Objectives To examine the overall association between age and return-to-work (RTW), understand the extent to which functional, psychosocial, organizational, life-stage related factors indirectly explain these associations, and examine whether there is a remaining direct proportion not mediated by these factors.

Methods We used survey data from a prospective cohort of injured workers in Victoria, Australia. Participants were recruited during the 2014 to 2015 period from monthly samples of claimants identified by the compensation system. Path models examined the relationship between age and RTW, and the proportion mediated via functional, psychosocial, organizational, life-stage related factors.

Results Older age was associated with non-RTW, although the pattern was not observed consistently across follow-up surveys. A proportion of the overall relationship between age and non-RTW was explained by functional and life-stage factors and RTW status at previous time points.

Conclusion Findings underscore the importance of moving beyond age measured only in chronological years, towards more complex conceptual and analytical models that recognize age as a multidimensional construct.

P-333 USING CANJEM TO EXAMINE THE ASSOCIATION BETWEEN OCCUPATIONAL EXPOSURE TO SELECTED METALS, METALLOIDS, AND WELDING FUMES AND BRAIN CANCER IN THE INTEROCC POOLED INTERNATIONAL CASE-CONTROL STUDY

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Introduction Exposure to metallic compounds may contribute to the etiology of brain cancer; however, few epidemiologic studies have examined this potential association.

Objective To examine occupational exposure to 21 metallic compounds in relation to the risk of glioma and meningioma.

Methods INTEROCC is an international consortium of seven brain cancer case-control studies using a common protocol. Among 1,917 glioma cases, 1,827 meningioma cases, and 5,475 controls in the pooled INTEROCC population, job histories were collected and transformed into histories of exposure to 21 metallic compounds by linkage to the Canadian job-exposure-matrix. Three metrics of exposure were calculated for each agent: ever exposed, duration of exposure, and cumulative exposure. Conditional logistic regression was used to estimate the odds ratios (ORs) and their 95% confidence intervals (95% CIs) for the association between the three metrics of exposure and both glioma and meningioma.

Results There was no evidence of associations between our selected agents and glioma. There were positive associations, with ORs ranging from 1.20 to 2.40, between meningioma and several of the metallic compounds, most notably zinc compounds, lead fumes, chromium VI compounds, soldering fumes, metal oxide fumes, and soldering fumes. Overall, our results were similar to two previous studies based on INTEROCC that examined five of the metallic compounds included in this study, using a modified version of the Finish job-exposure-matrix.

Conclusion Our results are suggestive of positive associations between exposure to metallic compounds, particularly metallic fumes, and meningioma, but not glioma.

P-334 OCCUPATIONAL EXPOSURES EXPERIENCED BY MONTRÉAL WOMEN PARTICIPATING IN TWO CASE-CONTROL STUDIES

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Introduction Women constitute nearly half of the workforce. However, most of our knowledge about occupational diseases come from studies conducted on men.

Objective To describe occupational exposures experienced by women.

Methods Two case-control studies of postmenopausal breast cancer were conducted in Montreal in 1996 and in 2011. Questionnaires on lifetime occupational history were administered during in-person or telephone interviews. Experts reviewed subjects' work history, assessing exposure to a list of 258 chemicals. Chemicals that were deemed to be present were categorized by concentration ('low', 'medium', 'high'), where low represented a background occupational level and high was the highest level experienced in that work environment. We pooled exposure information from both studies by time period and by age of exposure.

Results In both studies combined, the three most prevalent exposures were cleaning agents, ozone, and organic solvents; the jobs in which these top 3 agents were present included nurses and waitresses (cleaning agents), secretaries and clerks (ozone), and housekeepers and elementary school teachers (organic solvents). For cleaning agents and ozone, most exposures occurred at a low concentration (>98%) while slightly higher exposures to organic solvents were found (14% medium and 2% high). The top 3 agents by time period were: <1950, fabric dust, aliphatic aldehydes, and cotton dust; 1950–1969, cleaning agents, aliphatic aldehydes, and organic solvents; 1970–1989, cleaning agents, ozone, and aliphatic alcohols; and ≥1990, ozone, cleaning agents and aliphatic alcohols. The prevalence of exposures differed for women exposed earlier versus later in their working life (predominant agents ≤35 years of age: cleaning agents, aliphatic aldehydes, aliphatic alcohols; >35 years of age were ozone, cleaning agents, organic solvents).

Conclusion Occupational exposures of women remain understudied; bringing out inconspicuous exposures can help better assess women's occupational risks.

P-336 GENDER DIFFERENCES IN OCCUPATIONAL EXPOSURE IN THE CANADIAN JOB-EXPOSURE-MATRIX (CANJEM)

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Introduction One of the principal challenges in community-based occupational studies is retrospective assessment of exposure. Job-exposure-matrices (JEMs) have been proposed as a

cost-effective tool. However, most JEMs are built from the assessment of jobs held by men, with few studies assessing the applicability of those JEMs to the same jobs when held by women.

