

introducing necessary control measures were €34bn, €19bn and €10bn, respectively. Introducing an OEL of 6 mg/m<sup>3</sup> for rubber dust has only a minimal impact, while introducing an OEL of 0.6 mg/m<sup>3</sup> for rubber fumes avoids approximately 50 cancer deaths per year. The net health benefit for implementing the rubber fume OEL is approximately €579m to €1.2bn, compared to cost for compliance of €55–275m. In relation to mineral oils, we assumed that implementing best practice would prevent any cancers cases due to this exposure post 2040, resulting in a net monetary health benefit of €0.3–1.6bn, compared to a €50–900m required to implement best practice.

**Conclusions** The proposed changes for silica, rubber fumes and mineral oils will result in significant number of avoidable cancers, with monetized health benefit outweighing the cost of controlling exposure. For DEET the proposed limit of 100 mg EC/m<sup>3</sup> will not lead to significant health benefits.

## Session: Mini symposium III: Workers compensation

### 195 WORK INJURY RISK BY TIME OF DAY IN TWO POPULATION-BASED DATA SOURCES

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Mini-Symposium: Innovative uses of workers' compensation data: improving the impact.

**Objective** To estimate the rate of work injury over the 24 hour clock in two independent data sources for the Ontario labour force over a five year period 2004–2008.

**Methods** A cross-sectional, observational study of work-related injury and illness for a complete population of occupationally-active adults 15–64. The two independent data sources were lost-time compensation claims and emergency department encounter records. Estimates of hours worked annually for the Ontario labour force by time of day, age, gender, and occupation were derived from population-based surveys.

**Results** The incidence of emergency department visits for work-related conditions was approximately 40% higher than the incidence of lost-time workers' compensation claims: 707,933 emergency department records and 457,141 lost-time claims. For men and for women and across all age groups, there was an elevated risk of work-related injury or illness in the evening, night and early morning periods in both administrative data sources. This elevated risk was consistently observed across manual, mixed and non-manual occupational groups. The fraction of lost-time compensation claims that can be attributed to the elevated risk of work injury in evening or night work schedules is 12.5% for women and 5.8% for men.

**Conclusions** Despite the high prevalence of employment in non-daytime work schedules in the developed economies, the work injury hazards associated with evening and night schedules remains relatively invisible. This study has demonstrated the feasibility of using administrative data sources to enhance the capacity to conduct surveillance of work injury risk by time of day. More sophisticated etiologic research is needed to

understand the specific mechanisms of hazards associated with non-regular work hours.

### 196 THE IMPACT OF INJURY TYPE, HOSPITALISATIONS AND CHRONIC CONDITIONS ON AGE DIFFERENCES IN ABSENCE FROM WORK FOLLOWING INJURY

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**Objectives** To examine the relative importance of pre-existing chronic conditions versus differences in injury type and subsequent hospitalisations on age differences in absence from work following a work-related injury.

**Methods** This study used short and long term disability claims (i.e. claims involving time away from work) reported to Work-Safe British Columbia (WSBC) linked with the British Columbia Discharge Abstract Database (DAD) and Medical Services Plan (MSP) at the individual level. We ran a series of nested regression models to examine the impact adjustment for eight different chronic conditions, and injury type and hospitalisations, on attenuating age differences in days of absence from work over the two year period following the injury. Analyses were run separately for men and women.

**Results** Among men, a clear direct gradient was observed for number of days absent from work and age. Among women there appeared a threshold effect, with no increase in days away from work among 45 - 54 and 55+ year olds relative to 35 to 44 year olds. Pre-existing osteoarthritis, depression, and diabetes, as well as fractures, multiple injuries and hospitalisations were associated with longer absence from work among both men and women. Adjustment for injury type and hospitalisations attenuated differences across age groups among men by approximately 20%. Adjustment for chronic conditions did not attenuate age differences in workers less than 35 years of age, and only marginally attenuated differences among older male workers.

**Conclusions** The relationship between age and absences from work following a work injury differs for men and women. Age differences in injury type and subsequent hospitalisations are more important pathways in explaining age differences in absence from work among men than pre-existing chronic conditions

### 197 THE BENEFITS OF INTEGRATING COMPENSATION DATA WITH SURVEY DATA: THE PROSPECTIVE OUTCOMES OF INJURY STUDY EXPERIENCE

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**Objectives** The Prospective Outcomes of Injury Study (POIS) is a prospective cohort study that has followed 2856 injured New Zealanders for 2 years. The study examines the influence of injury, rehabilitation, social, work and economic factors on vocational, functional and disability outcomes following acute injury in New Zealanders.

**Methods** POIS has collected data using personal interviews at 3, 5, 12 and 24 month post-injury intervals on over 600 potential explanatory variables and three main outcomes. The cohort was recruited from the entitlement claimants register of New Zealand's monopoly universal accident compensation and

rehabilitation provider: the Accident Compensation Corporation (ACC). Alongside primary self-reported data, electronic hospital discharge data and ACC's compensation and rehabilitation data has been collected.

