, we demonstrated a positive association between residential radon and lung cancer mortality in the American Cancer Society Cancer Prevention Study-II (CPS-II). Here the association between residential radon and mortality from malignant and non-malignant diseases other than lung cancer is examined. CPS-II is a large prospective cohort study of nearly 1.2 million Americans recruited in 1982. Mean county-level residential radon concentrations were linked to study participants based on their ZIP code at enrollment (mean (SD) = 53.5 Bq/m3 (38.0)). Cox proportional hazards regression models were used to estimate adjusted hazard ratios (HR) and 95% confidence intervals (CI) for all cause (excluding lung cancer) and cause-specific mortality associated with radon concentrations. After necessary exclusions, a total of 811,961 participants in 2,754 counties were analyzed. As of 2006, there were a total of 314,311 deaths, of which 293,777 were due to causes other than lung cancer. No clear associations were observed between residential radon and mortality from cancer sites other than the lung. However radon exposure was significantly associated with chronic obstructive pulmonary disease (COPD) mortality (HR per each 100 Bq/m3 = 1.13, 95% CI 1.05 - 1.21). Findings were robust to the control of a variety of socio-demographic ecological risk factors, potential spatial clustering in the data, and ambient ozone concentrations. This large prospective study suggests that residential exposure to radon may increase COPD mortality. The significance of this finding will depend on replication in other studies.

0391

IMPACTS OF THE AUGUST 2003 POWER OUTAGE ON MORTALITY IN NEW YORK, NY. *G. B. Anderson and M. L. Bell (Yale University, New Haven, CT 22301)

A power outage on August 14-15, 2003, affected all of New York, NY, the first citywide blackout since 1977. This blackout stranded commuters, shut hotels, and affected water supply to high-rise buildings. We used a generalized linear time series model to investigate the mortality risk associated with this power outage using mortality data from 1987-2005 and controlling for potential confounders (long-term and seasonal trends in mortality, day of the week, and daily mean and dewpoint temperatures). We found that mortality risk for all non-accidental deaths increased 25.3% (95% confidence interval: 11.7%, 40.5%) on August 14 and 15, 2003, resulting in approximately 78 excess deaths. Using a distributed lag model, we determined that this increase was not short-term mortality displacement; in fact, mortality risk remained slightly elevated for the remainder of August 2003. We found that individuals $\geq$ 65 years were particularly affected (42.8% increase in mortality risk for those 65-74 years and 23.8% increase for those $\geq$ 75 years, compared to 17.3% increase for individuals < 65 years). To our knowledge, this is the first investigation of the effects of a power blackout on non-accidental mortality. Understanding the impacts of power outages on human health is important, given that urbanization and climate change are likely to strain power grids, and terrorist attacks on a power grid remain a security concern.

0392

IMPAIRED DRINKING WATERS AND ASSOCIATIONS WITH GASTROINTESTINAL CONDITIONS. *JS Jagai, BJ Rosenbaum, SM Pierson, LC Messer, K Rappazzo, EN Naumova, DT Lobdell (USEPA, RTP, NC 27711)

Under the Clean Water Act, the U.S. Environmental Protection Agency (EPA) collects information on intended stream use and impairment. We hypothesized that counties with impaired drinking water environments will also have higher rates of gastrointestinal infections (GI) and gastrointestinal symptoms (GS). Impairment data were obtained and merged with stream length data to estimate the percent of drinking-water-impaired stream-length per county in the 13 states that report these data. GI- and GS- (defined per ICD-9 codes) related hospitalizations (1991-2004) were abstracted from the Center for Medicare and Medicaid Services (CMS), the only comprehensive national hospitalization dataset. Data were aggregated by county of residence; annual hospitalization rates in the elderly (65+years) per county were calculated. A linear random effects model assessed county-level associations between percent impaired waters and hospitalization rates, adjusted for percent of population on public water supply and population density. Neither GI (unadjusted: beta coefficient (B): -0.064; 95% Confidence Interval (95% CI): -0.292, 0.164; adjusted: B: -0.014; 95% CI: -0.224, 0.196) nor GS (unadjusted: B: 0.561; 95% CI: -0.929, 2.050; adjusted: B: 0.677; 95% CI: -0.808, 2.162) hospitalization rates were associated with drinking water impairment. Low GI case counts and low GS outcome specificity may partially account for the lack of association with drinking water impairment. Impairment data from omitted states would possibly confirm these results. Though limited, this analysis demonstrates the feasibility of utilizing data collected for policy in environmental public health research. (This abstract does not necessarily reflect EPA policy.)

0393-S

INFLUENCE OF ENVIRONMENTAL FACTORS ON PNEUMOCYSTIS JIROVECII PNEUMONIA (PCP) HOSPITAL ADMISSION IN HIV PATIENTS IN SAN FRANCISCO GENERAL HOSPITAL (SFGH). K. Djawe, MS[1]*, L. Levin, PhD[1], A. Schwartzman, BS[2], S. Fong, BA[2], B. Roth, MPH[2], A. Subramanian, MD[2], K. Grieco, DO[2], L.G Jarlsberg, BA[2], , L. Huang, MD[2], and P.D. Walzer, MD, MSc[1] ([1]VAMC / U. Cincinnati, Cincinnati, OH, United States; [2]San Francisco General Hospital (SFGH) / U. California SF, San Francisco, CA, United States)

Pneumocystis jirovecii is a resourceful pathogen that continues to cause fatal PcP in immunosuppressed patients. Our goal was to determine environmental factors associated with PcP hospital admission. One hundred and forty-one PcP episodes were identified at SFGH between 2000 and 2008. A case-crossover design was used with the time of admission being a case time. One and two months before admission were used as control times. Daily climatic and air pollution data were collected. Conditional logistic regression was used to estimate the effect of climatic and air pollutant factors on PcP hospital admission. In univariate analysis, we found that temperature and SO2 increase the risk of PcP admission (OR [95% CI]: 1.05 [1.02-1.08], 2.06 [1.63-2.60] respectively). In multivariable analysis, temperature, SO2, and humidity were found to increase the risk of PcP admission (OR [95% CI]: 1.11 [1.06-1.16], 2.78 [1.99-8.73], and 1.04 [1.01-1.07] respectively). Other variables such as precipitation, carbon monoxide, nitrogen dioxide, ozone, and fine particles were not significantly associated with PcP admission. These data show that among climatic and ambient air pollutant constituents, temperature, humidity and SO2 are independent risk factors for PcP hospital admission. Further studies are needed to see if these factors are also predictors of PcP in other geographic locations in the country.

0394-S

FOOD OUTLET DENSITY AND OBESITY AMONG TEEN YOUTH IN CALIFORNIA. *Shams, P. and Lopez-Zetina, J. (California State University, Long Beach; Long Beach, CA, 90840-4902)

This research examines the ecology of teen obesity in Southern California and is based on analysis of secondary data. Aggregate measures of obesity and food outlet density are examined with the county as unit of analysis. Food outlet density is examined by using the Retail Food Environment Index Ratio (RFEI) developed by The California Center for Public Health Advocacy. The Retail Food Environment Index (RFEI) is compiled by dividing the total number of fast-food outlets and convenience stores by the total number of supermarkets and produce vendors (CCPHA 2007). Teen obesity data are from the California Health Interview Survey, CHIS 2007. Demographic data on Latino population density are from the Census Bureau. Spatial distribution of attributes of interest was examined with Geographic Information System technology (ESRI 2009. Much of the evidence pointed to an ecological positive association between high density of fast food outlets and greater obesity. Accessibility to supermarkets and fresh produce vendors appears to be more limited in counties with a high density of Latino population. Further, in counties with low RFEI ratios, (greater number of supermarkets and fresh produce vendors) lower levels of eating four or more times in past week was reported by Latino teenagers. Children and adolescents from racial/ethnically diverse communities are particularly affected by rising rates of obesity. Increased access to food fare of low nutritional value but high caloric and fat content is challenging public health efforts to reduce obesity in the U.S. A regulatory framework for food outlets offering fare with high caloric and fat content is urgently needed.

0395

CLIMATE CHANGE AND RESPIRATORY HOSPITALIZATIONS IN NEW YORK STATE: ESTIMATING THE CURRENT AND FUTURE HEALTH BURDEN OF INCREASING TEMPERATURE. S Lin, *W-H Hsu, AR Caton, S-A Hwang (New York State Department of Health, Troy, NY, 12180)

The global average surface temperature is likely to rise by 2 to 11.5°F at the end of 21st century relative to 1980-1999, and heat waves will be more intense, frequent and longer in duration. Our objective was to assess excess current and future public health impacts of respiratory disease attributable to extreme heat in summer in New York State. Previously, we reported the apparent temperature (AT) threshold and percent risk change above the threshold for New York State. Here we project change in temperature and other climate properties using a global climate model under various climate scenarios, which are plausible future trajectories for social, economic and technological development. Future climate was derived by shifting the baseline climate distribution according to these changes. Effects of extreme high AT in summer on respiratory hospitalizations, treatment costs, and lost workdays were estimated according to the risk change and increased AT above threshold under three climate scenarios. The New York State public health burden of respiratory disease attributable to extreme high AT in summer was estimated to be 100 hospitalizations, $1 million in treatment costs, and 615 lost workdays per year in 1991-2004. The 100-year projection of public health burden was estimated to range from 259-796 hospitalizations, $2.7-$8.3 million in treatment costs, and 1587-4833 lost workdays per year under the three climate scenarios. This study estimated a 2.6 to 8-fold increase in the public health burden of respiratory hospitalizations due to global warming in the coming 100 years. If combined with other diseases and mortality, the health impacts would be more evident.