Objective To compare within-occupation exposure assessments for jobs held by men versus women in a Canadian JEM (CANJEM).

Method Two sex-specific JEMs were created using data from CANJEM, a JEM based on the expert assessment of exposure to 258 chemicals in >30,000 jobs held during 1933–2005, by participants in five Montreal-based case-control studies. Each cell in the JEMs provided the probability, intensity, frequency, and frequency-weighted intensity (FWI) of exposure to a selected occupational agent, for a specific combination of a 4-digit Canadian Classification and Dictionary of Occupations code and one of four time periods. We used intra-class correlation coefficients (ICC) to compare the probability, frequency and FWI between cells considered exposed in the two JEMs; 'exposed' cells were defined by probability $\geq 5\%$. Given the semi-quantitative nature of intensity, Kendall's Tau (τ) was used. We further compared differences between the JEMs using empirical cumulative distribution functions (ECDF).

Results In total, 1,488 cells considered exposed in both JEMs were included in the analysis. ICC (95% confidence interval) of 0.58 (0.55–0.61), 0.55 (0.52–0.58) and 0.12 (0.07–0.17) were found for probability, frequency and FWI of exposure, respectively. For intensity, a τ of 0.24 (0.20–0.29) was found. The ECDFs showed a tendency for frequency to be higher in the female-JEM, but for intensity and FWI to be higher in the male-JEM. No clear trend was observed for probability of exposure.

Conclusion Our results suggest that CANJEM assessment of jobs held by men was inadequate to estimate exposure in women's.

P-338 PROBLEMS OF THE SANITARY AND EPIDEMIOLOGICAL SERVICE IN THE FIGHT AGAINST COVID-19

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Introduction The State Sanitary and Epidemiological Surveillance in the Republic of Kazakhstan is carried out by the Committee for Sanitary and Epidemiological Control, which is a unified centralized system for the prevention, detection, suppression of violations in the field of ensuring the sanitary and epidemiological well-being of the population in order to protect the health of the population and the human environment. The pandemic of a novel Coronavirus Disease 2019 (COVID-19) caused by the severe acute respiratory syndrome SARS-CoV2 has posed a severe global crisis. During the COVID-19 pandemic, this service took full control, monitoring and analysis of work to combat coronavirus infection. The purpose of infection control is to prevent and combat the emergence of acute infectious diseases among the population. The activities of the committee are aimed at: 1. Protection of public health. 2. Sanitary and epidemiological welfare of the population. 3. Anti-corruption activities. 4. Control and supervision over compliance with the requirements established by technical regulations in the country.

Methods An analysis was made of the structure of this state body, its activities, the number of employees and the results of their work.

Results and Conclusion There was a high shortage of specialist epidemiologists in this industry during the pandemic. After analyzing the activities of the sanitary and epidemiological service, we came to the conclusion that these problems arose in connection with the constant reorganization of this service. Over the period of 10 years (2010–2020), there have been transformations and changes in the committee for sanitary and epidemiological control more than 6 times, which significantly influenced the work of the sanitary and epidemiological service and its weakening. It should be noted that over the years of its existence, the service has been one of the main ones in protecting the health of the population of Kazakhstan.

P-339 THE IMPORTANCE OF TRAINING DOCTORS EPIDEMIOLOGISTS IN THE REPUBLIC OF KAZAKHSTAN

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Introduction In the history of development, humanity has tried to avoid the spread of diseases. It is known from historical sources that humanity has suffered about 50 pandemics. The main specialist in solving problems of infection control is the 'Epidemiologist'; his task is to prevent diseases and take appropriate preventive measures to prevent and spread diseases.

Objectives The purpose of this work is to analyze the training of doctors of the sanitary and epidemiological profile.

Methods An analysis of the training system for specialists in the sanitary and epidemiological profile was carried out, taking into account the study of specialized subjects, as well as an analysis of the lack of specialists in this industry.

Results and Conclusion Earlier in the Republic of Kazakhstan, there were 5 medical universities in which doctors-epidemiologists-hygienists were trained for the sanitary-epidemiological service. At the moment, there are 7 medical universities, which train specialists in the new specialty 'Public health'. After analyzing the training system for specialists in the sanitary and epidemiological profile, we discovered in 2020 during the COVID-19 pandemic in the Ministry of Health of the Republic of Kazakhstan, there was a shortage of more than 800 epidemiologists and specialists of the sanitary and epidemiological service, which significantly influenced the fight against coronavirus infection. From this it can be concluded that medical universities need to: 1. Open new faculties to train doctors-epidemiologists-hygienists; 2. to intensify the recruitment of new applicants for this specialty of a sanatorium-epidemiological profile; also, government agencies need to allocate additional grants for such applicants. The Sanitary and Epidemiological Service has played an important role in the history of the well-being of the population of the Republic of Kazakhstan. Over the years of its existence, the service has been one of the main ones in protecting the health of the population of Kazakhstan.