00002725

Breast-feeding amplifies the high risk of childhood overweight associated with maternal smoking

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Breast-feeding amplifies the high risk of childhood overweight associated with maternal smoking *Xiaozhong Wen, Edmond D. Shenassa, Paradis Angela, and Stephen L. Buka (Brown University,Providence,RI,02906; EDS was supported by Flight Attendants Medical Research Institute and by grant R40MC03600-01-00 from the Maternal and Child Health Bureau, Department of Health and Human Services) Perinatal maternal smoking is associated with overweight among the offspring. The breast milk of smoking mothers can deliver both beneficial nutrients and high concentrations of tobacco products to infants. We examined whether breast-feeding could modify the risk of childhood overweight associated with maternal smoking. The sample included 20,735 mother-child dyads in the Collaborative Perinatal Project. Based on the mean number of cigarettes smoked during the 3rd trimester of pregnancy, we classified mothers as non-smokers, light (1-9 /day), moderate (10-19 /day), or heavy smokers (20+ /day). We defined exclusive breast- or bottle- feeding based on observations taken during the infant's nursery stay after birth. Overweight at 7 years of age was defined as a body mass index ≥85th percentile by sex within the full cohort. Among bottle-fed children (n=18,871), the adjusted odds ratios (ORs) of overweight were 1.21 (95% confidence interval [CI], 1.09 to 1.35) for light, 1.38 (95% CI, 1.21 to 1.57) for moderate, and 1.40 (95% CI, 1.23 to 1.59) for heavy maternal smoking. Among breast-fed children (n=1,864), the adjusted ORs of overweight were 1.27 (95% CI, 0.92 to 1.77) for light, 1.74 (95% CI, 1.20 to 2.53) for moderate, and 2.25 (95% CI, 1.56 to 3.24) for heavy maternal smoking. There is synergistic interaction on a multiplicative scale between breast-feeding and heavy maternal smoking in the risk of childhood overweight. Breast-feeding may amplify the high risk of childhood overweight associated with heavy maternal smoking.

00002731

Breastfeeding, Early Weight Gain, and Secondary Sexual Maturation: Results from North Carolina Infant Feeding Study.

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Breastfeeding, Early Weight Gain, and Secondary Sexual Maturation: Results from North Carolina Infant Feeding Study. *Y. Wang and W. Rogan (National Institute of Environmental Health Sciences, RTP, NC, 27709)

Breastfed infants are lighter than formula fed infants during infancy, and girls who have menarche early are heavier. Few analyses of longitudinal data linking feeding in infancy, weight gain through childhood, and menarche are available. To elucidate the effects of breastfeeding on children's growth, girl's age at menarche, and ages when boys and girls reached sexual maturity (Tanner stage 3 through 5), we used data from US North Carolina infant feeding study in which 855 newborns were enrolled (1978-1982) and followed clinically until 5 years old. Information on feeding was collected and body size was measured prospectively. We re-contacted the families 10 or more years later, and 317 girls and 283 boys reported their height, weight, age at menarche (girls) and Tanner stage (breast stage for girls and genitalia stage for boys) from 1992 until attaining their final stages. We used Mixed Effect Models and Cox Proportional Hazard Models to analyze data. As a result, Breast-fed girls weighed lower than formula-fed girls from 6 months until 14 years and had earlier age at menarche (hazard ratio=0.85, 95% CI: 0.74, 0.97) after adjustment for confounders. Greater weight gains in infancy and childhood were associated with earlier age at menarche and age at breast stage 3 to 5. For boys, greater weight gain between 5 and 12 years was associated with later age in achieving stage 3 and 4 genital development (ß=-0.38 and -0.46 respectively). These findings suggest that breastfeeding and weight changes during infancy and childhood have long term effects on timing of secondary sexual maturation.