0396-S

ENVIRONMENTAL EFFECTS ON BIRTH WEIGHT AND CONSEQUENCES FOR LATER HEALTH. *C Imai, T Halldorsson, I Gunnarsdottir, T Aspelund, T Gudnason, I Thorsdottir (University of Iceland, 101 Reykjavik, Iceland)

Low birth weight has consistently been associated with adverse health outcomes in later life. The relative importance of genetic versus environmental factors for these associations has been minimally addressed. The authors examined the association between environmental decrease in birth weight and later health. Methods: Cohort of 3644 subjects born 1925-1934 in Reykjavik, Iceland. Anthropometric measures at birth and school age were collected from National registries. Subjects were medically examined as adults (35-65years). Calendar year was used as proxy for environmental effects, including access to food, by comparing infants born prior to (1925-1929) and after outbreak of the Great Depression in Iceland (1930-1934). Results: Birth weight, mean 3750 grams(g), decreased between 1925-1929 and 1930-1934 by 129g for males and 94g for females. Overall prevalence of low birth weight (<3000g) increased from 4% to 6% and growth at school age was significantly reduced during the Depression. Age-adjusted odds ratios showed significantly increased risk of obesity 1.42 (95%confidence interval (CI) 1.01,1.99) and modest increased risk of dysglycemia 1.30 (95%CI 0.89,1.89) for females born 1925-1929 compared to 1930-1934. These changes were followed by significant increases in mean body mass index (0.6kg/m2) and fasting blood glucose (0.2mmol/L) at adult age. Risk of hypertension was not increased for females. Non-significant associations were observed for males. Conclusion: Reduction in birth weight due to sudden shift in environmental (economic) conditions appears to have significant but modest effect on later disease. The observed sex specific differences are in line with previous findings from this cohort.

0397

THE PUBLIC HEALTH IMPLICATIONS OF ENVIRONMENTALLY-INDUCED MIGRATION FOR HIGH-INCOME NATIONS. *Alden Blair, R. Sari Kovats (London School of Hygiene and Tropical Medicine, London, England WC1E7HT)

Background: High-income nations are increasingly concerned about health and migratory implications of global climate change. The complexity of mechanisms leading to migration and politicized nature of the debate has led to a weak evidence base for planning future policy. Methods: We conducted a systematic literature search to identify the health burdens of environmentally induced migrants from low and middle-income countries resettling in high-income countries. Results: 17 articles met our criteria, showing that migrants experienced greater health burdens than host populations in high-income countries. Disparities were apparent upon arrival and over time, and were influenced by nation of origin and behavioural and structural factors affecting access to care. No studies specifically addressed "environmentally-induced" migrants. Conclusions: Health burdens in migrant populations are important and merit public health action. Assessment is complicated by a lack of consistency in defining migrants and the difficulty in attributing the cause for migration to environmental factors.

0398-S

BIRTH MONTH DISTRIBUTION IN LUPUS VS THE GENERAL POPULATION IN THE US MIDWEST: THE MICHIGAN LUPUS EPIDEMIOLOGY & SURVEILLANCE (MILES) PROGRAM. *M Senga, WJ McCune, J Wing, L Wang, W Marder, P Cagnoli, EE Lewis, P DeGuire, C Helmick, PC Gordon, J Leisen, JP Dhar, EC Somers on behalf of MILES Group (University of Michigan, Ann Arbor, MI)

It is hypothesized that pre- and post-natal environmental exposures, which can vary by season, may increase risk of autoimmune disease. We investigated a possible association between birth month and development of systemic lupus erythematosus (SLE), using data from a large SLE registry, and a national health database for controls. We compared the distribution of birth months of SLE cases in the MI Lupus Epidemiology & Surveillance Program (n=2980) to that of the Midwest regional subset of the 2008 US National Health Interview Survey (NHIS) (n=13,680), and tested the equality of distributions by chi-square. Additional analyses were performed for birth season, and stratified by sex and calendar period (by decade and pre-/post-1960 birth year). The distribution of birth months for SLE vs NHIS groups was not significantly different, with or without stratification by sex and calendar period. However, within each group, there was significant monthly variation overall (p =0.009 SLE, p=0.007 NHIS), and among females (p=0.025 SLE, p=0.019 NHIS). In NHIS, among females born after 1960, there was a significant difference in birth month distribution (p=0.016); among females born before 1960, there was significant variation when birth month was categorized into 4 seasons (p=0.006). We did not detect an association between birth seasonality and risk of SLE. However, within group variation in distribution of births by sex, month/season, and calendar period underscores the importance of controlling for such variables when exploring hypotheses regarding early life etiologic factors.

0399-S

BLOOD PRESSURE MEASURES AND ITS RELATIONSHIP TO THE ENVIRONMENT IN SCHOOL-AGED CHILDREN LIVING IN GHARB PLAIN (NORTH-WEST OF MOROCCO). *F-Z.AZZAOUI[1], H.HAMI[2] and A.AHAMI[1] ([1]Equip of Clinic and Cognitive Neurosciences and Health, Laboratory of Biology and Health,Faculty of Science, BP.133 Kenitra, Morocco. [2]Laboratory of Genetic and Biometry,Faculty of Sciences, BP.133 Kenitra, Morocco)

The "Gharb" plain (area of our study) located in the North-West of Morocco is one of the most important agricultural and industrial regions of the Kingdom. Unfortunately, it suffered from the increase of different polluting human activities which expose the population, especially children, to serious health problems. The aim of this study is to measure the systolic and diastolic blood pressure of 129 urban, periurban and rural schooled children (aged 6 to 8 years) living in Gharb plain (North-West of Morocco) and to study the possible relationship between variations of blood pressure and some environmental parameters, using a questionnaire. The obtained results had shown that 54.17% of rural, 52.63% of periurban and 42.10% of the urban children had normal systolic and diastolic blood pressure. However, 57.89% of urban, 42.10% of periurban and 41.67% of rural children suffered from hypotension. Further, 5.26% and 4.17% of hypertension were registered in periurban and rural children respectively. Moreover, a significant correlations between the diminution of diastolic blood pressure and the using of traditional clay ustensil ($p<0.05$), in one hand, and the number of pollution sources near the house ($p<0.05$), in other hand, were registered. This last result highlights the possible involvement of environmental toxicants in hypotension. That is why deeper studies are needed. Key words: Blood pressure, environment, children, Morocco.

0400

META-ANALYSIS OF ACOUSTIC NEUROMA AND MOBILE PHONE USE. *Kelsh M, Kanas G, Erdreich L (Exponent, Inc., Menlo Park, CA and New York, NY)

Previous meta-analyses report conflicting interpretations of mobile phone use and acoustic neuroma risks. Although pooled results for gliomas and meningiomas have been published from the international INTERPHONE study, results for acoustic neuromas are still forthcoming. In this meta-analysis, we evaluate the exposure metrics of "regular," duration, latency, and ipsilateral mobile phone use and risk of acoustic neuroma. Relevant studies were identified through Medline searches and review of bibliographies. Meta-relative risks were calculated using random and fixed effect models for acoustic neuromas and heterogeneity and publication bias were assessed. Eight studies evaluated the association between ever or regular use of mobile phones and risk of acoustic neuroma. The meta-relative risk (metaRR) for regular mobile phones use was less than 1.0. Five studies reported information on latency and acoustic neuroma. For longer latency periods, the meta-analysis results showed a positive association with acoustic neuroma, however the confidence intervals are wide and heterogeneity of findings across the two studies was present. No associations were observed for ipsilateral use and acoustic neuromas based on regular usage, however, in the subgroup of ipsilateral users with longer latency, a positive association is observed. Data are limited for evaluation of long term use and latency greater than ten years. The exposure assessment method (self-report) used by all studies is subject to inaccuracy and potential recall bias. Given concerns about study biases and the heterogeneity of findings, these data cannot support a causal interpretation between mobile phone use and acoustic neuromas.

0401-S

A CASE-CONTROL STUDY OF GLIOMAS AND RESIDENCY WITHIN COUNTIES OF POTENTIAL ELEVATED RADON. *J.F.M. Lewis[1], S. Erdal[1], B.J. McCarthy[1], D. Il'yasova[2], D. Bigner[2], F.G. Davis[1] ([1]University of Illinois at Chicago, Chicago, Illinois 60612, [2]Duke University Medical Center, Durham, North Carolina 27705)

The only established environmental risk factor for brain tumors is ionizing radiation. Radon gas is a chief source of natural background ionizing radiation humans encounter. We assessed the association between potential radon levels within residential counties and the risk for gliomas. A case-control study, conducted between 2005 and 2009, included 505 cases and 811 hospital controls recruited from the NorthShore University Health System (Illinois) and the Duke University Medical Center (North Carolina) (National Cancer Institute Grant P50 CA108786-01). This study population represented twenty-eight states in the mid-west and southern United States. Residential counties were linked to potential radon levels from the U.S. Environmental Protection Agency's (EPA) Map of Radon Zones using geographic information systems. The EPA determined these levels with five factors: indoor radon measurements, geology, aerial radioactivity, soil permeability and foundation type of structures. Logistic regression analyses, adjusted for age and gender, were completed to estimate odds ratios (OR) and 95% confidence intervals (CI). Living within a county where potential radon was high or moderate (>=2 pCi/L) (pico Curies per Liter)) versus low (<2pCi/L) resulted in an OR of 2.3 (95% CI:1.9–2.9). Living within a county where potential radon was high (>4pCi/L) versus low (<2pCi/L) resulted in an OR of 4.4 (95% CI:3.1 –6.3). To conclude, there is evidence in these data of an association between potential elevated radon and gliomas although usage of the EPA Map is limited as a substitute for personal exposure.

0404

ORAL HEALTH STATUS, TREATMENT NEEDS AND LEVELS OF SATISFACTION AMONG A BEDOUIN POPULATION IN SAUDI ARABIA . *Mohammad Alamri and Khalid Almas (King Saud University, Riyadh, Saudi Arabia)

The Bedu or Bedouins are the desert nomads. In Saudi Arabia, there are few studies describing oral health status of general population. But relatively negligible information is available about Bedouins. The objectives of the present study were to assess the oral health status, oral hygiene and smoking habits, dietary pattern, dental treatment needs and levels of satisfaction from oral health status of the Saudi Bedouin population around Medina, Qaseem and Khamis Moshayte area. The data were collected in questionnaire forms which were designed according to the World Health Organization criteria. 525 Bedouins (296 male, 229 female) with the age range 2-90 years were interviewed and examined clinically in July through October 2008. The mean DMFT (Decayed, Missing, Filled Teeth) of younger age group (2-14 years) was 8.18, with largest D components, and 13.46 for the adult group with less than 1 F component. Periodontal conditions found in 83% of the population. Twenty five percent of the subjects were miswak users, 30% used both miswak and toothbrush, while 26% never cleaned their teeth. Seventy percent were rice eaters while meat and dates were second and third preference. Tea was the most common drink with 2-3 teaspoons of sugar per cup. There were only 10% cigarette smokers and less than 5 % used Shisha. Less than 10% had any kind of dental prosthesis. One fifth (20.8 %) of the subjects were with pain or infection needing immediate care. More than 50% were satisfied with the function and esthetics of their teeth. While 82% of the subjects were found satisfied by their oral health status, ranging from fair to good level of satisfaction. The studied Bedouin population had low to moderate level of oral diseases with high level of unmet treatment needs. There is a need to develop organized health care services to the Bedouin population with special emphasis on oral health promotion.

