

8290363 THE INTERNATIONAL PARTNERSHIP ON AUTOMATIC JOB CODING (IPAJC): A HUB FOR AUTOMATIC JOB AND INDUSTRY CODING TOOLS AND EXPERTISE FOR OCCUPATIONAL HEALTH RESEARCH

Calvin Ge*, Peter Elias, Melissa C Friesen, Olga Kononykhina, Stacey Marovich, Cheryl Peters, Daniel E Russ, Malte Schierholz, Ellen Sweeney, Anil Adisesh. *TNO. Warwick Institute for Employment Research, University of Warwick, Coventry, UK. Division of Cancer Epidemiology and Genetics, National Cancer Institute, Bethesda, Maryland, USA. Social Data Science and AI Lab, LMU Munich, Munich, Germany. British Columbia Centre for Disease Control, Vancouver, Canada. Dalhousie University, Halifax, Canada*

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Objectives The goal of the International Partnership on Automatic Job Coding (IPAJC) is an interdisciplinary partnership aiming to enable and promote efficient collection, processing, and accessibility of job information through improvement of automatic coding tools.

Methods and Results Partners within IPAJC create and apply various automatic and semi-automatic coding tool using different methods. Examples include fuzzy matching and Boolean operators (e.g. CASCOT, University of Warwick), machine learning (ML) neural network (e.g. NIOCCS, US NIOSH), ML boosted decision trees (e.g. OccuCoDE, Ludwig Maximilian University, Munich; OPERAS, Utrecht University), ML ensemble classifiers (e.g. SOCcer, US NCI and AUTONOC, University of New Brunswick/Dalhousie University), and large language models (e.g. TNO-AOC, TNO). Depending on the specific tool, free text job descriptions in different languages are converted into standardised occupation codes such as various versions of international ISCO, Canadian NOC, German KldB, UK SOC, and US SOC. Although most tools thus far focused on coding to standardised occupations, some tools for coding to standardised industries are also available (e.g. CASCOT; NIOCCS; SOCcer CLIPS).

Conclusion The IPAJC continually seeks partners and job description data for development and validation of current and future automatic job coding tools. Our expertise on survey methods, occupation data collection, and occupation coding is improving job data collection and exposure assessment at scale in occupational health research.

8291675 INVENTORY AND CATALOGUE OF OCCUPATIONAL EXPOSURE AND HEALTH DATA IN THE NETHERLANDS

Zimbo Boudewijns*, Antonio D'Errico, Anna Hatsagi, Pim NH Wassenaar, Maartje Brouwer, Myrna D van de Burgwal, Eugene P van Someren, Suzanne Spaan, Susan Peters. *Utrecht University. National Institute for Public Health and the Environment (RIVM). Dutch Organization for Applied Scientific Research (TNO)*

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Objective Although a wide variety of occupational exposure and health data are available online and within institutes and universities, these data sources are fragmented and hard to find for researchers working on prevention of occupational diseases. The Dutch LEXCES project aims to increase the usability of relevant occupational exposure and health data, including data that is not readily findable, by creating a comprehensive inventory.

Methods Data sources were inventoried based on consultation of relevant literature, internet search and interviews with researchers with a focus on datasets from The Netherlands. To facilitate findability and reuse, the data sources were described using a selection of relevant metadata elements from standard vocabularies. A catalogue was built to browse and search data sources, making the datasets findable for all relevant stakeholders.

Results The initial inventory yielded over 60 data sources relevant in the context of occupational exposure and health. With some overlap in domains, the majority of datasets were related to the characterization of hazardous substances (n=42), while data sources describing mechanism of effect (n=7), production and use (n=6), occupational exposure (n=8), occupational diseases (n=5) and individual and societal burden of disease (n=2) were more sparse. Metadata was not always sufficiently available to enable efficient evaluation of accessibility and usability of the data.