00002752

Dietary Intake of Folate, B-Vitamins and Methionine and Breast Cancer Risk Among Hispanic and non-Hispanic White Women

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Background: Low dietary folate intake is associated with several neoplasias, but reports are inconsistent for breast cancer. It is not well established that the association of folate with breast cancer depends on phenotype, particularly for estrogen receptor (ER) status.
Objective: To determine if dietary folate intake, as well as B-vitamins (B2, B6, B12) and methionine are associated with breast cancer risk and ER status among Hispanic and non-Hispanic White women in the southwestern US.
Materials and Methods: Primary breast cancer cases (n=2,325) in the 4-Corners region (Arizona, Colorado, New Mexico and Utah), diagnosed between October 1999 and May 2004, were identified through state cancer registries. Controls (n=2,525) were frequency-matched by ethnicity and age (±5 years). Dietary intake, physical activity and other exposures were assessed using in-person interviews. Risk was assessed by multivariate and multinomial logistic regression with adjustment for relevant covariates.
Result: While there was no overall association with breast cancer, folate was inversely associated with ER- breast cancer (Odds Ratio (OR) for the highest quartile=0.50, 95%CI 0.25-1.00, p for trend=0.07). Vitamin B12 intake was inversely associated with breast cancer (OR=0.73, 95%CI 0.53-1.00, p for trend=0.06), particularly ER+ breast cancer (OR for the highest quartile=0.67, 95%CI 0.46-0.99, p for trend=0.06), and among NHW women (OR = 0.49, 95%CI 0.29-0.81, p for trend = 0.01). Methionine intake was also inversely associated with ER+ breast cancer (OR for 4th quartile=0.83, 95%CI 0.66-1.03, p for trend=0.04) primarily among Hispanic women (OR = 0.71, 95%CI 0.47-1.06, and P for trend = 0.02).
Conclusion: Higher intake of folate is marginally associated with lower risk for ER negative breast cancer, and higher intake of vitamin B-12 and methionine are marginally associated with lower risk of ER positive breast cancer.

00002768

Type 2 Diabetes and Risk of Renal Cell Cancer: Nurses' Health Study, 1976-2006.

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Diabetes has been suggested to increase the risk of several cancers, but its relation with renal cell cancer (RCC) is controversial. This study prospectively evaluated the association between type 2 diabetes and renal cell cancer incidence. A total of 117827 women aged 30 to 55 years who were free of cancer in 1976 were followed through 2004 for the occurrence of type 2 diabetes and through 2006 for incident RCC, verified by medical records and pathology reports. Relative risks for RCC were calculated using Cox proportional hazards models with adjustment for other risk factors, including age, tobacco use, body mass index (BMI), and history of hypertension. All statistical tests were two-sided. During 1765625 person-years of follow-up, we documented 15363 cases of type 2 diabetes and 287 cases of RCC. Compared with women without diabetes, those with type 2 diabetes had a modestly elevated risk of RCC(age-adjusted relative risks [RR] = 2.06, 95% confidence interval [CI] = 1.49-2.83, age, BMI and hypertension adjusted RR = 1.52, 95% CI = 1.09-2.13, multivariate RR = 1.55, 95% CI = 1.11-2.18). The associations were strongest among women whose diabetes duration was 10-15 years. Compared with nondiabetics, the multivariate RR for this group was 2.46 (95% CI = 1.39-4.38). These positive associations were consistent across different strata of BMI, smoking status, and hypertension ($P_{\text{interaction}}$ = 0.30, 0.82, and 0.52, respectively). In this prospective study of women, type 2 diabetes was associated with an elevated risk of renal cell cancer.

00002713

Association of early life factors with uterine fibroids in US black women

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Association of early life factors with uterine fibroids in US black women L.A. Wise, *R.G. Radin, J.R. Palmer, L. Rosenberg (Slone Epidemiology Center, Boston, MA 02215)