0403

ONE-YEAR OUTCOMES OF COMMUNITY-ACQUIRED AND HEALTH CARE-ASSOCIATED PNEUMONIA IN THE VETERANS AFFAIRS HEALTH CARE SYSTEM. Hsu JL, *Siroka AM, Smith MW,Holodniy M, Meduri GU (Department of Veterans Affairs, Menlo Park CA)

Background: While studies have demonstrated higher medium-term mortality for community acquired pneumonia (CAP), mortality and costs have not been characterized for health care-associated pneumonia (HCAP) over a one-year period. **Methods**: We conducted a retrospective cohort study to evaluate the mortality rates and health-system costs for patients with CAP or HCAP during initial hospitalization and for one year after hospital discharge. 50,758 patients were identified with CAP or HCAP admitted to the national Veterans Affairs (VA) health care system VA between October, 2003 and May, 2007. Main outcome measures included hospital, post discharge and cumulative mortality rates and cost during initial hospitalization and at 12 months following discharge. **Results:** HCAP mortality in hospital and up to12 months after discharge was nearly twice that of CAP (hospital: 9.9% and 5%, respectively; one-year post discharge: 34.4% and 17%, respectively). In logistic regression analyses, HCAP was an independent predictor for hospital mortality (odds ratio 1.62) and one-year mortality (odds ratio: 1.99) when controlling for demographics, comorbidities, pneumonia severity and factors associated with multidrug resistant infection including immune suppression, previous antibiotic treatment and aspiration pneumonia. When stratified by Charlson-Deyo Quan comorbidity index HCAP patients consistently had higher mortality in each stratum. HCAP patients incurred significantly greater cost during the initial hospital stay and in the following 12 months, however, this effect largely resolved with addition of aspiration pneumonia to the logistic regression model. **Conclusion**: HCAP represents a distinct category of pneumonia with particularly poor survival up to one year after hospital discharge. While factors such as comorbidities, pneumonia severity and risk factors for multidrug resistant infection may interact to produce even greater reductions in survival compared to CAP, they alone do not explain the observed mortality differences.

0405

AGGREGATE HEALTH BURDEN – COEXISTENT HEALTH PROBLEMS MORE STRONGLY CORRELATED WITH SELF-RATED HEALTH THAN MEDICAL COMORBIDITY ALONE. *Anthony V. Perruccio[a], Jeffrey N. Katz[a,b], Elena Losina[a,b,c] ([a]Brigham and Women's Hospital and Harvard Medical School, Boston, Massachusetts; [b]Harvard School of Public Health, Boston, Massachusetts; [c]Boston University School of Public Health, Boston, Massachusetts)

Objective: To investigate the effects of aggregate health burden – a construct comprised of several health domains (medical comorbidity, musculoskeletal, physical and social functional status, mental health, geriatric functional problems) – on overall self-rated health (SRH), an important chronic disease health outcome. We investigate whether medical comorbidity effects are mediated through other health domains and whether these domains have independent effects on SRH. Study Design: Medicare recipients (n=958) completed a questionnaire 3 years post primary total hip replacement surgery. Self-reported sociodemographic characteristics, SRH, and health domain statuses were ascertained. Probit regressions and path analyses were used to evaluate the independent effects of the health domains on SRH, the inter-relationships among these domains, and to quantify direct and mediated effects. Results: All health domains were independently associated with SRH. Medical comorbidity explained 11.7% of the variance in SRH and all other health domains explained 27.3%. The impact of medical comorbidity was largely direct, with only 21.5% mediated through the other domains. Medical comorbidity minimally explained the variance in other health domain scores. Conclusion: Self-rated health has multiple determinants. An exclusive focus on any one domain in health research, particularly medical comorbidity, is likely to limit researchers' ability to understand health outcomes or trajectories.

0406-S

SEVERE MENTAL ILLNESS AND HOSPITAL READMISSION IN DIABETIC ADULTS. *J.Albrecht, J.M.Hirshon, R.Goldberg, P.Langenberg, H.Day, D.Morgan, A.Comer, A.Harris, and J.Furuno (University of Maryland School of Medicine, Baltimore, MD 21201)

Severe mental illness (SMI) has been associated with higher hospital readmission rates in patients with cardiovascular disease. However, the impact of SMI on hospital readmission has not been assessed in patients with diabetes, who may be at increased risk of poor health outcomes. We hypothesized that among diabetics, SMI is associated with increased risk of 30-day hospital readmission. We conducted a retrospective cohort study including all adult (>18 years) admissions to the University of Maryland Medical Center between 2/01/2005 and 1/31/2009 with diabetes (ICD-9 code 250.xx) included as a discharge diagnosis. Our independent variable was a co-occurring diagnosis of SMI, defined by the presence of discharge diagnoses codes for schizophrenia, schizo-affective disorders, bipolar and manic disorders, major depressive disorder or other psychosis. Our dependent variable was readmission to the index facility within 30 days of discharge. Generalized estimating equations were used to account for repeated outcomes in a logistic regression model. We identified 26,878 (16.5%) patients with diabetes, of whom 1,613 (6%) had SMI. Diabetic patients with SMI did not have higher odds [odds ratio (OR) = 0.88(95% CI=0.76–1.02)] of 30-day hospital readmission compared to diabetic patients without SMI, controlling for age, length of initial hospital stay, sex, discharge to home and Charlson Comorbidity Index score. Our study highlights the importance of expanding research on SMI into different populations and exploring the relationship between mental illness and health outcomes.

0407

A REVIEW OF CRIMINAL PROCEEDINGS AGAINST PHYSICIAN REGISTRANTS BY THE U.S. DRUG ENFORCEMENT AGENCY (DEA) 2003 -2009. *Kenneth Soyemi, MD, MPH (John H Stroger Hospital, Chicago, Illinois)

Background: Diversion of legitimately manufactured controlled substances is a serious problem in the United States. DEA through the diversion control program monitors physician registrants in the U.S. Objectives: To conduct a descriptive analysis of the criminal proceedings against physician registrants from 2003 through 2009. Methods: A retrospective cohort study of physician registrants with criminal proceedings listed on the on the drug diversion website was conducted. Physician education, training, professional certification, and practice information was obtained from the AMA physician master file, and the state licensure websites. Number of criminal counts, and punishment were obtained from court documents, media reports, and the website. Results: Of the 199 physician registrants listed, 139 (70%) were primary care physicians, 175 (88%) were males, and death of patients occurred in 11(5.6%) cases. By region, 76 (38%) were located in the South, 54 (27%) in the Northeast, 36 (18%) in the Midwest, and 32 (16%) in West. The median (inter quartile range [IQR]) age at conviction was 53 (29-80) years, median (IQR) number of years of imprisonment was 3 (0-328) years, median (IQR) number of criminal counts was 2 (1- 178) counts, and median (IQR) fine was $6,986.50 ($1500.00 - $254,300.00). Age at conviction for primary care physicians did not differ compared with specialist (P = 0.4). Adjusting for region, gender, and practice type, there were no significant risk factors associated with conviction. Conclusion: Misuse of DEA registration by physician registrants threatens public health and safety. Programs regarding safe prescription practices should be developed to reduce misuse and drug diversion.

0408-S

SCREENING FOR GENITAL CHLAMYDIA FOR YOUNG PEOPLE IN COMMUNITY PHARMACIES: A STRUCTURED LITERATURE REVIEW OF INTERNATIONAL EVIDENCE. *M.Z.Kapadia, P.Warner, K.(Fairhurst University of Edinburgh, Scotland)

To review evidence and develop a conceptual framework regarding facilitators of and barriers to access and provision of chlamydia testing and treatment (CT&T) in community pharmacies from providers and users perspective. METHODS: Systematic searches were conducted for international research in electronic databases and grey literature from January 1990 to September 2010. The evidence categories used by the UK Department of Health in the National Service Framework (2001) was applied to each paper. RESULTS: We included 17 papers and reports. No systematic reviews and only one RCT was found. The conceptual framework developed can broadly be seen at three levels; i.e. i) Service delivery i.e. Community pharmacy action and behaviour, ii) Young people decision to receive service and iii) Stakeholders policy and action. Key facilitators identified were convenience of access - in terms of location, no need for appointment and extended opening hours for pharmacies - lack of social stigma to get the service from pharmacies rather than specialised sexual health clinics, incentives for pharmacies for provision of such care and in-pharmacy facilities such as counselling area and toilet. Identified barriers to access or provide CT&T service were level of privacy, anonymity and confidentiality achievable in a pharmacy setting, insufficient promotion of the service, pharmacy staff work load and lack of trained staff and perceived risk of chlamydia. CONCLUSION: Chlamydia screening in community pharmacies is broadly acceptable to both service users and providers. However if screening is to succeed, policy makers must consider the facilitators and barriers identified by young people and pharmacy staff.

0409

VALIDATION OF A PERSIAN VERSION OF THE QUALITY OF LIFE IN EPILEPSY INVENTORY-31 (QOLIE-31). *N Mohammadi, S Kian, M Nojomi, M A Akbarian (Tehran University of Medical Sciences, Tehran, Iran)

The psychometric properties of QOLIE-31, assessed in 84 adults with epilepsy: acceptability, test-retest reliability and validity (including internal consistency and item-to scale correlations, construct validity using factor analysis, discriminative validity using relationship with disease characteristics, and convergence validity using correlations with SF-36 scores). Internal consistency was high (Cronbach's alpha coefficient = 0.9). Discriminative validity was good for seizure control and epilepsy duration. Final scores of overall quality of life, cognition, medication effects, and social function was higher in patients without convulsion during recent one year ($p \leq 0.05$). Based on the time of diagnosis, quality of life showed different scores in energy/fatigue, cognition and medication effects ($p \leq 0.05$). Correlations between QOLIE-31 and SF-36 were 0.87 (good convergence validity). Factor analysis yielded seven factors by using principal component analysis. In most of questions, the first factor contained medication effects and two items of social function. The second factor in majority of questions was related to emotional well-being and energy/fatigue plus two items of social function. The third factor was related to seizure worry. Two factors were related to cognitive item and two other factors included emotional wellbeing and medication effects. We concluded the Persian version of QOLIE -31 meets established psychometric criteria for reliability and validity.

