

O2C.4

PATTERNS OF HEALTH CARE USE FOLLOWING WORK-RELATED INJURY AND ILLNESS IN AUSTRALIAN TRUCK DRIVERS: A LATENT CLASS ANALYSIS

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Purpose To identify patterns of health care use in truck drivers with work-related injury or illness and to identify demographic, occupation, injury/condition, claim and geographic factors associated with patterns of care.

Method 13 371 accepted workers compensation claims from truck drivers lodged between 2004 and 2013 in the state of Victoria were included. Episodes of health care were categorised according to practitioner type as General Practitioner (GP), Specialist Physician, Mental Health, Surgery, Return to Work, or Physical Therapy. Latent class analysis was used to identify and characterise the distinct profiles of users with different patterns of health service use. Multinomial logistic regression was used to examine the associations between latent class and predictors including demographic, claim and injury-related factors.

Results Four profiles of health service use were identified: (1) Low Service Users (55% of the sample) were more likely to be younger, have an injury that did not result in time off work and have conditions other than a musculoskeletal injury; (2) High Service Users (10%) tended to be those who were aged between 45 and 64 years, lived in major cities and had musculoskeletal conditions that resulted in time off work; (3) Physical Therapy Users (25%) were more likely to be aged between 45 and 64 years, live in major cities and have non-traumatic injuries that resulted in time off work; and (4) GP/Mental Health Users (10%) were more likely to be over 24 years of age, from the lowest socio-economic band, be employed by smaller organisations and be claiming benefits for a mental health condition.

Conclusions It is possible to identify distinct patterns of health care use following work-related injury and disease using workers' compensation claims data. Nature of injury/disease, socio-demographic characteristics and geographic proximity to health services affect patterns of care.

O2C.5

INCREASING COSTS OF OCCUPATIONAL INJURIES IN ASSOCIATION WITH HIGH AMBIENT TEMPERATURES IN ADELAIDE, SOUTH AUSTRALIA, 2000–2014

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Objective To investigate the impact of ambient temperature on compensation costs due to work-related injuries, and to provide an evidence base about the economic benefits of developing workplace heat prevention strategies in a warming climate.

Methods Workers' compensation claims obtained from SafeWork South Australia for 2000–2014 were transformed into daily time series format and merged with meteorological data. The relationship between temperature and compensation costs were estimated using a generalized linear model after controlling for long-term

trends, seasonality, and day of week. A piecewise linear spline function was used to account for non-linearity.

Results A total of 4 64 139 workers' compensation claims were reported during the 15 year period in South Australia, resulting in AU\$14.9 billion dollars compensation payment. Overall, it is a reversed V-shaped temperature-cost association. A 1°C increase in maximum temperature was associated with a 1.1% (95% CI, 0.2%–2.0%) increase in daily injury compensation expenditure below 35.2°C. Specifically, significant increases of injury costs were observed in males (1.4%, 95% CI 0.3%–2.5%), young workers (3.0%, 95% CI 1.2%–4.9%), older workers ≥65 years (2.4%, 95% CI 0.5%–4.4%), labourers (2.7%, 95% CI 0.5%–4.8%), machinery operators and drivers (3.5%, 95% CI 1.6%–5.3%) and the following industries: agriculture, forestry, fishing and hunting (12.3%, 95% CI 2.2%–23.3%); construction (7.8%, 95% CI 0.02%–16.3%); and wholesale and retail trade (2.4%, 95% CI 0.5%–4.4%). Costs for compensating occupational burns and 'skin and subcutaneous tissue diseases' increased by 3.1% (95% CI 1.2%–5.1%) and 2.7% (95% CI 0.1%–5.4%) respectively, with a 1°C increase in maximum temperature.

Conclusion There is a significant association between temperature and work-related injury compensation costs in Adelaide, South Australia for certain subgroups. Heat attributable workers' compensation costs may increase with the predicted rising temperature.

O2C.6

THE ECONOMIC BURDEN OF OCCUPATIONAL INJURIES AND DISEASES IN FIVE EUROPEAN UNION COUNTRIES

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The objective of this study was to estimate the economic burden of occupational injuries and diseases in five European Union countries for the reference year 2015.

We used a 'bottom up' approach to estimate the economic burden from a societal perspective for Finland, Germany, Italy, The Netherlands, and Poland. Three broad cost categories were considered—direct health care, indirect productivity, and intangible health-related quality of life costs. The methods started with data on newly diagnosed occupational injuries and diseases from calendar year 2015. We considered lifetime costs for cases across all cost categories. Sensitivity analysis was undertaken to assess the impact of key parameters.

Indirect costs represent the largest proportion of total costs (with the exception is Poland), ranging from 66% for The Netherlands to 43% for Poland. Intangible costs are the second highest, ranging from 49% for Poland to 21% for Finland and The Netherlands. Direct costs range from 16% for Finland to 8% for Poland.

Average per case costing is highest for The Netherlands (€ 75,342), followed by Italy (€ 58,411), German (€ 44,919), Finland (€ 43,069) and lastly Poland (€ 38,918). Total costs as a percentage of GDP are highest for Poland (10.4%), followed by Italy (6.7%), The Netherlands (3.6%), Germany (3.3%) and lastly Finland (2.7%). In terms of costs per working population, the value is highest for Italy (€ 4,956), followed by The Netherlands (€ 2,930), Poland (€ 2,793), Germany (€ 2,527) and lastly Finland (€ 2,331).