Background: A recent study identified soy formula, low childhood SES, and preterm birth as risk factors for uterine leiomyoma (UL) diagnosed by age 35. We examined the relation of early life factors, including maternal and intrauterine characteristics, to risk of self-reported UL. Methods: Data were derived from the Black Women's Health Study, a prospective cohort study of black women aged 21-69 at baseline. Over a 12-year period (1997-2009), we followed 24,232 premenopausal women for incidence of UL. We used Cox models to compute rate ratios (RR) and 95% confidence intervals (CI), after adjusting for covariates. Results: During 194,803 person-years of follow-up, there were 6,929 incident cases of UL diagnosed by ultrasound (N=4,559) or surgery (N=2,370). While we did not find evidence for an association of UL with soy formula (RR=0.97, CI=0.82-1.14) or preterm birth (RR=1.01, CI=0.92-1.11), weak associations were found for being left-handed or ambidextrous (RR=1.11, CI=1.01-1.21), being a twin or triplet (RR=0.87, CI=0.72-1.05), and birth weight <2,000g after control for gestational age (RR=0.87, CI=0.72-1.04). Factors associated with UL among women age<35 included low parental education (RR=1.24, CI=1.01-1.54, neither vs. both parents completed high school), being the first-born child of a young mother (RR=1.19, CI=1.01-1.41, first-born/maternal age<20 vs. later-born/maternal age≥30), and latitude of residence in childhood (RR=1.13, CI=0.99-1.28, northern vs. southern tier of US). Other factors examined but unrelated to UL included being breastfed, maternal smoking, and exposure to environmental tobacco smoke before age 11. Conclusion: These findings support the hypothesis that some early life factors may be related to UL risk.

00002757

Gene-environment interaction between {Paraoxonase 1 (PON1)} and nerve agent exposure for chronic encephalopathy in Gulf War veterans.

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Gene-Environment Interaction Between *Paraoxonase 1 (PON1)* and Nerve Agent Exposure for Chronic Encephalopathy in Gulf War Veterans. *R. Haley, J. Kramer, J. Xiao, and J. Teiber (Epidemiology Division, University of Texas Southwestern Medical Center, Dallas, Texas, 75390).

An estimated 25% of veterans of the 1991 Persian Gulf War suffer from a chronic encephalopathy, often debilitating, linked epidemiologically with low level exposure to organophosphate pesticides and nerve agent. Disagreement over etiology has delayed diagnosis, treatment and compensation. Because the Q and R isoenzymes determined by the Q192R polymorphism of *paraoxonase 1 (PON1)* in serum *differentially* inactivate pesticides and nerve agents, a genetic-epidemiology study of *PON1* gene-environmental interactions was undertaken to inform the debate over etiology of Gulf War illness. We measured a factor analysis-derived case definition of Gulf War Illness and chemical exposure histories in a computer-assisted telephone interview of a nationwide probability sample of U.S. Gulf War-era veterans (n=8020). Serum PON1 activity levels of the Q and R isoenzymes and *PON1* Q192R genotypes were measured in a nested case-control study of all ill veterans surveyed and a random subsample of the well (n=2092). Hearing chemical nerve agent alarms sounding, suggesting earliest exposure to nerve agents in the war, was strongly associated with Gulf War illness (odds ratio [OR] 4.3, $P<0.001$); however, the association was weak in veterans in the highest quartile of Q activity (OR 2.8), intermediate in those in the middle quartiles (OR 3.9 and 5.2), and strongest in the lowest Q activity quartile (OR 8.8, P for interaction=0.007). No significant gene interactions with pesticide exposures were found. These findings support a predominant role of nerve agent exposure from fallout of bombing Iraqi munitions stores in the pathogenesis of Gulf War illness.

00002719

Chronic Obstructive Pulmonary Disease Mortality by Industry Sector among Women Textile Workers in Shanghai, China