0410-S

PRIMARY HEALTH CARE REFORM: WHO JOINS A FAMILY MEDICINE GROUP. *N. Coyle, E. Strumpf, P. Tousignant, Y. Roy and J. Fiset-Laniel (McGill University, Montreal, QC, H3A 1A2)

One new promising model of primary care delivery is Family Medicine Groups (Groupes de Médecine de Famille or GMFs) that are designed to provide all Quebecers with access to a primary care physician. The objective is to understand the characteristics of patients and providers that voluntarily join a GMF and assess whether differences between participants and non-participants are likely to confound the predicted effects of GMFs on health care system outcomes if implemented at the population level. A cohort of vulnerable patients (elderly or chronically ill) consisting of GMF and non-GMF users, includes information on inpatient care, outpatient care, death records, demographics, geographic and socioeconomic characteristics. Multivariate logistic regression and Bayesian analysis is used to identify key predictors of joining a GMF and these models are used to calculate propensity scores. Propensity score matching is used to evaluate the impacts of the GMF model among comparable physicians and patients. Physicians that join a GMF have a unique practice profile, such that they are younger and performed more services at local community service centres (CLSC), compared to physicians that do not join a GMF. After joining, GMF physicians also significantly increase their productivity, as measured by the number of services, patients seen and days worked. Patients, however, are fairly comparable, with some differences in chronic health conditions and utilization of services. The types of providers and patients who are attracted to group practice has important policy implications and helps to identify the casual effect of the GMF model on health care utilization, costs, and health outcomes.

0411

INAPPROPRIATE EMERGENCY DEPARTMENT (ED) USE: PHYSICIAN POINT OF VIEW AND PATIENTS OUTCOMES. A STUDY IN 4 EMERGENCY DEPARTMENTS IN FRANCE. Ladner J[1], Bailly L[1], Pitrou I[1], Cartoux M[2], Tavolacci MP[1]. (Rouen University Hospital, Rouen, FRANCE)

Objective: To assess the appropriateness of ED admissions, based on the senior physician justification and to identify factors associated to inappropriate ED admissions. Methods: Between September 2005 and June 2006, a cross-sectional study was carried out in four ED of public reference hospitals in Upper Normandy region (France). Inclusion criteria were patients 18 years old or older, volunteers and very low vital risk (without emergency procedures). For each patient, the outcomes collected were medical consumption during the last six month, socio-economic characteristics, referred to ED by a general practitioner (GP, diagnosis and care in ED, visit appropriateness according to ED senior physician point of view. Results: A total of 485 patients were included. The mean age was 43.4 years (standard deviation [SD]=18.9); 307 patients (63.3%) were self-referred; 243 senior physicians assessed the visit as appropriate, 227 as inappropriate and 15 seniors were without opinion (excluded from the analysis). After adjustment (logistic regression), the patients whose visits were judged as inappropriate were self-referred (AOR=1.78, 95% CI=1.08-2.94, p=0.02), already done a visit to the ED in the last 6 months (AOR=2.31, 95% CI=1.36-3.91, p=0.002) and without hospitalisation after ED visit (AOR=12.82, 95% CI=6.23-26.37, p<10-4). Conclusion: In the context of an increasing number of patient admissions to the EDs in France, inappropriate use was characterised mainly by iterative recourse to ED for consultation. Our study shows that an emergency department adaptation, such as triage and ambulatory consultation, could be a solution to overcrowding. The availability of primary health care at the ED, providing continuity of care outside, might be evaluated.

0413

THE INFLUENCE OF HEALTH POLICY ON SMOKING RATES: A NATURAL EXPERIMENT. *AB Araujo, GS Miyasato, DE Levy, JB McKinlay (New England Research Institutes, Watertown, MA 02472)

Cigarette smoking is the leading cause of preventable death in the US. In 2006, Massachusetts mandated a tobacco cessation treatment benefit (pharmacotherapy/counseling) with minimal copay for all MassHealth (MA state Medicaid program) members ≥18 years. Prior to this, MassHealth provided no cessation benefit. We assessed the impact of this change on smoking rates in a population-based study. The Boston Area Community Health (BACH) Survey is a longitudinal study of 5503 Boston residents. Assessments were conducted before (2002-05) and after (2006-10) the change in benefits. Subjects were asked about insurance coverage, and MassHealth members during both assessments were the "exposed" group. An independent group of subjects with low socioeconomic status (SES, defined by income and education) observed at both assessments served as the comparison ("non-exposed") group. We examined quit rates and smoking exposure among these two groups. There were 1,029 MassHealth members and 456 subjects with low SES. Baseline smoking prevalence and mean number of years smoking were 39.7% and 17.9 years (MassHealth) and 22.8% and 20.0 years (low SES) (p<.001 and p=.312, respectively). The quit rate among MassHealth members was 13.6%, which was 7.1% (p=.869) higher than the quit rate of 12.7% among low SES subjects. The two groups reduced smoking by a half-pack at similar rates (11.8%, 11.6%). At baseline, MassHealth members smoked an average of 0.71 packs per day, versus low SES subjects who smoked 0.96 packs per day (p=.044). At follow-up, MassHealth members smoked 0.70 packs per day compared to 0.90 packs per day among low SES subjects (p=.397). Introduction of mandatory insurance coverage for smoking cessation appears to have a minimal short-term impact on quit rates or reduction of exposure. Supported by Award Number U01DK056842 from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) (NIH). Content is solely the responsibility of the authors and does not necessarily represent the official views of NIDDK or NIH.

0414

UNMET MENTAL HEALTH CARE NEEDS AMONG WORLD TRADE CENTER DISASTER SURVIVORS. *R. M. Brackbill, S.D. Stellman, H. P. Nair, M. Farfel (New York City Dept. of Health and Mental Hygiene, NY, NY 10013)

Post-traumatic stress disorder (PTSD), depression and anxiety are common among persons exposed to the 9/11 World Trade Center (WTC) disaster. It is important to understand factors underlying unmet mental health care needs (UMHC) and barriers to care in this population in order to increase access to mental health care. Methods. We studied 46,602 participants in the WTC Health Registry first follow-up (2006-7) survey, which included questions on perceived lack of care and barriers to needed care, diagnosed conditions in the past 12 months, and a screen for probable PTSD. Logistic regression was used to examine factors associated with UMHC. Results. 18% reported unmet health care need in the past 12m; of these 28% (2418) reported an unmet need for mental health care or counseling whether or not they were receiving mental health services. Those most likely to report UMHC were young adults (18-24 yrs) (adjusted Odds Ratio (aOR) = 5.0, 95% confidence interval (CI) 3.3-7.4), persons with annual household income <$25,000 (aOR=1.7, 95% CI, 1.4-2.0) and no social support (aOR =1.9 CI-1.5-2.3). Other risk factors were 14 or more days of poor mental health in the past 30 days (aOR=3.2, 95% CI, 2.9-3.6) and having probable PTSD or a previously diagnosed mental health condition (aOR=5.2, 95%CI, 4.6-5.8). No association was found between having any chronic physical condition and UMHC. The two most frequently reported barriers to mental health care were lack of money (51%) and insurance (41%). Conclusion. These findings are highly important to Registry's treatment referral program that employs personalized outreach to encourage enrollees with UMHC to seek care with no out-of-pocket costs at WTC Centers of Excellence.

0415-S

FACTORS CONTRIBUTING TO THE UPTAKE OF ROUTINE PEDIATRIC VACCINATIONS AMONG INFANTS. *Beverly A. Collisson, Sheila W. McDonald, Suzanne C. Tough (University of Calgary, Calgary, AB, Canada)

Background: Children who are not adequately immunized are at risk of disease specific illness, hospitalization, disability, and death. In a country where preschool immunization strategies are publicly-funded and supported by public awareness campaigns, improving immunization rates constitutes a national priority. This study identifies the factors contributing to the vaccination status of four-month-olds in Calgary, Canada. Methods: Data were analyzed from the All Our Babies Study (2008-2010), a population based prospective birth cohort investigating factors related to maternal mental and physical health and infant outcomes. Participants completed 2 questionnaires during pregnancy and 1 at 4 months postpartum. Results: Of 1175 women, 91.8% had vaccinated their infants, 8.2% had not. Factors significantly associated with vaccinations included mother having a physician ($P = 0.045$), baby having a physician, ($P < 0.001$), baby having received a checkup since leaving the hospital ($P < 0.001$) and maternal consultation of a parenting resource book ($P < 0.001$). Socioeconomic and sociodemographic factors were not associated with vaccination adherence. Conclusions: Maternal use of existing health and wellness services and supports both preceding and during infant vaccination eligibility is significantly associated with uptake of routine pediatric immunizations. These results suggest those who are already engaged with health services and supports are more likely to comply with vaccination guidelines than mothers who are not. Improving immunization rates may require identification of barriers to engagement with primary care services, regardless of family economic profile.

0416-S

USE OF ACADEMIC DETAILING TO INFLUENCE THE PRESCRIPTION PATTERNS OF FAMILY PHYSICIANS IN PRIMARY CARE - A SYSTEMATIC REVIEW. *H. Chhina, V. Bhole, D. Lacaille (Arthritis Research Center of Canada, University of British Columbia,Vancouver,BC)

Introduction: Academic detailing (AD) or Educational outreach visits (EOV) have been widely used to influence the behaviour of health care professionals. Previous studies suggest that dissemination and uptake of guidelines by interactive techniques like AD is more effective than traditional methods. Objective: To synthesize current knowledge on effectiveness of AD in influencing drug prescription patterns of family physicians (FPs).Methods A mapped search of MEDLINE, EMBASE, CENTRAL and Web of Science from 1983 to 2010 for epidemiologic studies of AD was conducted. Inclusion criteria were: 1) randomized control trial (RCT) or observational study with a control group; 2) drug prescribing as the targeted behaviour; 3) AD as the intervention; and 4) FPs in a primary care setting as participants. Results: The search strategy resulted in 570 studies, of which 271 were forwarded to abstract review and 24 studies forwarded to full manuscript review. Overall, 11 RCTs and 4 observational studies were included in the final review. 8 out of 11 RCTs and 3 out of 4 observational studies showed a positive effect of AD intervention on drug prescription patterns (i.e. a change in prescription pattern consistent with the treatment recommendation included in the AD). In these studies, the difference in relative change in prescription rate in AD group compared to control group (i.e. AD – control group) varied from 3.29% to 77.89%. Relative change was calculated as [(post – pre)/pre]*100 for both AD and control groups. Conclusion: AD is an effective strategy to influence the prescription patterns of FPs in primary care.

