

Oral presentation

nasopharyngeal carcinoma and myeloid leukaemia. To provide further information on the risks of cancer from formaldehyde, we extended follow-up of 14 008 male chemical workers at six factories in England and Wales.

Method The cohort was identified from employment records, and exposures to formaldehyde were classified on the basis of job title. Subjects were traced through health service records, and their mortality was compared with national death rates by the person-years method. Associations of exposure with incident upper airways cancer and leukaemia were further explored in nested case-control analyses.

Results More than 2000 additional deaths had occurred since last follow-up of the cohort. Excess deaths were observed from cancers of the oesophagus (100 v 93.2 expected), stomach (182 v 141.1), rectum (107 v 86.8), liver (35 v 26.9) and lung (813 v 645.6), but none of these tumours exhibited a clear exposure-response relationship. In nested case-control analyses of 115 men with upper airways cancer (including one nasopharyngeal cancer), 92 with leukaemia, and 45 with myeloid leukaemia, there were no elevations of risk in the highest exposure category (>2 ppm for ≥ 1 year). When the two highest exposure categories were combined, the odds ratio for myeloid leukaemia was 1.26 (95% CI 0.39–4.08).

Conclusions Our results provide no support for a hazard of myeloid leukaemia, nasopharyngeal carcinoma or other upper airways cancer from formaldehyde, and indicate that any excess risk of these diseases, even from relatively high exposures, is at most small.

0048 JOINT ASSOCIATION OF SMOKING AND SILICA DUST WITH LUNG CANCER RISK: A POPULATION-BASED CASE-REFERENT STUDY IN HONG KONG MEN

Ignatius Tak-sun Yu, Lap Ah (Shelly) Tse. *JC School of Public Health and Primary Care, The Chinese University of Hong Kong, Hong Kong, China*

10.1136/oemed-2014-102362.11

Objectives To examine the joint association of smoking and silica dust exposure with lung cancer risk.

Method This is a population-based case-referent study among Hong Kong Chinese males. We consecutively recruited 1208 newly diagnosed lung cancer cases and 1069 age-matched community referents during the period 2004–2006. We obtained each participant's lifelong smoking data, occupational history, and other important information including family cancer history. Unconditional multiple logistic regression analysis was performed to estimate the odds ratio (OR) and the 95% confidence interval (95% CI). We examined the joint association and tested potential interaction under multiplicative or additive risk model.

Results A total of 132 (10.9%) lung cancers and 536 (50.1%) community referents were never smokers. The prevalence of silica dust exposure among ever smokers was higher than the never smokers for both the lung cancers (13.5% vs. 7.6%) and community referents (6.4% vs. 3.7%). A 2.4-fold (95% CI: 1.05–5.52) risk of lung cancer for silica dust exposure was observed in never smokers, whilst it increased sharply to 12-fold (95% CI: 7.59–18.95) if the dust exposed workers were also smokers. A possible additive interaction was indicated between these two exposures but power is limited (synergy index = 1.61, 95% CI: 0.95–2.73), particularly for the adenocarcinoma (synergy index = 1.25, 95% CI: 0.52–3.01).

Conclusions Our findings supports the conclusion of IARC that workers exposed to silica dust increase lung cancer risk but adds new evidence on a positive additive interaction between silica and smoking. [Research Grants Council (Project CUHK4460/03M), Hong Kong].

0051 WORK INTENSITY, INJURY, STRESS AND PAIN AMONG COMMERCIAL JANITORS

Noah Seixas, Bert Stover, Nancy Simcox, Carlos Dominguez. *University of Washington, Seattle, WA, USA*

10.1136/oemed-2014-102362.12

Objectives Commercial janitors are a relatively unseen and understudied segment of the workforce. Janitors report increasing work pressures over the past few years. We conducted a cross-sectional survey among janitors to evaluate the association of changes in work intensity and other aspects of work organisation on injury, musculoskeletal pain, disability, and stress.

Method We conducted a cross-sectional survey among commercial janitors, including both union and non-union workers, and a comparison group of union security guards using peer interviewers and electronic data collection. Work intensity was measured using a 10-point scale and outcomes including injury, musculoskeletal pain, disability, and stress were assessed for the current year, and two previous years. The association between work intensity and each outcome was evaluated, controlling for group and demographics.

