Society for Epidemiologic Research

48th Annual Meeting

Abstract Book

Denver, Colorado – June 16-19, 2015

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AN INNOVATIVE APPROACH TO OCCUPATIONAL CANCER RESEARCH. PA Demers*, Jill Hardt, Anne Harris, Mieke Koehoorn, Christopher McLeod (Occupational Cancer Research Centre)

Objective: Although Canada collects timely and high quality information on new cancers through provincial tumor registries, occupational cancer surveillance is limited by a lack of any information on occupation or industry. This pilot project assesses the feasibility of linking workers compensation records to the Ontario Cancer Registry (OCR) to estimate the risk of cancer in occupation and industry groups. **Methods:** A 20% sample of 1975-2011 lost-work time claims (981,320 among 851,141 people) were linked with 1965-2012 OCR records using probabilistic record linkage, after excluding cancer claims. Hazard ratios (HRs) were calculated using Cox Proportional Hazards modelling adjusting for age and sex. **Results:** The linkage yielded 81,010 matched pairs. Increased risks among occupational groups for cancers consistent with established associations were observed. For example, lung cancer among miners (HR=1.42, 95% CI=1.27-1.59) and breast cancer among teachers (HR=1.57, 96% CI=1.37-1.81). Despite excluding compensated cases, mesothelioma excesses were observed among expected (e.g. construction workers, HR=1.78, 95% CI=1.26-2.53) and unexpected (e.g. education workers, HR=1.36, 95% CI=1.23-1.51) groups. The latter excess was limited to maintenance and cleaners and no cases were observed among teachers. **Conclusions:** This linkage was found to be cost effective and useful means of surveillance to identify to new associations for investigation. Future plans include using 100% of available records and expanding the linkage to other databases to improve the accuracy of follow-up and range of outcomes, as well as using a job exposure matrix and risk factor survey data in analysis. The implications of using non-represenative samples of the labor force will be discussed.

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ASSESSED MATERNAL OCCUPATIONAL EXPOSURE TO CHLORINATED, AROMATIC AND STODDARD SOLVENTS DURING PREGNANCY AND RISK OF FETAL GROWTH RESTRICTION IN OFFSPRING. Tania A. Desrosiers*, Lawson, Christina C., Meyer, Robert E., Stewart, Patricia A. Waters, Martha A., Correa, Adolfo, Olshan, Andrew F. (Department of Epidemiology, Gillings School of Global Public Health, UNC Chapel Hill, NC)

Background: Previous experimental and epidemiologic research suggests that maternal exposure to some organic solvents during pregnancy may increase the risk of fetal growth restriction (FGR). We evaluated the association between expert-assessed occupational solvent exposure and risk of small for gestational age (SGA) in a population-based sample of women from 8 US states in the National Birth Defects Prevention Study. **Methods:** We analyzed data from 2,886 mothers and their infants born between 1997 and 2002 without a major congenital anomaly. Job histories and information about other factors during pregnancy were self-reported via interview. Probability of occupational exposure to 6 chlorinated, 3 aromatic, and 1 petroleum solvent was assessed by industrial hygienists. SGA was defined as birthweight <10th percentile of birthweight-by-gestational age in a national reference. Logistic regression was used to estimate ORs and 95% CIs to assess the association between SGA and exposure to any solvent or specific solvent classes, adjusting for maternal age and education. **Results:** Approximately 8% of infants in the sample were classified as SGA. Prevalence of exposure to any solvent was approximately 10% and 8% among mothers of SGA and non-SGA infants, respectively. Any exposure to solvents was not associated with an increased odds of SGA (OR=1.16; 95% CI=0.73, 1.83). Among women with ≥50% exposure probability, we observed elevated but imprecise associations between SGA and exposure to any solvent (1.71; 0.86, 3.40), chlorinated solvents (1.70; 0.69, 4.01), and aromatic solvents (1.87; 0.78, 4.50). **Conclusions:** This is the first population-based study in the US to investigate the potential association between FGR and assessed maternal occupational exposure during pregnancy to distinct classes of organic solvents. The potential associations observed between SGA and exposure to chlorinated and aromatic solvents are based on small numbers and merit further investigation.

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ASSOCIATION BETWEEN JOB STRAIN AND ASPECTS OF THE CORTISOL DIURNAL CYCLE: THE MULTI ETHNIC STUDY OF ATHEROSCLEROSIS. Kara E. Rudolph*, Brisa N. Sanchez, Elizabeth A. Stuart, Benjamin Greenberg, Kaori Fujishiro, Gary S. Wand, Sandi Shrager, Teresa Seeman, Ana V. Diez, Roux, Sherita H. Golden (University of California, Berkeley and University of California, San Francisco)

We estimate the association between having a high-strain versus non-high-strain job and salivary cortisol's diurnal rhythm. We use the Multi Ethnic Study of Atherosclerosis (MESA) Stress I study, a racially, ethnically, and occupationally diverse sample of 1,002 participants. Cortisol is sampled across the entire diurnal cycle for multiple days. We use a propensity score matching approach on an extensive set of sociodemographic and health variables coupled with a penalized functional mixed outcome regression model. Our approach addresses several previous limitations in the literature: small sample size; racially/ethnically homogeneous samples that do not generalize; failure to account for measurement error and day-to-day variability of the cortisol features; and residual confounding. We find that having a high-strain job is associated with lower salivary cortisol levels, particularly later in the day, and lower total area under the cortisol curve (AUC). We find no association between job strain and the cortisol awakening response (CAR). In a sensitivity analysis, we find evidence that the relationship between job strain and cortisol may be modified by level of income/wealth.

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BREAST CANCER INCIDENCE IN A COHORT OF US FEMALE FLIGHT ATTENDANTS: EXPOSURE-RESPONSE ANALYSES. Lynne Pinkerton*, Misty Hein, Jeri Anderson, Mark Little, Alice Sigurdson, Mary Schubauer-Berigan (National Institute for Occupational Safety and Health, Cincinnati, OH)

Objective: To examine the association of breast cancer incidence with cosmic radiation dose and metrics of circadian rhythm disruption, adjusted for non-occupational breast cancer risk factors, in a cohort of 6,093 US female flight attendants. **Methods:** We evaluated the association of breast cancer incidence with cumulative cosmic radiation absorbed dose, time spent working during the standard sleep interval, and time zones crossed (all lagged by ten years) using Cox regression. Individual exposure estimates were derived by linking work history data with domicile- and era- specific exposure estimates. Breast cancers were identified from telephone interviews and state cancer registries, and covariate data were obtained from telephone interviews. **Results:** Breast cancer incidence in the overall cohort was not associated with exposure. Significant, positive associations in breast cancer incidence were observed with all three exposures only among women with parity of three or more. Adjusted excess relative risks (95% confidence intervals) for women with parity of three or more were 1.6 (0.14 -6.6), 0.99 (-0.04-4.3), and 1.5 (0.14-6.2) per 10mGy, per 2000 hours spent working in the standard sleep interval, and per 4600 time zones crossed, respectively. **Conclusions:** Positive exposure-response relations occurred only in a small subset of the cohort. We recommend that future studies of breast cancer incidence in flight crew and other workers with circadian rhythm disruption assess interaction with parity to see if our findings are confirmed.