0417

PROMIS PAIN SCALES AND ADDICTION TREATMENT PATIENTS. *K Wiest, J Colditz, D McCarty, P Pilkonis (CODA & OHSU, Portland OR 97214; U Pitt, Pittsburgh, PA 15261)

Patients with substance use disorders have relatively high complaints of pain, anxiety and depression during treatment. Individuals receiving methadone maintenance for opioid dependence often report even greater levels of pain. Little is known about pain status at the beginning of treatment. The National Institutes of Health's (NIH) Patient-Reported Outcomes Measurement Information System (PROMIS) reliably and validly measures health outcomes using computer-assisted testing and scales developed with item response theory. PROMIS scales were used to explore pain symptoms and emotional distress among participants (n = 407) within the first 30 days of beginning methadone (n = 171) and outpatient (n = 236) substance use treatment. Clinical participants were recruited from substance use treatment programs in Portland, Oregon (n =182), Seattle, Washington (n =115) and Pittsburgh, Pennsylvania (n =115) from March through October 2010. The comparison group (n =1000) completed study measures through the YouGov Polimetrix internet panel. Study participation required respondents to report at least one alcoholic drink in the 30 days prior to completing the survey. Analyses adjusted for age and race. Mean pain interference, anxiety, fatigue and depression scores were significantly higher in substance use treatment patients. Patients receiving methadone maintenance were 3.5 times ($p<.001$) more likely to report severe pain interference relative to the comparison group. Obesity (body mass index ≥ 30.0) was not associated with increased pain. Incorporating treatment practices directed to patients with pain interference and related distress may enhance treatment efficacy for patients with substance use disorders.

0418

LIVER-RELATED OUTCOMES IN KIDNEY TRANSPLANT RECIPIENTS INFECTED WITH HEPATITIS C. *L M Kucirka, T G Peters, D L Segev. (Johns Hopkins Medicine, 21231)

Only 29% of Hepatitis C virus (HCV) (+) kidney transplant (KT) recipients receive HCV(+) kidneys, and these kidneys are discarded at 2.5-times the rate of their HCV(-) counterparts. We hypothesized that fear of worsening liver disease might be a disincentive to use of HCV (+) kidneys . The goals of our study were to (1) characterize post-KT liver disease in HCV(+) recipients, and (2) compare rates of post-KT liver-related outcomes between HCV(+) recipients who received HCV (-) and HCV(+) kidneys. Methods: We cross-referenced 6,250 KT recipients captured in UNOS between 1995 and 2008 with the liver dataset to identify those who later (1) joined the liver waitlist, (2) listed with a MELD > 15, or (3) received a liver transplant post-KT. Competing risk regression was used to account for potential survival bias and a matched cohort analysis was used to account for potential confounding. Each patient who received an HCV (+) kidney was matched to a patient of similar age, gender, diabetes status, and follow-up time who received an HCV (-) kidney. Results: Only 63 (1%) HCV (+) kidney recipients eventually the liver waitlist post-KT over our 13 year study period. Those who received HCV (+) kidneys had 2.5-fold higher hazards of joining the liver list ($p <0.001$); however, the absolute difference in rate of listing between recipients of HCV(-) and HCV(+) kidneys was less than 2%. Competing risk and matched control analyses confirmed these findings. Conclusion: Previous studies have demonstrated that KT using an HCV(+) kidney can reduce waiting by over a year for an HCV(+) patient; given the high risk of mortality on the waitlist, the slightly increased rate of adverse liver outcomes shown in this study should not be a disincentive to the use of HCV(+) kidneys.

0419

DIFFERENCES IN MALE BREAST CANCER STAGE, TUMOR SIZE AT DIAGNOSIS,AND SURVIVAL RATE BETWEEN METROPOLITAN AND NONMETROPOLITAN REGIONS. *Judith Klein, PhD, MSPH; Ming Ji, PhD; Nancy Rea, PhD; Georjean Stoodt, MD, MPH (Walden University, Minneapolis, MN, 55401)

Although the incidence for breast cancer in men is lower than for women, male breast cancer (MBC) patients are diagnosed at a later stage and have a higher mortality rate than women. This study examined male cases reported from 1988 through 2006 in the Surveillance, Epidemiology, and End Results program of the National Cancer Institute for differences in cancer stage, tumor size at diagnosis, and survival rate between metropolitan and nonmetropolitan regions. Pearson's Chi-square was used to evaluate differences in stage and tumor size at diagnosis. Cox proportional hazards regression was used to assess survival differences after adjusting for confounders (race, marital status, median family income, age and education). Regional differences in tumor size and stage at diagnosis were not statistically significant, however survival differences were observed between metropolitan and nonmetropolitan regions. An interaction between nonmetropolitan area and regional stage MBC was a significant predictor of poorer survival. Raising awareness of MBC in nonmetropolitan areas could save the lives of many men and action should be taken to improve health care access, treatment, earlier diagnosis, and prognosis in this population.

0420

FATHER MENTAL HEALTH, PARENTING AND CHILD WELL-BEING IN THE EARLY CHILDHOOD PERIOD: RESULTS OF AN AUSTRALIAN POPULATION BASED LONGITUDINAL STUDY. *R. Giallo, A. Cooklin, C. Wade, F. (Parenting Research Centre, Australia), D'Esposito, F. Mensah, N. Lucas, & J. Nicholson (Murdoch Children's Research Institute, Australia)

This paper presents a longitudinal model of the relationships between mental health, parenting and child wellbeing in a large nationally representative sample of 1936 fathers participating in the Longitudinal Study of Australian Children. Data from three waves when the children were aged 0-12 months (Wave 1), 2-3 years (Wave 2) and 4-5 years (Wave 3) were used. Structural equation modeling revealed that fathers' mental health was associated with child wellbeing via its effects on parenting self-efficacy in the postnatal period and later parenting behavior. The model accounted for 15% of the variance in child outcomes. Specifically, latent growth modeling revealed that father's mental health was associated with low parental self-efficacy at Wave 1, and this was predictive of low parenting warmth and high parenting irritability at Wave 3. In turn, low warmth and high irritability were associated with increased child emotional and behavioural difficulties at Wave 3. These relationships remained significant after controlling for maternal mental health, child gender and socio-economic position. These findings underscore the importance of father mental health and parental self-efficacy in the early parenting period, and their contribution to later child outcomes. Implications for policy and practice will be discussed, with particular focus on improving mental health and parenting support to fathers in the early childhood period.

0421

ERECTILE DYSFUNCTION IS ASSOCIATED WITH INCREASED C-REACTIVE PROTEIN LEVELS IN MEN WITHOUT DIABETES OR HEART DISEASE. *V Kupelian, GE Chiu, RC Rosen, JB McKinlay (New England Research Institutes, Watertown, MA 02472)

There is increasing evidence suggesting that endothelial dysfunction will manifest sooner in the penile microvasculature than in systemic conduit vessels. Inflammation is a promoter of endothelial dysfunction and is a cardiovascular risk factor. The objective of this study is to investigate the association between erectile dysfunction (ED) and C-reactive protein (CRP), a biomarker of systemic inflammation. The Boston Area Community Health (BACH) Survey, a population-based study of urologic symptoms, used a multistage stratified design to recruit 5503 adults age 30-79. Analyses were conducted in 1,898 men with complete data on CRP levels. ED, assessed using the International Index of Erectile Function (IIEF-5), was defined as an IIEF-5 score <17. CRP levels were categorized as <1 mg/L (referent), 1-3 mg/L, >3 mg/L. Comorbid conditions were assessed by self-report. The association between CRP levels and ED was assessed using odds ratios (OR) and 95% confidence intervals (95%CI) estimated using multiple logistic regression models to control for potential confounders. The association between elevated CRP levels and ED was modified by comorbid heart disease and diabetes status. Results show increased odds of ED with higher CRP levels (>3 mg/L) in men without prevalent heart disease or diabetes (OR=2.17, 95% CI:1.26-3.74) while no association was observed in men with prevalent comorbid conditions (OR=0.74, 95%CI:0.32-1.74). Results show an increased inflammatory profile among men with moderate to severe ED symptoms, especially among men without prevalent heart disease or diabetes. These results support the hypothesis that ED is a marker of increased cardiovascular risk. The project described was supported by Award Number U01DK056842 from the National Institute of Diabetes and Digestive and Kidney Diseases. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Diabetes and Digestive and Kidney Diseases or the National Institutes of Health.

0422-S

DIFFERENCES IN ALCOHOL USE DISORDER PREVALENCE BETWEEN MEN AND WOMEN: A META-ANALYSIS. Tzong KY*, Brady JE, Lusardi AR, DiMaggio CJ, Li G. (Columbia University, New York, NY 10032)

Alcohol use disorders (AUD), encompassing alcohol dependence and abuse, are a serious public health problem in the United States. Men have higher rates than women for all three measures of drinking: alcohol use (drinking alcohol at all), binge drinking (drinking 5 or more drinks in 2 hours for men and 4 or more drinks in 2 hours for women), and heavy alcohol use (drinking 5 or more drinks per occasion on 5 or more days in the past 30 days). We conducted a meta-analysis of AUD to quantify the sex-difference in the prevalence of AUD. We searched literature databases and obtained 908 citations. We conducted manual review of abstracts written in the English language, published after 1980, and conducted on populations within the United States. A total of 17 articles were included in the meta-analysis. We extracted data on AUD prevalence in men and women residing in the United States from each of these studies and calculated study-level and summary odds ratios. Statistically significant excess risk of AUD in men was found in 16 of the 17 studies, with estimated odds ratios ranging from 1.1 to 4.2. The summary odds ratio of AUD for men compared to women was 2.1 (95% confidence interval 1.8– 2.4). The funnel plot and Rosenthal's fail-safe n indicated that publication bias alone was insufficient to explain the sex-difference in the prevalence of AUD found in this meta-analysis. The review of published literature indicates that AUD prevalence in men is twice that in women.