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Objective: Cotton dust has been associated with respiratory symptoms and lung function decline, although there has been limited previous research on chronic obstructive pulmonary disease (COPD) mortality in the textile industry.
Methods: A total of 267, 400 Chinese female textile employees were followed for COPD (ICD-9, 490-496) mortality from 1989 to 2000. Cause of death information was collected from the Shanghai Textile Industry Bureau's Tumor and Death Registry. The textile factories where the women worked were classified into 10 sectors based on their manufactured products. Age-adjusted mortality rates and standardized mortality ratios (SMRs) were calculated by sector. In addition, relative risks (hazard ratios), adjusted for smoking and age, were calculated by Cox proportional hazards modeling for employment in cotton and silk textile factories.
Results: The majority of textile sectors had lower or similar COPD mortality (age-adjusted SMRs=0.58-1.15) to a comparable general female population in the city of Nanjing, China. The cotton workers had a SMR of 1.02 (95% CI=0.81-1.28). However, a significant elevated COPD rate was observed among silk factory workers (SMR=2.03, 95%CI=1.13-3.34). Compared to all other textile sectors, there were increases of COPD mortality among cotton workers (HR=1.40, 95% CI=1.03-1.89) and silk workers (HR=2.54, 95%CI=1.47-4.39), respectively.
Conclusions: Elevated COPD mortality among cotton workers is consistent with previous reports of adverse respiratory effects, presumably due to endotoxin contamination of cotton dust. An association among silk workers was unexpected, but may be related to characteristic exposures, including silk dust, related biological contaminants, or silk processing chemicals. Confirmatory findings for silk workers in other settings are needed to strengthen this causal conclusion.

00002718

Novel approach to meta-analyses combing observational studies that report adjusted risk ratios with different dose categories

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Performing meta-analyses combining observational studies of nutrition and disease relationships that report quantile-based results is particularly challenging because the risk estimates are calculated using a common reference group and consequently are correlated with each other. Basic meta-analysis methods cannot account for these multiple, non-independent effect estimates from a single study. Motivated by the availability of a new statistical method that allows the creation of a table of effective numbers of subjects (representing the "adjusted" population), the authors aim to evaluate the application of this new method to facilitate meta-analyses combining observational studies that report quantile-based data. Examples are presented for the application of this method using a dataset of nested case-control studies assessing the relationships between vitamin D status (plasma 25-hydroxyvitamin D concentrations) and risk of colorectal cancer. Using this dataset, we conducted several meta-analyses, including naive "high versus low" meta-analysis, an alternative meta-analysis comparing people with vitamin D insufficiency to those with normal vitamin D status, linear dose-response meta-analysis, and spline meta-regression analysis. Our analyses demonstrate that the different approaches to conducting the meta-analyses resulted in different conclusions. We also demonstrate that the new statistical method is particularly helpful for facilitating dose-response meta-analysis and spline meta-regression for synthesizing quantile-based results, both valuable for strengthening causal reasoning.

00002743

Lifecourse earnings instability and subsequent incidence of cardiovascular disease among older Americans.

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Lifecourse earnings instability and subsequent incidence of cardiovascular disease among older Americans. *K. White, M. Glymour, I. Kawachi (Harvard University, Boston, MA, 02215)

Income has been shown in many studies to predict cardiovascular disease (CVD) risk. However, most research has focused on the health consequences of level of income at a single point in life, ignoring the possible importance of instability or fluctuations during the lifecourse. It is possible that persistent experiences of financial instability may influence CVD risk in late life. The Health and Retirement Survey linked with 30 years of Social Security Administration earnings data is used to investigate whether lifecourse earnings instability over a 25-year period during young and middle adulthood is associated with incident CVD morbidity and/or mortality among older adults. Indicators of lifecourse earnings instability included labor market participation, number of earning declines, and total years of earnings during ages 25-50. Gender stratified, discrete-time hazard models were used to estimate incidence of CVD before and after controlling for age at baseline, race, region of birth, parental education, respondent educational attainment, marital status, and lifecourse average earnings. After adjustment, unstable labor market participation was the strongest predictor of CVD risk (HR: 1.47; 95% CI: 1.17, 1.85) among men. In fully adjusted models, an increasing number of earning declines (HR: 1.07; 95% CI: 1.03, 1.12) and total years of earnings (HR: 1.03; 95% CI: 1.01, 1.05) were the most robust predictors of incident CVD risk among women. The findings from this study suggest that measures of income instability could offer greater explanatory power of lifecourse economic conditions. Additionally this study underscores that lifecourse earnings instability and CVD risk are embodied in different ways for men and women.

00002736
Vitamin D, frailty and mortality in older adults.

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Vitamin D, frailty and mortality in older adults. *E. Smit, R.E. Anderson, Y. Michael, F.A. Ramirez-Marrero, G. Brodowicz, S. Bartlett, C.J. Crespo (Oregon State University, Corvallis, OR, 97331).