**Results** Interviews were completed by 81% and 79% of the cohort at the 12 and 24 month time points respectively. Compensation and rehabilitation data has been used to: 1) obtain data for intervening time periods between participant interviews to examine re-injury; 2) provide additional data on compensation exposures, outcomes and costs; 3) validate self-reported work-related cause of injury; and 4) to classify injury on the basis of multiple injury diagnoses. Examples of each use will be provided.

**Conclusions** Linking compensation and rehabilitation data with self-reported survey data has proven valuable by allowing researchers further insight into injury, compensation and rehabilitation factors associated with vocational, functional, and disability outcomes.

#### 198 **DIAGNOSED OCCUPATIONAL CONTACT DERMATITIS COMPARED TO OCCUPATIONAL DERMATITIS WORKERS' COMPENSATION CLAIMS: ARE FEMALES LESS LIKELY TO CLAIM WORKERS' COMPENSATION?**

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**Objective** To compare diagnosed disease data for occupational contact dermatitis (OCD) with workers' compensation claims data for OCD, thereby characterising potential differences between the two information sources.

**Methods** We conducted a retrospective analysis of OCD diagnosed disease and workers' compensation claims data, for the twelve highest risk occupational groups for the state of Victoria, Australia from 1993–2009. Diagnosed disease data for OCD is collected by the Victorian Skin and Cancer Foundation, which services the state of Victoria. Workers' compensation claims for OCD are from the Compensation Research Database, which is held by the Institute for Safety, Compensation and Recovery Research. Estimates of denominators for the occupational groups are derived from 2001 Australian Bureau of Statistics census data.

**Results** The proportions for diagnosed disease and the workers' compensation claims datasets varied considerably by gender, age and occupational group. There was a much higher rate of females diagnosed with OCD compared to the rate of workers' compensation claims (48% for diagnosed disease dataset vs 33% for workers' compensation claims dataset,  $p < 0.001$ ). These differences by gender were significant in the following occupational groups using diagnosed disease data compared to workers' compensation claims data: Hair and beauty, Automobile workers, Science workers, Trades persons and labourers, Food handlers, and Process workers and packers ( $p < 0.05$ ).

**Conclusions** Females were less likely to claim workers' compensation when compared to males even in occupational groups with a predominantly female workforce such as Hair and beauty. The gender discrepancy between the diagnosed disease dataset and the workers' compensation dataset requires further investigation as to why males were more likely to claim than females, particularly as the gender differences for diagnosed disease do not seem to follow the same pattern. A comprehensive surveillance system for OCD policy and practice intervention, should

integrate diagnosed disease data and workers' compensation claims statistics.

#### 199 **THE PROMISE AND CHALLENGE OF USING WORKERS' COMPENSATION DATA IN COMPARATIVE, CROSS-JURISDICTIONAL RESEARCH**

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Comparative, cross-jurisdictional research has the potential to increase our understanding of the causes of work injury and disease and identification of effective prevention and return-to-work policies. Results from comparative research may be more powerful than those from single jurisdiction studies as we are able to control for additional sources of variation that may be driving the results and take advantage of policy and program variation across jurisdictions to identify natural experiments that enable stronger causal inference to be drawn. Single jurisdiction studies attempt to do this using variation over time, but often temporal variation is confounded by other factors or is too small for there to be meaningful inference. While the comparative research approach can be powerful, careful attention needs to be paid to the development of comparable study populations and measures and to understanding the differences and/or comparability of the policies under study. Sources of variations across jurisdictions that could lead to spurious differences in the policy outcome need to be identified and controlled for. Fundamentally this implies the need to study the same population at risk, ensuring that cohorts, measures and outcomes are comparable, as well as accounting for other structural or contextual factors that could affect outcomes across jurisdictions. This synthetic presentation will exemplify these challenges with reference to claims and injury data drawn from the Canadian province of British Columbia and the Australian state of Victoria and in comparing claim rates and return-to-work outcomes in cohorts of workers employed in similar occupations and industries. The presentation concludes with a brief overview of a nascent international collaboration that has the aim of creating a network of researchers and data to conduct comparative, cross-jurisdictional occupational health and safety and workers' compensation research in jurisdictions from Oceania, North America and Europe.

#### Session: Mini symposium IV: Disease surveillance

#### 200 **THE CONTRIBUTION OF SURVEILLANCE DATA TO OCCUPATIONAL BURDEN OF DISEASE STUDIES**

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**Objectives** To explore methodological issues related to the use of surveillance data in burden of disease studies.

**Methods and Results** Burden of disease methodologies generally rely on the calculation of population attributable fraction (PAF). This in turn typically requires estimates of exposure prevalence and relative risk. An exposure surveillance system can provide the required estimate of exposure prevalence.