0423

SOCIAL NETWORK ANALYSIS OF A SYPHILIS OUTBREAK IN TORONTO, ONTARIO. B Kinniburgh, C Rank, AM Jolly, R Shahin, GB Clarke, D Al-Bargash, M-L Gilbert, and *M Ofner. (Toronto Public Health, Toronto, ON, M5B 1W2 and Public Health Agency of Canada, Ottawa, ON, K1A 0K9)

An outbreak of infectious syphilis began among men who have sex with men in 2002 in Toronto when the number of cases increased 555% in one year. Cases increased again in 2009, when 579 cases were reported; a 72% increase over 2008. The Canadian Field Epidemiology Program was invited by Toronto Public Health to assist with enhanced surveillance of infectious syphilis, and specifically to identify where cases looked for sex partners. Routine surveillance data for 27 males diagnosed with infectious syphilis from April 15 to June 30, 2010 were supplemented with data from a self-administered online questionnaire developed for the purpose of this outbreak investigation. A social network was constructed to examine cases, sexual contacts, and venues where sex partners were sought. In enhanced surveillance, the median number of male sex partners reported was 5 (range 1-50). Only three cases (11%) reported identifiable names of sexual contacts in routine case follow-up. Multiple sex partners were reported more often in enhanced vs. routine surveillance (92% vs. 59%). Twenty-five cases named 31 venues where they recruited sexual partners. The most popular venue types were the internet (n=22, 88%), bath houses (n=15, 60%), and bars/clubs (n=9, 36%). The largest network component included 24 cases, seven contacts, and 31 venues. Most cases (22 of 24) were linked by six common venues: three websites, two bath houses, and one bar. As data from routine contact tracing were limited, social network analysis was valuable as it identified venues where opportunities for public health messaging and case finding exist.

0424

DEPRESSION AND SOCIODEMOGRAPHIC RISK FACTORS AMONG MIDDLE-AGED AND OLDER MEN. S.D. Cleary* (George Washington University, Washington, DC, 20037)

Although depression is not as common among men as it is among women, it may lead to physical and social impairments that hasten morbidity and mortality. For example, rates of completed suicide are significantly higher among middle-aged and older men than women at any age as well as younger men. In this paper the prevalence of current depression, severity of depression, and lifetime depression is estimated among a community-based sample of adult males in 38 states and the District of Columbia that completed the anxiety and depression module in the 2006 Behavioral Risk Factor Surveillance System. Depressive disorders were measured using the Patient Health Questionnaire-8. Findings indicate that 6.6% of men aged 45 years and older have current depression, 12.3% have mild depressive symptoms, and 11.9% reported a depressive episode in their lifetime. Current depression decreased significantly among older age groups and was higher among men that were divorced/separated and widowed, unemployed or unable to work, and those with a functional disability. Lifetime depression was significantly higher among older men, those not married or cohabitating, unemployed or retired, and disabled, and lower among non-whites and men with lower education. Understanding the impact of depression on middle-aged and older men is important given the increasing size of this population, the meditating role of depression on treatment, recovery, and mortality for physical illnesses, and the increasing risk of suicide with age. Knowledge gained will facilitate the development of interventions to mitigate the effects of depression on overall health and well-being among middle-aged and older men.

0425-S

DOES THE EPIDEMIOLOGICAL TRANSITION CONTRIBUTE TO ISCHEMIC HEART DISEASE IN MEN? US HISPANICS. J Speicher, MPH student, CM Schooling PhD. (School of PH, CUNY)

Men die prematurely of ischemic heart disease (IHD) two to three times more than women in developed environments. This disease-specific disparity between the sexes largely emerged with the epidemiologic transition and is replicating in developing countries. The authors have previously hypothesized that growing up in a developed location has detrimental effects on specific IHD risk factors (waist-hip ratio (WHR) and HDL-cholesterol (HDL-c)) in men but possibly protective effects in women. Multivariable linear regression was used in the National Health and Nutrition Examination III survey of US adults (17+ years), 1988-1994, to examine IHD risk factors in US Hispanics by growth environment (US (n=2418), non-US (n=1226) or migrated before age 20 years (n=938)). This had sex-specific associations with WHR and HDL-c (p values for interaction $\leq$ 0.001 and 0.03, respectively, adjusted for age, education and smoking). Hispanic men raised in the US had higher WHR (0.014, 95% confidence interval (CI) 0.005 to 0.018) than non-US-raised Hispanic men. In contrast, US-raised Hispanic women had lower WHR (-0.010, 95% CI -0.002 to -0.018) and higher HDL-c (3.67 mg/dL, 95% CI 5.13 to 2.21) than the non-US -raised women. These observations are consistent with those in other recently transitioned populations where generational changes in maternal-child early living conditions (nutrition and exposure to infections) have similar sex-specific associations. They are also consistent with the life-course hypothesis that upregulation of the gonadotropic axis underlies changing patterns of disease with economic development. Further investigation is required to prevent the tragedy of history repeating itself.

0426

TESTOSTERONE LEVELS IN US MALES IN THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY, 1988-1991 TO 1999-2004. *SJ Nyante, BI Graubard, G McQuillan, EA Platz, S Rohrmann, G Bradwin, KA McGlynn (National Cancer Institute, Bethesda, MD 20892)

Studies suggest that male testosterone levels have declined recently. To examine this in the US, we compared total testosterone (TT), free testosterone (FT), and sex hormone-binding globulin (SHBG) in the National Health and Nutrition Examination Survey (NHANES) from 1988-1991 and 1999-2004. Analyses included white, black, and Mexican-American men who were $\geq$20 years old and had serum available from morning examinations. TT and SHBG were measured in serum from 1999-2004 participants (N=907) using the Roche Elecsys 2010 (CV: testosterone, 4.8%; SHBG, 5.6%). The same laboratory previously measured serum TT and SHBG in 1988-1991 participants (N=1413) using the same methods. A subset of samples from 1988-1991 men was re-assayed at the time of the 1999-2004 population assays and had good reproducibility (CV: TT, 6.3%; SHBG, 5.3%). FT was calculated from TT and SHBG values. Means were estimated using linear regression that accounted for NHANES sample weights and design, and adjusted for age, race/ethnicity, body mass index, waist circumference, alcohol use and smoking. Differences in mean concentrations (Δ) and two-sided P-values were calculated (α=0.05). TT, SHBG, and FT did not change significantly comparing 1999-2004 participants to 1988-1991 (Δ: TT=-0.11 ng/mL, P=0.24; SHBG=-1.62 nmol/L, P=0.07; FT=-0.002 ng/mL, P=0.45). Stratified by age, SHBG was lower in 1999-2004 among men 20-44, but not among older men (Δ, nmol/L: 20-44=-4.40, P=<0.01; 45-69=2.26, P=0.07; $\geq$70=1.92, P=0.31). TT and FT did not differ stratified by age (all P>0.05). Overall, there was no evidence of a decline in total or free testosterone in US males between 1988-1991 and 1999-2004.

0427

PREVALENCE OF ERECTILE DYSFUNCTION IN PORTUGUESE MALE PRISON GUARDS. C Pereira*, O Amaral, N Veiga (CI&DETS. Polytechnic Institute of Viseu. Portugal)

Objective: The aim of this study was to quantify the prevalence of erectile dysfunction and analyse related factors in portuguese prison guards. Subjects and methods: In a cross-sectional approach we included all prison guards from 12 prisons in Portugal. The data was collected using a self-administrated questionnaire. We distributed 1190 questionnaires and received 1040 (87.4%). The questionnaires without information about sex and age and those referring to females (120) were excluded from the analysis (final sample=748). Erectile dysfunction was measured using a IIEF-5 scale that includes five questions (scores ranging from 1 to 25). Erectile dysfunction were classified into four categories: severe (1-7), moderate (8-11), mild to moderate (12-16), mild (17-21), and no erectile dysfunction (22-25). Results: The prevalence of erectile dysfunction was 40.4%, distributed according to the following categories: severe/moderate=0.6%, mild to moderate=8.4%, mild =31.5%. Erectile dysfunction was associated with age (≤40 years 29.5%, 41-50 years 40.0%, >50 years 62,1%, $p<0.01$), marital status (single 37.5%, married or living with partner 40.3%, divorced/separated/widowed 62.5%, $p<0.01$), insomnia (yes 46.5%, no 35.6%, $p<0.01$), depression (yes 60.9%, no 25.9%, $p<0.01$), excessive daytime sleepiness (yes 44.6%, no 31.6%, $p<0.01$), shift-working (yes 37.3%, no 50.0%, $p<0.01$), sports practice (yes 33.0%, no 51.6%, $p<0.01$), alcohol drinking (yes 53.8%, no 37.8%, $p<0.01$) and life satisfaction (yes 39.2%, no 71.4%, $p<0.01$). The life prevalence of medication used to help maintain erection was 6.2%. Conclusion: Erectile dysfunction is a high prevalent condition in male guards and it is associated with personal factors and work-related conditions.

0428

IT'S NOT THAT COMPLICATED: WHAT MOTIVATES BLUE COLLAR WORKERS TO QUIT SMOKING? *Bondy SJ, Bercovitz KL. (Univ. of Toronto DLSPH, Toronto ON, M5T 3M7)

Workers in construction and trades are a priority for smoking cessation efforts. They have smoking rates three times the population average, less access to preventive services, and have been poorly represented in research. This qualitative study describes views and experiences of (mostly) men working residential construction expressed in an online discussion forum unrelated to health behaviour. Having previously used this resource to describe workplace smoking policies, we focused here on what motivates these men to quit smoking and predicts success when they try. Analysis considered constructs in the Integrated Theory of Health Behaviour as well as research on smoking in relation to gender and class. Available data suggested that smoking and cessation were not largely influenced by distal social norms and pressures. Smoking was not linked to social power or masculinity as has been suggested elsewhere such as in youth. In terms of lessons for communications, smokers and nonsmokers were little moved by arguments for tobacco-control efforts if these were seen as supported solely by a precautionary principle or the preferences or attitudes of others. Smokers tended feel quitting was important to maintain one's health and livelihood but described failure at cessation. Maintenance of cessation was described in terms of immediate and physical cues to smoke such as smell and access to cigarettes (e.g., unconscious smoking) which suggests the need to enhance self-regulation as opposed to motivation. Successful quitters motivated others to quit by emphasizing the immediate, tangible and positive gains to the individual smoker and offered advice to avoid relapse.