Results Surveys were collected among 276 union and 78 non-union janitors, and 76 security guards, 76% of whom were immigrants. An increase in work intensity among union janitors, and strong trend of increasing injury, pain, upper extremity disability and stress associated with work intensity was observed. Union janitors report an increase in injury over the past 3 years from 6.3 to 13.5%. Multi-variable models further explore the impact of demographics and work characteristics on the increase in risk.

Conclusions Anecdotal reports of increased workload among janitors are substantiated by the reported increase in work pressure over the past three years and its association with stress, pain and injury among janitors.

0054 TIME OF EXPOSURE AND RISK OF ASBESTOS RELATED LUNG CANCER

Bengt Järnholm, Evelina Åström. *Umeå University, Umeå, Sweden*

10.1136/oemed-2014-102362.13

Objectives It is well known that the risk of lung cancer decrease in ex-smokers some years after exposure have stopped and some studies indicate that the risk of asbestos related lung cancer decrease some years after the exposure had stopped. We have studied how the time after stop of exposure has influenced the risk of asbestos related lung cancer.

Method The incidence of lung cancer was studied in Swedish construction workers who had participated in health controls. The exposure to asbestos was estimated through the occupational titles. Occupational groups with highest risk of malignant mesothelioma were considered to be highly exposed to asbestos and the group with the lowest risk of malignant mesothelioma was considered to have the lowest exposure to asbestos.

Results There were 600 cases of lung cancer in the highest exposed group and 668 in the lowest exposed group. The relative risk comparing high and low exposed decreased the years after exposure had stopped. It was 1.8 during the decade when the exposure came to an end, decreased to 1.5 (95% CI 1.3–1.9) the next decade, to 1.2 (95% CI 1.0–1.5) the decade later and finally to 1.0 (95% CI 0.8–1.2) three decades after the exposure to asbestos had stopped.

Conclusions The time pattern of asbestos related lung cancer seem to follow a similar pattern as the risk of lung cancer in ex-smokers.

0055 ASSOCIATION OF OCCUPATIONAL TRAJECTORIES WITH ALCOHOL USE DISORDERS IN A LONGITUDINAL NATIONAL SURVEY

¹John D Meyer, ²Miriam Mutambudzi. ¹Icahn-Mount Sinai School of Medicine, New York, NY, USA; ²Johns Hopkins Medical Institutions, Baltimore, MD, USA

10.1136/oemed-2014-102362.14

Objectives We posited mutually-reinforcing longitudinal pathways between occupation and alcohol use disorders (AUD).

Method Longitudinal trajectories of work substantive complexity were constructed by growth mixture modelling (GMM) of occupational data from the National Longitudinal Survey of Youth 1979 and O*NET work variables. AUD was determined using a set of 25 questions that map onto 9 criteria for alcohol dependence. Prevalent AUD was one occurred at or before the first alcohol questionnaire in 1989; an incident AUD was a new case between 1989 and the 1994 survey. The association between work trajectories and AUD was modelled using Poisson regression in a generalised linear model adjusting for covariates.

Results Lower work trajectories were associated with higher AUD prevalence (prevalence ratio 1.41; 95% confidence interval 1.04–1.91 for lowest versus highest class). Incident AUDs were associated with risk of a decline in work trajectory class in both high (OR=2.68; 95% CI 1.34–5.35) and low (OR=1.62 95% CI 1.01–2.60) initial classes. Interval educational attainment was not associated with AUD within a specific occupational trajectory class.

Conclusions Low occupational trajectories are associated with increased AUD prevalence. Incident AUDs may be followed by a decline in work SC. These findings suggest self-reinforcing relations between the development of AUD and both prior and subsequent work.

0056 PATTERNS OF SITE-EMPLOYMENT OF CONSTRUCTION WORKERS ON AND OFF COMMERCIAL CONSTRUCTION SITES IN NEW ENGLAND AND THE RELATIONSHIP TO MUSCULOSKELETAL PAIN

¹Emily H Sparer, ¹Cassandra A Okechukwu, ²Justin Manjourides, ¹Robert F Herrick, ^{1,3}Jeffrey N Katz, ^{1,2}Jack T Dennerlein. ¹Harvard School of Public Health, Boston, MA, USA; ²Northeastern University, Boston, MA, USA; ³Brigham and Women's Hospital, Boston, MA, USA

10.1136/oemed-2014-102362.15

Objectives Construction workers who work on multiple jobsites have a high prevalence of musculoskeletal disorders. Yet, scant quantitative information exists in the scientific literature on the relationship between worksite mobility patterns and musculoskeletal disorders.