We examined vitamin D status, frailty and all cause mortality in participants 60+ years of age of The Third National Health and Nutrition Examination Survey. Frailty was defined according to the 5 item criteria, adapted to the available data: low BMI, slow walking, weakness, exhaustion, and low physical activity. Participants with available data for all 5 frailty criteria were included in the analysis (n=4731). Frailty included those who met ≥3 and pre-frailty included those who met 1-2 of the 5 criteria. Vitamin D status was assessed by serum 25-hydroxyvitamin D (25(OH)D) and categorized into quartiles (<49.5, 49.5-66.4, 66.5-84.1, and >84.1 nmol/L). Analyses adjusted for gender, race, age, smoking, education and other comorbid conditions were conducted using SUDAAN. Compared to those without frailty, frail participants were older, more likely to be female and have achieved less than high school education, and less likely to be white. Serum 25(OH)D levels were lowest in participants with frailty, intermediate in participants with pre-frailty and highest in participants without frailty. The odds of frailty in the lowest quartile of serum 25(OH)D was 1.87 times the odds in the highest quartile (95% Confidence Interval (CI) 1.07-3.25). Mortality (median follow-up time of 8.6 years) was positively associated with frailty with the risk being higher in the lowest quartile of serum 25(OH)D (Hazards Ratio (HR) 3.54 (95% CI 2.44-5.12) than the highest quartile of serum 25(OH)D (HR 2.14 (95% CI 1.24-4.67)). Our results suggest low vitamin D is associated with frailty, and low vitamin D moderates the association between frailty and mortality in older adults.
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00002761
Malodor, air quality, and health in a community bordering a landfill

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Malodor, air quality, and health in a community bordering a landfill. *C Heaney, S Wing, D Richardson, R Campbell, D Caldwell, B Hopkins (UNC Chapel Hill, NC 27599) Landfills create odorant compounds such as hydrogen sulfide (H2S) that are components of mixtures of agents that could trigger alteration of daily activities and mental and physical health symptoms among neighbors. We completed H2S measures in a community bordering a landfill and examined associations with reports of odor, alteration of daily activities, stress, negative mood states, and physical symptoms. Twenty-four adults living within 1.75 mi of the landfill completed twice-daily odor diaries for 2-weeks while H2S was measured. We used fixed effects linear and logistic models to quantify relationships between H2S, odor, alteration of daily activities, stress, negative mood states, and physical symptoms. Participants reported landfill odor during 213 (26%) diary periods and H2S was present during 586 (72%) diary periods (μ=0.244ppb, SD=0.486, range=0-14.862ppb). Landfill odor increased 3 tenths of a point (5-point Likert scale) for a 1 ppb increase in hourly mean H2S (SE=0.11; t-value=2.79; df=1; $p<0.01$). Wind direction modified the H2S-odor relation-with an effect nearly 7 times greater when blowing towards the community. The odds ratio (OR) for reporting a difference in daily activities due to odor was 4.1 (95% confidence interval [CI]=1.2, 14.4) when mean H2S in the previous hour $\geq$0.15ppb compared to <0.15ppb. Odor was related to stress (OR=2.1 [95% CI=1.2, 3.8]), 4 negative mood states (range of ORs=1.8, 3.9), 3 mucosal irritation symptoms (range of ORs=3.3, 5.3), 4 upper respiratory symptoms (range of ORs=1.9, 2.6), and headache (OR=3.3 [95% CI=1.5, 7.4]). Landfill odor is commonly present in this predominantly black community and odor is related to objective H2S measures and health and quality of life outcomes.

