program is cost effective and at what level of coverage is cost-effective.

Methods A cost effectiveness model was constructed using Tree Age Pro Healthcare 2011 program. Silica exposure was updated from previous studies. Actual levels of surveillance coverage were estimated on 20–35%. Disease Model (DisMod) software was used to estimate the prevalence (0.9) and incidence (0.06) of silicosis in Chile. Mortality rates were estimated based on national rates. Then, Disability Adjusted Lost Years (DALY) for workers exposed to silica dust was estimated. Effectiveness parameters were gathered from international studies. DALYs avoided were estimated using TreeAge Pro. Costs of medical and environmental interventions were estimated with data from workers insurance and assuming 3 stage of silicosis disease. Finally, a cost-effectiveness ratio was calculated for different levels of surveillance coverage.

Main results Higher cost-effectiveness ratios were obtained at higher coverage level. Increase in coverage from 35% to 95% of surveillance silicosis program, reduced DALY in 30.7% (2,377 of a total number of the actual 5,456 AVISA), and avoided 62.2% of death due to silicosis. To obtain these results, high levels of employer's compliance and worker's adherence to preventive measures was assumed (85%). Important lowering costs are estimated due to early diagnosis.

Conclusion Extending the surveillance coverage of silicosis program is increasingly cost effective and represents an opportunity to diminish this preventable disease.

O33-4 WORLD TRADE CENTRE DISASTER AND THE HEALTH OF RESPONDERS: SURVEILLANCE, EPIDEMIOLOGY, AND BIASES

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The World Trade Centre (WTC) disaster occurred on September 11, 2001 and resulted in 2,876 immediate deaths and approximately 6,000 injuries. Shortly after the disaster, the WTC medical screening program (MSP) was started for the responders. The program was initially designed as a one-time medical screening, but evolved into a longitudinal medical monitoring program allowing researchers to investigate a wide range of health outcomes. There have now been more than 2,000 WTC scientific publications, but none that have formally investigated potential impacts of biases that may have arisen from the challenging conditions under which the studies were designed and data collected.

We conducted a systematic assessment of the potential impacts of biases on health effects studies of the WTC MSP. Systematic review of the published studies was supplemented with targeted analyses of the primary data collected from WTC responders to identify and evaluate biases in qualitative and quantitative approaches.

Several potential biases were identified using questionnaire data collected by WTC MSP. Selection bias likely occurred at least through self-selection into the WTC MSP. Loss to follow-up and non-random sampling due to differential recruiting strategies across study periods also likely occurred. Significant exposure misclassification may have occurred through use of self-reported information without validation from objective real-time exposure assessment. For some health outcomes, misclassifications may have occurred due to low inter-rater reliability during clinical diagnosis of health conditions, as well by changes over time in which health conditions were recognised as WTC-related. A quantitative analysis estimated the magnitude of the impact of these biases.

Implementing a disaster based epidemiologic surveillance faces many challenges; among them is designing health surveillance in ways that increase reliability and reduce potential biases. Our study aimed to strengthen future disaster epidemiology studies by learning from the challenges of data collection and analysis for the WTC MSP.

O33-5 DEVELOPING AN OCCUPATIONAL DISEASE SURVEILLANCE SYSTEM: DETECTING WORK-RELATED RISKS THROUGH LINKAGE OF ADMINISTRATIVE DATABASES

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Background Work-related risk factors are important determinants of health, but existing surveillance systems commonly fail to capture occupational information.

Objectives A novel surveillance program was established for the detection of work-related diseases in Ontario, Canada's largest province, through the linkage of several existing administrative databases. The Occupational Disease Surveillance System (ODSS) was used to detect work-related risks of cancers, and other chronic diseases and to identify at-risk groups of workers for targeted prevention.

Methods The ODSS identifies workers and their occupations and industries in compensation records for time-loss claims (1983-2014) and links these records through deterministic and probabilistic methods to health data captured in the Ontario Cancer Registry to monitor cancer risks and hospital discharge and outpatient billing data to identify chronic disease risks.

Results ODSS captured data for approximately 2.5 million workers (Ontario's labour force in 2015 was 7.4M). A pilot project detected many excess risks among occupation groups and cancers consistent with established risk factors, including elevated risks of lung cancer in mining workers (HR 1.42, 95% CI: 1.27–1.59), mesothelioma in construction workers (HR 1.78, 95% CI: 1.26–2.53) and breast cancer among teachers (HR 1.57, 95% CI: 1.37–1.81). The ODSS cohort, derived from workers' compensation claims records over represents workers with a higher risk profile and has the ability to identify and monitor work-related health outcomes within very specific occupational groups. This system was useful in determining that the more than 3-fold excess mesothelioma risk observed among educational services workers was driven by an excess risk among custodial staff, as opposed to teachers or administrators.

Piloted in Ontario, this model can be extended to other jurisdictions. Linkage of workers compensation data to other health records can be a valuable strategic resource for large-scale occupational chronic disease surveillance.

O33-4 World trade centre disaster and the health of responders: surveillance, epidemiology, and biases

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