The economic burden of occupational injuries and diseases in the countries considered are substantial, despite efforts to reduce adverse workplace exposures. Our case costs and total economic burden estimates provide a basis for undertaking economic evaluations of prevention efforts and can serve as a template for monitoring and evaluation at the country level. We advance the methods on several fronts.

Solvents

02D.1 A FOLLOW-UP STUDY OF OCCUPATIONAL STYRENE EXPOSURE AND RISK OF SYSTEMIC SCLEROSIS, RHEUMATOID ARTHRITIS, AND OTHER SYSTEMIC AUTOIMMUNE RHEUMATOLOGICAL DISEASES

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Background Increased risk of systemic sclerosis, systemic lupus erythematosus, rheumatoid arthritis, primary systemic vasculitis, and systemic Sjogren's syndrome has been suggested following occupational solvent exposure. The evidence for specific solvents is, however, limited and little is known about exposure and risk patterns.

Aim Our aim is to examine the exposure response relation for systemic sclerosis, rheumatoid arthritis, systemic lupus erythematosus, primary systemic vasculitis, and systemic Sjogren's syndrome following occupational styrene exposure.

Methods We followed 72 467 styrene exposed workers of the Danish reinforced plastics industry from 1977–2012. We modelled styrene exposure from employment history, survey data and historical styrene exposure measurements. We identified cases in a national patient register, and investigated gender specific exposure response relations by cumulative styrene exposure for different exposure time windows adjusting for age, decade, educational level and a proxy for tobacco smoking.

Results During 1,553,577 person-years, we identified 223 women and 453 men diagnosed with a systemic autoimmune rheumatological disease, of which three out of four were rheumatoid arthritis. When adjusting for potential confounders and comparing the highest with the lowest styrene exposure tertile, we observed a statistically non-significantly increased risk of systemic sclerosis among men (IRR=1.79; 95% CI 0.48–6.87) and women (IRR=2.58; 95% CI 0.51–12.94), based on 20 and 9 cases respectively. However, for women with systemic sclerosis, we saw a significantly increasing trend of 1.19 (1.01–1.40) pr. 100 mg/m³-years. Increased risks were also suggested for primary systemic vasculitis (IRR=2.32; 95% CI 0.63–8.52) and rheumatoid arthritis (IRR=1.26; 95% CI 0.95–1.67) among men. Analyses of exposure time windows suggest a latency period for rheumatoid arthritis of about 15 years.

Conclusion This study might indicate that styrene exposure is associated with the occurrence of systemic sclerosis among men and women, and primary systemic vasculitis and rheumatoid arthritis among men.

02D.2 OCCUPATIONAL EXPOSURE TO OXYGENATED, PETROLEUM-BASED AND CHLORINATED SOLVENTS OF WOMEN IN CHILDBEARING AGE IN FRANCE IN 2013

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Objective Occupational exposure to chemical agents including solvents is sparsely described among women although they constitute a vulnerable population at certain points in life and particularly during the procreative period. The aim of this study is to document the occupational exposure to oxygenated, petroleum-based and chlorinated solvents in women of childbearing age (WCA).

Methods We linked 17 job-exposure matrices describing exposure to oxygenated, petroleum-based and chlorinated solvents from the MATGÉNÉ programme to the 2013 French census. The occupational exposure prevalence was estimated in women aged from 15 to 44 years. The occupational exposure prevalence was described by 5 year age group, occupation and worker status (salaried or self-employed).

Results The most frequently used solvents in French workplace in 2013 by WCA are oxygenated solvents (15% of WCA at work, n=1,112,000), then petroleum-based solvents (1%, n=73,000) and chlorinated solvents (0.1%, n=9,000). The younger WCA (15–29 years) are more exposed to oxygenated solvents than their elders (19.9% vs 14.9%). On the contrary, the elderly (35–44 years) are more exposed to petroleum-based and chlorinated solvents. Three quarters of the WCA exposed to at least one oxygenated solvent are civil and public servants (41%), health and social workers (21%) or direct personal services staff (19%). Half of WCA exposed to at least one petroleum-based solvent are drivers (20%) and skilled workers of industrial and artisanal fields (13% respectively). For WCA exposed to at least one chlorinated solvent, nearly half worked as non-skilled workers of industrial and artisanal type (17% respectively) and health and social workers (15%).

Conclusions This study is the first describing occupational exposure to three major solvents' families for the entire working WCA in France regardless of working status or occupation. These information will help in the surveillance of this occupational risk and to prioritize prevention actions.

02D.3 PROTECTIVE EFFECTS OF PPE USE AND GOOD WORKPLACE HYGIENE PRACTICES AGAINST SYMPTOMS OF NEUROTOXICITY IN COLLISION REPAIR WORKERS

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Objectives We have recently shown that solvent-exposed collision repair workers (spray painters and panel beaters) in New Zealand are at an increased risk of both self-reported and objectively assessed neurobehavioural effects, indicating a need for more effective exposure controls. This study assessed the