Conclusion The project shows that a large number of data sources is available for use within occupational exposure and health. However, for some domains only a few data sources are identified, e.g. with regard to data on occupational exposure, which is crucial for modeling disease risk. The catalogue will be publicly available and future efforts should be aimed at adding new data sources, for instance by inviting stakeholders to add relevant sources.

8265963 SMOKERS WITH COPD HAD HIGHER RISK OF HAVING AN ACCELERATED LUNG FUNCTION DECLINE COMPARED TO NON-SMOKERS WITH COPD IN A WTC COHORT ON SURVEILLANCE

Zitong Zhang, Moshe Shapiro, Jonathan Weber, John T Doucette, Juan C Celedón, Rafael E de la Hoz*. *Department of Environmental Medicine, Icahn School of Medicine at Mount Sinai. University of Pittsburgh School of Medicine*

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Objective In the Mount Sinai WTC General Responders' Cohort on longitudinal health surveillance, about a third of participants who met the spirometric definition of chronic obstructive pulmonary disease (COPDspiro) have never smoked tobacco products, and we have observed less radiological emphysema. We examined the hypothesis that smoking-related COPDspiro is associated with accelerated longitudinal FEV1 decline.

Methods All study subjects participated were diagnosed with COPDspiro based on post-bronchodilator FEV1/FVC<0.7. We examined differences between participants with ever vs. never smoking on longitudinal lung function trajectory based on our previous publication[PMC7605357] and defined those with an average decrease in FEV1 larger than 62.5ml/year as an accelerated decliner. We additionally compared the effect of bronchodilator response using and a five-category bronchodilator response grading strategy[PMC6956832]. We used multivariable logistic regressions to examine the odds of an accelerated FEV1 decline trajectory between ever- vs never smoking COPDspiro groups.

Results Among the 504 subjects with COPDspiro, 181 (35.9%) never smoked. Compared with the ever smokers, nonsmokers were younger and more often of Latino/any race ethnicity. While the smokers had higher prevalence of high blood neutrophil count ($>6000/\text{mcl}$), the non-smokers had higher prevalence of self-reported asthma and evidence of bronchodilator responsiveness (BDR), and a higher proportion of subjects with marked BDR category ($\Delta\text{FEV1}>0.26\text{ L}$ or 26%). Smokers had 1.56 times higher odds (95%CI 1.01-2.42) of having dyspnea, and 1.74 times higher odds (95%CI 1.05-2.89) of having an accelerated FEV1 decline compared to non-smokers.

Conclusion Among WTC responders, COPDspiro in smokers was associated with an accelerated FEV1 decline and shortness of breath compared to never smokers, while never smokers with COPD tended to have higher percentage of asthma diagnosis and a positive BDR.

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8292700 EXPOSURE-RESPONSE RELATIONSHIP FOR CUMULATIVE ASBESTOS EXPOSURE AND LUNG CANCER: A SYSTEMATIC REVIEW AND META-ANALYSIS STUDY

Mieke Koehoorn, PA Demers, VH Arrandale, C Chen, HW Davies, J Dement, J Fan, R Macpherson, A Olsson, M Pahwa, CE Peters, L Stayner, K Straif, CB McLeod*. *School of Population and Public Health, The University of British Columbia, Faculty of Medicine, Vancouver, British Columbia, Canada. Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario, Canada. Occupational Cancer Research Centre, Ontario Health, Toronto, Ontario, Canada. Occupational and Environmental Medicine, Duke University Medical Center, Durham, North Carolina, USA. International Agency for Research on Cancer. School of Physical and Occupational Therapy, McGill University, Faculty of Medicine and Health Sciences, Montreal, Quebec, Canada. British Columbia Centre for Disease Control, Vancouver, British Columbia, Canada. Division of Epidemiology and Biostatistics, University of Illinois, School of Public Health, Chicago, Illinois, USA. Boston College, Chestnut Hill, Massachusetts, USA. ISGlobal, Barcelona, Catalunya, Spain*

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Objective To conduct an updated systematic review and meta-analyses of the exposure-response relationship between cumulative occupational asbestos exposure and the risk of lung cancer.

