

S-78 INCIDENCE OF COVID-19 BY SECTOR

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Introduction The workplace is among the main activities for a large proportion of the population, and consequently a source of potential Sars-Cov2 infection. In this study we investigated longitudinally the incidence of COVID-19 by sector

Methods The 14-day incidence of confirmed COVID-19 cases per NACE-BEL code is calculated cross-sectionally in periods immediately preceding the Belgian soft lock-down of October 19, 2020, and is evaluated longitudinally by a Gaussian-Gaussian modelling two-stage approach. Additionally, we are analysing contact tracing data for companies affiliated with occupational health service IDEWE.

Results The peak of COVID-19 14-day incidence was reached in the period October 20-November 2, 2020 and was considerably higher than average in human health activities, residential care activities, fitness facilities, human resource provision, hairdressing and other beauty treatment and some public service activities. During the course of the study, we observed large outbreaks in processing, production and preserving of meat, poultry. Similarly, higher incidences was shown in some manufacturing sectors that are not able to telework (manufacturing of metals and textile). Employees in wholesale and retail daily confronted with multiple close contacts, resulting in higher incidences of COVID-19. Finally, the incidence of COVID-19 in the non-medical contact professions remained in general above the working population incidence. Finally, it is encouraging that 3 to 4 weeks after vaccination that the 14-day incidences in health care workers, in- and out-hospital, and residential care in elderly employees are the lowest of all sectors,

Conclusion This analysis can help us to better understand causes of increased infection rates and it can offer us ways to reduce infections without jeopardizing the continuity of these sectors/companies for the benefit of all. These data can also support the epidemiological evidence for the recognition of COVID-19 as occupational disease.

S-80 OUTBREAK OF INVASIVE PNEUMOCOCCAL DISEASE AMONG WORKERS AT A NORWEGIAN SHIPYARD.

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Introduction/Objective Although exposure to metal fumes is known to increase the risk of pneumococcal disease, published outbreaks has been quite rare. However, during nine weeks in 2019, 20 confirmed and probable cases of disease were identified among 1.900 shipyard workers at one shipyard in Norway.

Method/Results The local hospitals initially detected the outbreak. The affected workers were of different European nationalities, most of them employed by different subcontractors. Sixteen were hospitalized. Isolates were available for serotyping for 17 cases, all isolates belonged to serotype 4. The same strain was found in a similar outbreak in Northern Ireland in 2015. Onsite inspection found a crowded shipyard in the process of finishing a new cruise ship. Many tasks

were carried out in the same workspace; like welding, cutting, painting, and finishing on surfaces. The labour inspectorate ordered immediate occupational hygiene measures with short notification. Regulations on tobacco smoking, air quality improvements, and the use of personal protective equipment were all implemented. There were also given advice on measures for improving general hygiene at the yard. The National Institute of Public Health recommended vaccination for the involved workers. Around 1.500 of the 1.900 workers present at the shipyard were vaccinated by the shipyard's occupational health services. After onsite occupational hygiene measures and vaccination, no new cases were identified. There are published information on a similar outbreak in Finland later the same year, and also in France early in 2020.

Conclusion This outbreak indicates that the occupational risk of severe pneumococcal disease is multifactorial, and that metal fume exposure not only is limited to the occupational category welders. In Norway, vaccination with the pneumococcal is recommended for welders after risk assessment. Recommendation of pneumococcal vaccination to broader occupational groups exposed to metal fumes should be considered, and the working and living conditions.

S-81 INFECTIOUS DISEASE RISKS ASSOCIATED WITH OCCUPATIONAL EXPOSURE AMONG NON-HEALTHCARE WORKERS : A SYSTEMATIC REVIEW OF THE LITERATURE

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Objective The purpose of this systematic review is to provide an overview of the published evidence on the role of infectious diseases in occupational health, focusing on occupations other than health care workers. We started from a key systematic review from 2009, extending it up to November 2019.

Methods The subqueries of the review were translated into Embase/Medline/Cochrane queries, and the adequacy of these translations was checked. Studies were screened in two rounds. In the first, title and abstract were compared to the inclusion criteria. These were based on the previous review, adding 'Immune-related and respiratory conditions after exposure to bioaerosols'. In the second round, title, abstract and full text were assessed. Quality assessment was applied using published guidelines: SIGN for case-control and cohort studies, STROBE for cross-sectional studies, ORION for outbreak reports and CARE for case series.

Results 3353 unique results were yielded; 214 eligible studies were included. 44 occupations with in total 89 infectious disease exposures were found, some of which were overlapping between occupations. The occupations most frequently reported were armed forces (n=32 pathogens), garbage/recycling collectors (n=13), livestock/dairy producers (n=12), female sex workers (n=9); and forestry and wastewater workers (n=8). Exposure to bioaerosols was mentioned in various occupations: wastewater/garbage workers, biotechnology workers, poultry/abattoir workers, construction workers, public transport workers, greenhouse workers, hotel workers, fire-fighters, services for homeless, cash collectors, television crew, compost/greenhouse workers, grain and animal feed production.