Method Self-reported musculoskeletal pain, as defined as pain experienced in one of seven body areas in the past month, work

history, and demographics were collected from 776 Boston area workers on their first day at one of seven commercial construction projects. Workers were classified as long-term workers (on-site greater than or equal to 30 days) or short-term workers (less than 30 days). Bivariate and multiple logistic regression analyses tested the relationship between term length and prevalence of self-reported musculoskeletal pain, adjusting for relevant covariates.

Results Of the 776 new workers, 344 (44%) were on-site after one month, 164 (21%) remained after two months, and only 74 (10%) remained after three months. Thirty-three percent of workers reported musculoskeletal pain at baseline. Short-term workers were 2.02 times (95% CI: 1.32, 3.08) more likely to report any musculoskeletal pain at baseline than long-term workers, when controlling for trade and tenure. Reporting of single- and multi-site pain was also associated with term length, with statistically significant adjusted odds ratios of 2.00 and 2.35, respectively.

Conclusions The observed excess of self-reported pain in short-term workers when compared to long-term workers mirrors disparities between temporary and non-temporary workers in other industries. This observed effect highlights the need to consider worksite mobility when analysing and interpreting data aimed at improving construction worker health and safety.

0058 COLORECTAL CANCER RISK AND SHIFT WORK IN A POPULATION-BASED CASE-CONTROL STUDY IN SPAIN (MCC-SPAIN)

^{1,2}Kyriaki Papantoniou, ^{1,2}Manolis Kogevinas, ^{2,3}Vicente Martin Sanchez, ^{2,4}Victor Moreno, ^{2,5}Marina Pollan, ^{2,6}Jose Juan Jimenez Moleón, ^{2,7}Eva Ardanaz, ^{2,8}Jone Maltzibar, ^{2,9}Rosana Peiro, ^{2,10}Adonina Tardon, ^{2,11}Juan Alguazil, ^{2,12}Carmen Navarro, ^{2,13}Ines Gomez-Acebo, ^{1,2}Gemma Castano-Vimys. ¹Centre for Research in Environmental Epidemiology (CREAL, Barcelona, Spain; ²CIBER Epidemiologia Y Salud Publica (CIBERESP), Madrid, Spain; ³Universidad de León, Leon, Spain; ⁴Catalan Institute of Oncology, Hospitalet, Spain; ⁵Centro Nacional de Epidemiologia-Instituto de Salud Carlos III, Madrid, Spain; ⁶Universidad de Granada, Granada, Spain; ⁷Servicio Navarro de Salud-Instituto de Salud Publica de Navarra, Pamplona, Spain; ⁸Subdirección de Salud Pública de Gipuzkoa, Donostia, Spain; ⁹Centre for Research in Public Health, Valencia, Spain; ¹⁰Instituto Universitario de Oncología, Universidad de Oviedo, Oviedo, Spain; ¹¹Universidad de Huelva, Huelva, Spain; ¹²Servicio Epidemiología, Consejería Sanidad, Murcia, Spain; ¹³Universidad de Cantabria, Santander, Spain

10.1136/oemed-2014-102362.16

Objectives Epidemiological cancer studies on shift work have focused on breast cancer while evidence on other tumours is limited. We evaluated colorectal cancer risk in relation to night and rotating shift work and genetic variation, in a population based case-control study in Spain.

Method 1066 male and 592 female incident colorectal cancer cases and 3388 randomly selected population controls of both sexes, enrolled in 11 regions of Spain, were included. Information was collected on socio-demographic, lifestyle, medical history and other variables by face-to-face interviews. Lifetime occupational history on daily time schedule of each job, day/night/rotating shifts, light at night exposure, and duration of different jobs, was used for exposure assessment. We used unconditional logistic regression adjusting for potential confounders.

Results Among controls 10% of males and 4% females had ever worked full time in permanent night shifts (working between midnight and 6am) and 24% of males and 14% of females in rotating shifts for ≥1 year. Having ever performed rotating shift work was associated with an increased risk for colorectal cancer