Material and Methods The search strategy was executed on five databases and by review of reference lists. A total of 32 cohort and case-control studies with risk estimates for cumulative, categorical asbestos exposure and lung cancer risk were included. The reported mean or midpoint of each cumulative asbestos exposure category was log-transformed and meta-analyzed using multi-level, random intercept, log-linear regression models. Analyses explored higher risk groups and sources of heterogeneity by exposure and study characteristics, including the quality of the exposure assessment. The investigators reached consensus on interpretation of the findings by emphasizing the consistency of the findings and study informativeness, and placing less emphasis on statistical significance in the meta-analyses of a significant occupational hazard.

Results The predicted exposure-response curve, extrapolated from the overall meta-risk estimate (θ)=0.13 (95% CI,

0.10, 0.16)), was nonlinear with a steeper rise in risk at the lower exposure range: the estimated RR was 1.21 (1.17, 1.26) at 5 f-yr/ml; 1.43 (1.33, 1.53) at 25 f-yr/ml; 1.52 (1.40, 1.63) at 50 f-yr/ml; 1.61 (1.47, 1.64) at 100 f-yr/m; and 1.71 (1.54, 1.87) at 200 f-yr/ml. Stronger exposure-response relationships were observed in studies with higher quality exposure assessment (e.g., RR from 1.32 to 2.07 across the same range of exposures), as well as in studies of asbestos production and manufacturing workers, particularly in North America. The results were robust to sensitivity analyses investigating sources of heterogeneity and analytic methods.

Conclusion Increasing cumulative asbestos exposure is associated with higher lung cancer risk across the range of cumulative exposure, with a steeper rise in risk at the lower exposure range.

8285950 SHIFT WORK AND PRESCRIPTIONS OF PSYCHOTROPIC MEDICATION AMONG HEALTHCARE WORKERS: A PROSPECTIVE COHORT STUDY

Tove Nilsson*, Seth Ayisi Addo, Abid Lashari, Per Gustavsson, Carolina Bigert, Jenny Selander, Emma Brulin. *Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden. Centre for Occupational and Environmental Medicine, Region Stockholm, Stockholm, Sweden*

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Objective To investigate the associations between shift work and the risk of psychotropic medication prescriptions (PMPs), specifically, neuroleptics, sedatives, hypnotics, and antidepressants, among nursing staff in Region Stockholm.

Material and Methods Using register-based data, 32,275 nurses and nursing assistants employed for at least one year by Region Stockholm between 2008 and 2019 were included. Exposures were obtained from a computerised employee register while PMPs were obtained from a pharmaceutical register. With one year follow-up, discrete time proportional hazard models were used to estimate hazard ratios (HR), adjusting for covariates.

Results Increased risks of PMPs were recorded among those who only worked night shifts (HR 1.14, 95% CI 1.08–1.20) compared to those who worked day shifts, and those who worked night shift frequently (>121 times) compared to those who never worked nights (HR 1.04, 95% CI 1.02–1.05) in the preceding year. Among night workers, increased risks were recorded for those who worked 3 or more consecutive nights 13-21 times and >21 times (HR 1.04, 95% CI 1.02–1.07, and HR 1.08, 95% CI 1.06–1.11 respectively) compared to those with none. Night workers who had quick returns from night shift (<28 hrs) of >69 times recorded an increased risk compared to those who had 0-9 times (HR 1.06, 95% CI 1.04–1.09). Lastly, decreased risks were recorded for quick returns from afternoon (<11 hrs) 18-32 times, 33-49 times, and >49 times (HR 0.94, 95% CI 0.92–0.95, HR 0.94, 95% CI 0.92–0.95, and HR 0.98, 95% CI 0.96–0.99 respectively) compared to day shift only.

Conclusion Exclusive night work is associated with a small but statistically significant increase in risk of PMPs compared to day work. However, day work only is associated with increased risks compared to afternoon shift.

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