00002739
Does having a Primary Care Provider Increase HIV Screening among Men who have sex with Men (MSM)?

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Does having a Primary Care Provider Increase HIV Screening among Men who have sex with Men (MSM)?
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In 2006, the Centers for Disease Control and Prevention released new HIV testing guidelines recommending that healthcare providers annually screen persons who are at risk for infection. Because of the recommendations' focus on healthcare provider screening, we examined the association for MSM between HIV testing and relationship with a primary care doctor. We used data from a cross-sectional survey conducted among 986 MSM in Utah. Fifty-two percent had been tested in the past year, 29% more than a year ago, and 19% had never been tested. Of those who had been tested, 24% were last tested in a doctor's office, 36% at community organizations, and 40% in other locations. In univariate analyses, having a regular medical provider was not associated with HIV testing. A positive association existed between testing and having a regular provider if the provider knew the patient was gay.

Adjusting for age, education, race/ethnicity, 'outness' about sexual orientation in general, and past 3-month incidence of unprotected anal intercourse, compared to men with no medical care provider, the odds ratios of being tested for HIV for men with a regular medical provider unaware of the patient's sexual orientation, and for men with a regular medical provider aware of the patient's sexual orientation, were 0.987 (95% CI: 0.66-1.49) and 2.06 (95% CI: 1.44 -2.96) respectively.

Having a primary medical care provider is associated with increased HIV-testing among MSM, but only when men disclose their sexual orientation to their providers. We identified no benefit to having a primary care provider who is unaware of a patient's sexual orientation. Interventions to improve communication between primary care providers and MSM may increase HIV screening in this population.

00002738

Trichomonas vaginalis and 25-Hydroxyvitamin D Deficiency in US Women

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Objective: Recent studies have found an association between serum vitamin D levels and vaginal floral colonization, but none have yet examined whether this extends to sexually transmitted infection (STI). This study seeks to describe the association between Vitamin D and Trichomonas vaginalis (TV), the most common parasitic STI.

Methods: Data from non-pregnant women between 18 and 49 years from the 2001-2004 National Health and Nutrition Examination Survey were examined. Serum 25-Hydroxyvitamin D (25[OH]D) sufficiency was defined as 25[OH]D 20 ng/ml or greater, insufficiency as < 20 ng/ml and deficiency as < 15 ng/ml. TV was detected from vaginal swabs by polymerase chain reaction. Covariates were age, race, poverty income ratio, and lifetime number of sexual partners.

Results: The mean 25[OH]D level was 24.2 ng/ml; women with TV had lower mean levels compared to those without (15.2 v. 24.5 ng/ml). Similarly, vitamin D insufficiency (77.7 v. 36.5%) and deficiency (61.4 vs. 20.8%) were more prevalent among women with TV. The prevalence of TV varied with vitamin D status; among those with sufficient levels the prevalence of TV was 1.2% compared with 6.9 and 9.4% in the insufficient and deficient groups. The crude odds of TV were 6 fold higher for women with insufficiency or deficiency. After adjustment for age, race/ethnicity, poverty index and lifetime sexual partners, the odds ratio (OR) was attenuated, but remained significant (OR[insufficient] = 4.2, 95% CI 1.8-9.6; OR[deficient] = 2.9, 95% CI 1.4-6.0).

Conclusion: Randomized trials are needed to ascertain whether Vitamin D deficiency is associated with increased TV incidence. If found effective for STI prevention vitamin D supplementation could be a widely accessible and inexpensive intervention.

00002717
Space-Time Clustering of Kawasaki Disease in Japan

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Space-Time Clustering of Kawasaki Disease in Japan. *Ermias D. Belay, Joseph Abrams, Ritei Uehara, Ryan A. Maddox, Lawrence B. Schonberger, Yosikazu Nakamura (Centers for Disease Control and Prevention, Atlanta, Georgia, USA; Jichi Medical University, Tochigi, Japan)