0429

CHOICE OF CORRECTION FOR RETENTION BIAS CAN GREATLY AFFECT STUDY CONCLUSIONS. *Bondy SJ, Victor JC, Zawertailo L, Dragonetti R, Selby P (Univ. of Toronto DLSPH, Toronto ON, M5T 3M7)

Poor participation and retention rates are a reality in population- and community-based research. The impact of methods of correction for bias from missing data are demonstrated using the Stop Smoking for Ontario Patients study – a full-population intervention study which offered free nicotine therapy and minimal contact to all Ontario smokers. Using only non-missing data the intervention was estimated to have increased cessation rates by 75% relative to a contemporaneous, matched, population-based control group drawn from the Ontario Tobacco Survey. If estimated using the so-called conservative intent-to-treat approach, the impact of intervention, would be grossly penalized and show no benefit. Using multiple imputation supports the clear benefit shown using non-missing data. This paper provides a review and discussion of popular, emerging, and under-utilized means to assess and correct for actual bias due to loss-to follow-up and missing data. Use of weights, external validation sub-studies and continuum of resistance models should be incorporated at the design-stage of community intervention studies and surveys.

0430

EXPLORING THE EFFECTS OF NON-RESPONSE TO THE BASELINE AND FOLLOW-UP ON THE VALIDITY IN COHORT STUDIES. *C. Coeli, M. Carvalho, D Chor, R. Pinheiro, P. Guimarães, D. Skaba (Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brazil, 21941-598)

Few articles have evaluated the effects of non-response in cohort studies. The aim of this study was to assess if non-response, both to the baseline and to follow-up, may introduce selection bias on the association between occupational level and mortality. We applied the non-response and mortality estimates of the Whitehall II1 study to a hypothetical cohort encompassing 110.000 person.years (occupational level: low- 50.000; high - 60.000). We considered four scenarios: (1) full participation; (2) non-response to baseline; (3) non-response to follow-up; (4) non-response to baseline and follow-up. We calculated mortality rate ratios (RR) considering the high occupation level as reference and absence of confounding or information bias. The first scenario RR was 1.79 (95% confidence interval [CI] 1.6;2.1), with only the last scenario showing an important impact of the non-response on the rate ratio estimate (RR=1.2; 95% CI 0.91;1.57)). Our results suggest that combining non-response in different stages of cohort studies may cause selection bias. 1. Ferrie JE,et al. Non-response to baseline, non-response to follow-up and mortality in the Whitehall II cohort. Int. J. Epidemiol. 2009 Jun 1;38(3):831-837.

0431

OPENRECLINK A FREE AND OPEN SOURCE SOLUTION FOR PROBABILISTIC RECORD LINKAGE. *K Camargo, C Coeli (Universidade do Estado do Rio de Janeiro, Rio de Janeiro, RJ, Brazil, 20559-900)

In 1998 we began the development of a software package, called RecLink, that implemented the probabilistic record linkage techniques. Our main drive then was the lack of available low-cost alternatives. Since then we developed three successive versions of the program, which has been widely used in Brazil. OpenReclink is an evolution of that first attempt. Although based in the algorithms and experience acquired with the development of the previous iteration, the new version is a total rewrite of the program, based on a set of goals that we established for the new stage of its development: (1) migrate to a free and open source software (FOSS) platform; (2) to implement a multiplatform version; (3) to implement the support for internationalization. We adopted the Gnu Public License (GPL) v2 for the new software, as a warranty of maintenance of the open software status with the possibility of incorporation of third party modifications without risk of compromising its free and open characteristics. The development site for the program is housed in SourceForge. We kept C++ as the development language, for its versatility and high performance of the generated code. We adopted the FOSS wxWidgets library (www.wxwidgets.org) as the development framework; among its relevant features are the support for multiple platforms (Windows, Linux, MacOS) and the incorporation of the gettext() system of internationalization Finally, we adopted the hamsterbase library (www.hamsterdb.com), which is available as a free and open tool for equally free and open programs and has a high performance and ease of use, as the data back-end.

0432

NONCOVERAGE BIAS IN HOUSEHOLD LANDLINE TELEPHONE SURVEYS, BRFSS 2008 . Lina Balluz*, Shaohua S. Hu, Michael P. Battaglia, Martin R. Frankel (CDC, Atlanta, GA)

The Behavior Risk Factor Surveillance System is a state based telephone survey conducted in all 50 states, DC and the territories. To determine whether exclusion of adults with cell-phone-only may bias estimates from a landline-based survey, a cell phone survey was conducted in parallel with the ongoing, monthly landline data collection in 18 states in 2008. The landline and cell phone samples were weighted at state level. Logistic models were developed for each of 16 health indicators to examine whether survey approach affected estimates after adjusting for the impact of demographic characteristics. The relative biases for estimates were calculated to estimate the potential biases in landline telephone surveys that exclude cell phones. The study found that as noncoverage rate for cell-phone-only adults continued to increase, the biases of 16 health indicators resulting from their exclusion from landline-based health survey were significantly high and cannot be ignored.

0433

THE USE OF NATIONAL PROBABILITY SURVEYS TO DESCRIBE REGIONAL PATTERNS OF FUNGAL INFECTIONS IN THE UNITED STATES. *S. Gallas, D. Guo, S. Niemcryk, R. Jenrow, R. Tresley (Abbott Laboratories, Abbott Park, IL 60064)

This study was designed to describe the regional distribution of ambulatory care visits for superficial and invasive fungal infections in the United States. Data from the National Ambulatory Medical Care Survey and the National Hospital Ambulatory Medical Care Survey, which rely on multi-stage probability sampling and which are conducted by the Centers for Disease Control and Prevention, were used to identify fungal infections diagnosed from 2000 through 2006 at physician offices, hospital outpatient settings, and emergency departments. A total of 52,492,640 (+2,582,422) physician office visits, 5,903,934 (+378,017) hospital outpatient department visits and 3,757,723 (+263,666) emergency department visits with fungal infections coded as an ICD-9 diagnosis were identified over the seven year period of study. Over 38% of physician office visits and nearly 46% of emergency department visits with a diagnosis of a fungal infection were in the southern region. Of the fungal infections diagnosed in the outpatient setting, 33% and 30% occurred in the midwestern and southern regions, respectively. Dermatophytosis and candidiasis were the two most frequently diagnosed fungal infections. The regional distribution of commonly diagnosed fungal infections, including dermatophytosis and candidiasis was described. Patients with serious fungal infections would likely require hospitalization and therefore would not have been captured in these datasets.

0434

CONSIDERATIONS IN DEVELOPING AND USING ELECTRONIC HEALTHCARE DATA ALGORITHMS FOR EPIDEMIOLOGIC AND HEALTH SERVICES RESEARCH. *J. Chubak, G. Pocobelli, N.S. Weiss (Group Health Research Institute, Seattle, WA 98101)

Epidemiologic studies often use electronic healthcare data algorithms to classify persons as having health conditions or having undergone certain medical procedures. However, the data on which algorithms are based may be incomplete or inaccurate. We review uses of electronic healthcare data algorithms, measures of their accuracy, and reasons for prioritizing one measure of accuracy over another. High algorithm sensitivity is important for reducing the costs and burdens associated with the use of a more accurate measurement tool, for enhancing study inclusiveness, and for collecting information on common exposures. High specificity is important for classifying outcomes. High positive predictive value is important for identifying a cohort consisting of persons with a condition of interest but that need not be representative of or include everyone with that condition. Finally, a high negative predictive value is important for reducing the likelihood that study subjects have an exclusionary condition. Recognizing that electronic healthcare data algorithms will not be completely accurate, epidemiologists must prioritize one measure of accuracy over another when generating an algorithm for use in their study. We recommend that researchers publish all tested algorithms—including those that do not have acceptable accuracy levels—to help future studies refine and apply algorithms that are well-suited to their objectives.

0435

MAINTAINING SAMPLE DIVERSITY AND RESPONSE RATES IN A LONGITUDINAL POPULATION-BASED STUDY, 2002-2010. *H Cochran, J Brewer, D Brander, JB McKinlay (New England Research Institutes, Watertown, MA 02472)

The Boston Area Community Health (BACH) Survey is population-based longitudinal study of 5,502 racially/ethnically diverse Boston adult residents. During our 5 year follow-up, we have achieved a high response rate (N=4,145, 80% of eligible) in a mobile population while preserving the sample's diversity. A combination of panel maintenance and tracking methods is to be credited for this success. Since start-up in 2002, we have made yearly contact with subjects. (Holiday and birthday mailings with a return postage-paid card requesting updated contact information). During follow-up, a rigorous tracking protocol was implemented. Results showed that of the 5,502, the majority were successfully tracked using standard methods (e.g., letters, phone calls at varied times of day, outreach to "contacts" named by subjects and field tracking). Follow-up interviews were completed among 3,978 of these subjects. For the remaining 742 originally believed to be lost-to-follow-up, we used intensive methods (e.g., on-line databases). Of these, 37% were located and 16% of these were determined to be ineligible (death, etc.). Of the 84% that remained eligible, 73% (N=167) completed a follow-up interview. Thus, these additional efforts increased our yield by >4% of the sample who completed follow-up. This highly-mobile cohort of inner-city Boston residents poses significant recruitment challenges due to diversity in age, SES, race/ethnicity and country of origin. Additionally, study visits are long (~2 hours) and conducted *in-person*. The use of evolving tracking methods has kept diversity of the sample intact, for instance, in terms of the distribution of race/ethnicity (Baseline/follow-up: White 34%/36%, Black 32%/32%, Hispanic 34%/32%). Supported by Award Number U01DK056842 from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) (NIH). Content is solely the responsibility of the authors and does not necessarily represent the official views of NIDDK or NIH.

0436

SELF-REPORTED ATRIAL FIBRILLATION AS A PREDICTOR FOR STROKE IN THE REASONS FOR GEOGRAPHIC AND RACIAL DIFFERENCES IN STROKE (REGARDS) STUDY. *EZ Soliman, G Howard, JF Meschia, M Cushman, P Muntner, PM Pullicino, LA McClure, S Judd, VJ Howard (Wake Forest Univ Sch of Med, Winston Salem, NC; Univ of Alabama at Birmingham, Birmingham AL; Mayo Clinic, Jacksonville, FL; Univ of Vermont, Burlington, VT; New Jersey Med Sch, New Jersey, NJ)

Background: Self-reported atrial fibrillation (SR-AF) data is often called into question because of the possibility of unreliable information from the respondents. We compared the associations of SR-AF and electrocardiogram-detected AF (ECG-AF) with incident stroke in the REGARDS study. Methods: 27,109 participants aged >45 years without prior stroke were included in this analysis. AF was identified by SR and ECG. Stroke cases were identified and adjudicated during an average of 4.4 years of follow-up. Multivariable Cox proportional hazards analysis was used to examine the association between AF ascertained by different methods with incident stroke. We also examined the impact of the AF ascertainment method on the predictive ability of the Framingham Stroke Risk Score (FSRS). Results: After adjustment for demographics and common stroke risk factors (the components of the FSRS), SR-AF, ECG-AF, and AF by either method were predictive of incident stroke [HR (95% CI): 1.41 (1.05,1.88), 1.90 (1.10,3.27), 1.53 and (1.16,2.01), respectively]. When SR, ECG or either method, separately, were considered as the method of AF ascertainment in the FSRS, the hazard ratios per 1% higher FSRS were the same regardless of the AF ascertainment method [1.04 (1.03,1.04); 1.04 (1.04,1.05); 1.04 (1.03,1.04), respectively]. Conclusion: SR-AF is a strong predictor of stroke that can be used interchangeably with ECG-AF in stroke risk stratification models.