Discussion Two general classes of biological agents could be recognized. The first comprised infectious diseases, including but not limited to zoonotic infections. The second class comprised organisms resulting in the production of bioaerosols, thus increasing the occupational risk of immune-related and respiratory conditions. Some occupations (e.g. mine work and welding) might increase susceptibility of workers to infection, without increasing the exposure to this pathogen.

S-85

SEX AND GENDER INEQUALITIES: SEGREGATION OF OHS EXPOSURES AND PREVENTIVE AVENUES FOR A POPULATION OF LOW-EDUCATED TEENAGERS ENTERING THE LABOUR FORCE

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As men and women hold different jobs, have different social roles and different power influence in societal strata, they are exposed to different physical and psychosocial hazards at work. Adolescents with lower levels of education who start working are particularly vulnerable to sex/gender segregation of tasks and exposure to different work hazards.

In Quebec, adolescents who have experienced significant academic delays are referred to the Work-Oriented Training Program (WOTP). In this program, they learn semi-skilled trades by doing practicums, through Co-operative Education. These placements involve many occupational health and safety risks. For example, students may be exposed to various toxic substances in cleaning jobs, to wood or metal dust in processing plants or garages, to allergens in pet care businesses, hair salons, or child care centers. As jobs are segregated by gender, prevention approaches must take this into account. Occupational health and safety (OHS) risk factors may differ by sex and/or gender (e.g. when a small girl uses tools designed for tall men; or when manual handling training only considers 'boxes' as potential loads rather than a variety of situations, such as angry children or objects). Accordingly, occupational safety and health programs and prevention strategies should consider sex and gender-related factors. Our team is developing educational tools and resources to help these students improve and maintain their health as they enter the workforce, through an equity perspective. This presentation will discuss the differentiated hazards faced by low-educated male and female adolescents, as well as promising prevention avenues, including specific consideration for 'invisible risks' often encountered by young women. The WOTP examples that will be given can be applicable to other contexts of vocational training and work integration in low-skilled jobs for young workers.

S-89

RESPIRATORY HEALTH IMPACTS OF CLEANING AND DISINFECTING EXPOSURES: DOES EVIDENCE SUPPORT A LINK WITH COPD?

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Introduction Concerns regarding the respiratory health effects of disinfectants and cleaning products (DCP) have been growing in the last two decades. Studies have shown associations

between exposure to DCP and asthma. The irritant properties of many chemicals contained in DCP have prompted research on respiratory effects beyond asthma.

Objective to review the current evidence for an association between exposure to DCP and Chronic Obstructive Pulmonary Disease (COPD).

Methods We will present an overview of the recent epidemiological literature on the association between exposure to DCP at the workplace or at home and COPD. We will discuss challenges and opportunities for future research on this question.

Results Increased risk of chronic bronchitis or COPD have been reported among workers regularly exposed to DCP, such as cleaners or healthcare workers in both European and US populations. In a large cohort study of US female nurses, occupational exposure to DCP was significantly associated with an increased risk of developing COPD, independent of asthma. High-level exposure, evaluated by a job-task exposure matrix, to several specific disinfectants (e.g., glutaraldehyde, bleach, hydrogen peroxide) was associated with COPD incidence. An impact of exposure to DCP on lung function outcomes has also been reported in a European population-based study. Exposure to cleaning activities either at work or at home was associated with accelerated FEV1 and FVC decline.

Conclusion Despite accumulating evidence for adverse effects of DCP on COPD, specific tasks and substances at risk still need to be elucidated. Exposure assessment methods need to be improved in epidemiological studies. Novel statistical approaches, such as the ones developed in the context of exposome research, may help disentangling the mutual effect of the numerous chemicals contained in DCP, as well as their mixture. The mechanisms underlying the association between DCP and respiratory health outcomes need to be clarified.

S-92

GENDER/SEX DIFFERENCES IN WORKERS' COMPENSATION FOR HEARING LOSS, CONCUSSIONS AND ACTIVITY-RELATED SOFT TISSUE DISORDER (ASTDS) IN BRITISH COLUMBIA, CANADA

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Introduction Novel access to workers' compensation claims data, in particular disallowed claims and claim eligibility status decisions, was used to inform an evidence need on sex/gender differences in experiences of the workers' compensation process in British Columbia, Canada.

Objectives To conduct a sex/gender stratified analyses of the risk of work-related acute injuries and cumulative disorders, and of the adjudication of the work-relatedness of these injuries and disorders.

Methods Compensation claims for ASTDs, concussions and noise-induced hearing loss (2003–17) were analysed for differences between women and men by age-adjusted rates of accepted claims within occupations (ASTDs and concussions only), for ratios of disallowed to accepted claims (ASTDs and hearing loss only), and for time to final claim eligibility decision (ASTDs, concussions and hearing loss).

Results We observed higher rates and rates of increase for women compared to men in the same occupations for ASTDs