Kawasaki disease (KD) is a vasculitis of unknown etiology primarily affecting children <5 years of age. The epidemiologic characteristics of KD are consistent with an infectious etiology. Analysis of space-time clustering of KD may provide clues about factors that may contribute to its occurrence. Data from KD surveys in Japan for the years 1991-2004 were analyzed using SaTScan, GeoDa, ArcGIS, and SAS applications. KD incidence was estimated per 100,000 children <5 years of age after correcting the number of cases for hospital response rate for each prefecture. During 1991-2004, 99,580 KD cases were reported in Japan; 88,719 (89.1%) were <5 years of age. KD incidence by prefecture ranged from 67.3 in Okinawa to 217.48 in Chiba. KD incidence in Okinawa was 61.6% lower than the national average. Four prefectures (Chiba, Fukuoka, Kyōto, and Tōkyō) were in clusters of statistically significant high KD incidence for at least 8 of the 14 year study period. Six prefectures (Fukushima, Okinawa, Gifu, Niigata, Shiga, and Toyama) were in clusters of statistically significant low KD incidence for at least 8 of the 14 years. Prefectures in high incidence clusters had significantly high population density compared with the rest of Japan. Host or environmental factors that may have contributed to the low incidence in Okinawa need further investigation. KD consistently occurs in clusters of high and low incidence across Japan. The association of high KD incidence clusters with high population density provides additional evidence to the infectious etiology of KD.

00002729

Household patterns of influenza vaccination in the Minneapolis-St. Paul seven county metropolitan area, 2008-2009

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Household patterns of influenza vaccination in the Minneapolis-St. Paul seven county metropolitan area, 2008-2009

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Background: Household transmission of influenza is likely responsible for ~30% of influenza cases. Vaccination of all eligible individuals in high-risk households is recommended nationally by the Advisory Committee on Immunization Policy. Nonetheless, information about overall household patterns of influenza vaccination is extremely limited.
Methods: Questions were posed to 800 households participating in the 2009 Twin Cities Area Survey during January-March of 2009 (~ 2 months prior to initial detection of novel H1N1). An adult was asked to report the age, gender, and 2008-2009 influenza vaccination status for each household member.
Key Results: Full household influenza vaccination was reported by 35% of multiperson households, 38% reported partial household influenza vaccination, and 28% reported that no household members had received influenza vaccine. Households with an elderly resident had the highest prevalence of full household influenza vaccination (69%), with intermediate prevalence in households with a child under 5 years old (42%), and lower prevalence in the remaining households (24%). Only ~10% of households with a young child or elderly resident reported that none of the household members had received influenza vaccination, in contrast to over 30% of other households.
Conclusions: To our knowledge, this is the first study ever to describe influenza vaccination coverage at the household rather than the individual level. This study may provide data essential for both theoretical modeling and clinical studies assessing the importance of household influenza vaccination in preventing influenza in the individual, household, and the broader community.

00002742

Effectiveness of influenza vaccination with FLUAD versus a Sub-unit Influenza Vaccine

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Effectiveness of influenza vaccination with FLUAD versus a Sub-unit Influenza Vaccine

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In Italy vaccination against influenza is recommended for elderly and high risk patients. Novartis Vaccines developed adjuvant MF59 to increase immunogenicity of conventional vaccines, but its effectiveness has not yet been well documented. We conducted a population-based cohort study to compare the risk of hospitalization for influenza or pneumonia during the influenza season among elderly persons vaccinated with adjuvanted (Fluad) versus conventional sub-unit (Agrippal) influenza vaccine. The study was conducted in three consecutive influenza seasons (2006-2009) through General Practitioners or Local Health Authorities District offices. Data on vaccine exposure, potential confounders and medical history were collected through questionnaire and administrative databases. Hospitalizations for influenza or pneumonia (ICD9-CM 480-487) were identified through administrative databases during influenza seasons; to increase specificity of influenza-related cases, we defined progressively narrower time windows around the seasonal peak. We conducted stratified and regression analysis using propensity scores to control for confounding, and Generalized Estimating Equations to account for repeated vaccination. Overall we recruited 171,547 people, corresponding to 170,816 person-seasons. A total of 115 hospitalizations of interest occurred in the Fluad group compared with 112 in the Agrippal group (crude risk ratio = 0.96; 95% CI 0.74-1.25). After controlling for confounders and propensity score in a doubly robust regression model, we estimated a risk ratio of 0.77 (95% CI 0.59-0.99) for Fluad relative to Agrippal. Vaccination with Fluad reduced the risk of hospitalization for influenza and pneumonia in the elderly by 23% compared with the unadjuvanted vaccine.