0437-S

HOW SHOULD WE MEASURE ASTHMA AND ALLERGIC RHINITIS IN EPIDEMIOLOGIC STUDIES? A COMPARISON OF SELF-REPORTED AND POPULATION-BASED REGISTER DATA. *S Hansen, E Maslova, M Strøm, EL Mortensen, SF Olsen (Statens Serum Institut, Centre for Foetal Programming, Copenhagen, Denmark)

The study aim was to compare cases of asthma and allergic rhinitis ascertained by different assessment methods. The work was carried out in the Danish National Birth Cohort including around 93.000 live-born children who were followed-up at seven years of age. We identified cases of asthma and allergic rhinitis from three sources: a self-administered questionnaire, the Danish National Patient Register, and the Register of Medicinal Product Statistics. Using these rich data sets we found a substantial non-overlap between the number of cases ascertained by the three assessment methods (kappa=0.08-0.38). We found the highest lifetime prevalences of asthma and allergic rhinitis when we used the medication registry for the ascertainment of cases (32.7 % for asthma, 7.5 % for allergic rhinitis) and the lowest lifetime prevalences when we used the hospital registry (6.6 % and 0.5 %, respectively) for the ascertainment. In general, the self-reported asthma and allergic rhinitis measures had higher speci-ficities and negative predictive values and lower sensitivities and positive predictive values compared with the registry data. The non-overlap between the three methods may be due to different abilities of the methods to ascertain cases with different phenotypes and aetiologies in which case they should be treated as separate outcomes in future aetiological studies. The non-overlap may also be due to bias in the measurements; if the ascertained cases across the methods are not phenotypically different, a combination of these methods could be used to create measures with high specificities which is desirable in aetiologic studies.

0438

RECRUITMENT RESULTS AND COSTS OF A COUPLES-BASED INTERVENTION TO CONTROL AND PREVENT DIABETES. *VP Quinn, ED Tuazon, R Contreras (Kaiser Permanente Southern California, Pasadena, CA 91101), D Ritzwoller, A Sukhanova, RE Glasgow (Kaiser Permanente Colorado, Denver, CO 80237), D DeRosa, R Chon, A Xiang, K Reynolds (University of Southern California, Alhambra, CA 91801)

Background: To improve self-management of type II diabetes (DM II) we sought to recruit couples to the Prevention and Control of Diabetes in Families Study, an intervention targeting diet and physical activity. Subjects were from Kaiser Permanente Southern California (KPSC) a non-profit, prepaid health plan serving 3.3 million members. Methods: Couples were randomly selected to be contacted if one spouse had DM II and both were 30-70 years of age, able to speak and read English, and had no serious health conditions. We sent introductory packets and screened by phone for eligibility and interest. Results: We sent letters to 4366 patients with DM II, completed 3655 calls, identified 1606 ineligible couples, and randomized 305 spousal pairs. Participation ranged from 11% to 33% depending on assumptions about eligibility of refusers (n=1744) and those we couldn't contact (n=711). Refusers most often reported having no interest in the intervention. Participants were more likely to be older, non-Hispanic white, college educated and have a body mass index >30.0. Recruitment costs were $113,128 or 17% of total study costs including intervention, data collection, labs and analyses. Conclusions: Recruiting couples to a lifestyle intervention was difficult and costly. Including spouses added to the recruitment burden, as did the high proportion with limited English language skills. Significant differences were found between subjects and non-participants. Strategies to motivate interest in lifestyle change in this high-risk population need to be improved.

0439

VERIFICATION OF RANDOM SELECTION ASSUMPTION IN RESPONDENT-DRIVEN SAMPLING IN EGOCENTRIC SOCIAL NETWORK DATA. *H. Liu, and J. Li (Virginia Commonwealth University, Richmond, VA 23298)

The primary aim of respondent-driven sampling (RDS) analysis is the estimation of population proportions in a hidden population. One of the key assumptions in RDS analysis, called "random selection assumption," is that respondents randomly recruit peers from their personal networks. The verification of this assumption in empirical studies is rare. The objective of this study was to verify this assumption in the empirical data of egocentric networks. We conducted an egocentric social network study among young drug users in China, in which RDS was used to recruit this hard-to-reach population. The evaluation of the RDS sample indicated its success in reaching the convergence of RDS compositions and including a broad cross-section of the hidden population. To verify the random selection assumption, we first randomly selected alters from an ego's social network. The number of alters randomly selected from an ego's social network was the same as the number of subjects that the ego actually recruited in this study. We refer to this randomly selected sample as an "ad-hoc random sample". Next, we compared the distributions of five visible variables (group traits) that were measured in both egos and alters between the RDS sample and the ad-hoc random sample. Findings demonstrate that the random selection assumption holds for three group traits, but not for two others. Specifically, egos randomly recruited subjects in different age groups, marital status, or drug use modes from their network alters, but not in gender and education levels. Future studies are needed to assess the extent to which the population proportion estimates can be biased when the violation of the assumption occurs in some group traits in RDS samples.

0440

SCALING UP RESPONDENT-DRIVEN SAMPLING BEYOND THE LOCAL LEVEL: IMPLEMENTATION LESSONS FROM THE TRANS PULSE PROJECT. *G.R. Bauer, N. Khobzi (University of Western Ontario, London, Ontario, Canada N6H 2B1)

Respondent-driven sampling (RDS) provides a systematic network-based option for sampling, tracking, and analysing data on hidden populations. It has been used extensively in local studies where researcher contact with participants continued through each successive recruitment wave, allowing for validation of eligibility, control in data collection, and consistent messaging regarding recruitment of new participants by prior participants. While evaluations of RDS have consistently confirmed point estimate validity, design effects are often large, suggesting that larger sample sizes may be needed than previously believed. The ability to scale up RDS to non-local samples presents one response, but requires new or adapted strategies. We evaluate strategies developed by the community-based Trans PULSE Project team to recruit a province-wide sample of trans (transgender, transsexual or transitioned) people in Ontario, Canada for a multi-mode epidemiologic survey of trans health. Trans PULSE recruited 433 participants within this moderately well-networked population (median network size = 8). This presentation provides an overview of validity issues specific to, or with unique implications for, RDS; lessons learned in scaling up RDS, and considerations in deciding whether RDS methods are appropriate for a study, and at what scale.

0441

FOLLOW-UP OF METHODS USED BY THE KAROLINSKA INSTITUTE (KI) TO ANALYZE THE SWEDISH CONSTRUCTION WORKERS COHORT STUDY: STILL INCONSISTENT AND UNJUSTIFIED. *KK Heavner, CV Phillips (Populi Health Institute, Wayne, PA, 19087)

In 2009 we reported at these meetings on KI's inconsistent methods used to analyze data about smokeless tobacco (snus) exposure from the Swedish Construction Workers cohort study (see: tobaccoharmreduction.org/papers.htm). Instead of doing a single study with common methodology, KI researchers used different methods for different endpoints, apparently searching for the most upward-biased result for each. Varying methods included subject eligibility criteria and variable definitions (different cutoffs for continuous variables, failure to use available exposure variables that were more detailed, etc.) and inappropriate tests of significance were used. The consequent apparent bias has affected meta-analyses and tobacco harm reduction policy (specifically the discussions of the snus ban in the European Union). Subsequent to our last report, the researchers were made aware of our concerns about their methodology, but refused to share their data or even run additional analyses (reporting what their method for analyzing one endpoint would have produced for others, a way to detect biased methods choices) and basically conceded that their method was to dredge for larger associations. Another researcher then asked the Swedish courts to intervene, to enforce Swedish law that requires the data be made publicly accessible. The case is pending and the researchers continue to publish on the topic using the same plastic methods. While it is possible that KI's results are legitimate, the unexplained inconsistencies and anti-scientific hiding of the data suggest a threat to knowledge on the topic as well as the integrity of epidemiology.

0443

ASSOCIATIONS BETWEEN OCCUPATIONAL WHOLE BODY VIBRATION EXPOSURE AND PARKINSON'S DISEASE IN A POPULATION-BASED CASE-CONTROL STUDY. *M.Anne Harris, Stephen A. Marion, Joseph K.C. Tsui, John J. Spinelli, Kay Teschke (University of British Columbia, Vancouver, BC, Canada, V6T1Z3)

Head injury events increase risk of Parkinson's disease (PD), suggesting that mechanical stressors are implicated in PD etiology. Sources of mechanical stress such as whole body vibration have yet to be explored as potential risk factors. To our knowledge, this study is the first to evaluate the relationship between occupational whole body vibration exposure and Parkinson's disease. We conducted a population-based case control study in British Columbia, Canada with 403 cases and 405 controls. From detailed occupational histories and measurements of whole body vibration in the published literature, metrics of occupational whole body vibration exposure were constructed and tested for associations with Parkinson's disease using logistic regression analyses while adjusting for possible confounders such as age, sex, smoking and history of head injury. Any history of occupational whole body vibration exposure was inversely associated with Parkinson's disease (odds ratio (OR) [95%CI]: 0.73 [0.52-1.04]), but the greatest values of the most intense equipment exposure were associated with increased odds of Parkinson's disease, particularly when exposures occurred 20 years or more prior to diagnosis (adjusted OR [95%CI]: 1.90 [0.91-3.95], p=0.08). Possible mechanisms of an inverse relationship between low levels of whole body vibration exposure could include direct protective effects or correlation with other protective effects such as exercise. The relationship between high intensity of whole body vibration and Parkinson's disease could result from vascular or inflammatory effects of vibration exposure.