**Objectives** To examine gender and racial disparities in heart disease mortality related to metalworking fluid exposures and in the healthy worker survivor effect.

**Method** We examined ischaemic heart disease (IHD) mortality from 1941 to 1995 in a cohort of autoworkers with quantitative exposure to cumulative respirable particulate matter from water-based metalworking fluids. Cox models were used to estimate the exposure-response to soluble and synthetic fluids separately in white men, black men, and white women. In separate analyses, we used g-estimation to adjust for the healthy worker survivor effect.

**Results** The risk of IHD was increased among black men (295 deaths) exposed to synthetic fluid with a hazard ratio (HR) of 3.47 (95% CI: 1.52, 7.92) in the highest cumulative exposure category. White women (119 deaths) had increased risk of IHD with increased soluble fluid (HR: 2.44 (0.93, 6.38)) in the second to highest category. However, Cox models show no increased risk in white men (2246 deaths). In contrast, g-estimation results indicate that if white men had been always unexposed to soluble and synthetic fluid, then on average for each case, 2.99 and 2.77 years of life would have been saved, respectively.

**Conclusions** We found increased risk of IHD for black men and white women exposed to metalworking fluids using Cox regression. After adjusting for the healthy worker survivor effect, increased risk was observed for white men. The ability to leave work for health related reasons may be an option more available to white male workers.

**FARM EXPOSURES, ALLERGY SYMPTOMS AND RISK OF NON-HODGKIN LYMPHOMA IN THE AGRICULTURAL HEALTH STUDY**

**Objectives** Exposure to allergens and microorganisms in the agricultural environment has been linked to altered immune response. Studies in the general population have reported reduced risks of non-Hodgkin lymphoma (NHL) among those with a history of atopic conditions, although results are inconsistent. To evaluate the allergy-NHL association in the context of farm exposures, we conducted an investigation in the Agricultural Health Study, a prospective cohort of farmers and spouses from North Carolina and Iowa.

**Method** Our study included 49,656 farmers and spouses with crop and animal exposures and allergy symptoms reported at baseline (1993–1997). We identified 418 incident cases of NHL (including chronic lymphocytic leukaemia and multiple myeloma) during follow-up through 2010 in North Carolina and Iowa. Hazard ratios (HR) and 95% confidence intervals (CI) were calculated using multivariable-adjusted proportional hazards models.

**Results** At enrollment, over 80% of the study participants lived on farms growing grains or hay and 64% on farms raising livestock. Compared to individuals without allergy symptoms, those with symptoms had a reduced risk of NHL (HR=0.61, 95% CI=0.50–0.74). We observed a slightly greater reduction in NHL risk among participants whose allergy symptoms worsened after working with grains and hay (HR=0.53, 95% CI=0.41–0.69). The association between livestock and NHL was borderline significant overall (HR=0.82, 95% CI=0.66–1.01), and significant among those without allergy symptoms (HR=0.70, 95% CI=0.51–0.96).

**Conclusions** Our findings suggest that among individuals working and living on farms, allergy symptoms are associated with a reduced risk of developing NHL, and that risk may be influenced by particular farm characteristics.

**Personnel Assistance - A Prerequisite to Work for Persons with Substantial and Permanent Disability?**

**Objectives** In Sweden, people with a substantial and permanent disability have been entitled to personal assistance (PA) since the reform took effect in 1994. To qualify for government attendance allowance, a person must belong to one of the groups pre-defined in the Act Concerning Support and Service for Persons...
with Certain Functional Impairments (LSI) and require PA with their basic daily needs for more than 20 h a week. The aim of the study was to investigate how the LSS Act provides possibilities to work for people entitled to measures for special support and special service.

**Method** Cross-sectional analysis based on data from the Swedish Social Insurance Agency and from a questionnaire survey of a sample of people entitled to PA (total of 15515). The response rate was 67%.

**Results** Generally more men (27%) than women (21%) considered that PA is a prerequisite for their ability to work. Among those who were mentally retarded, were autistic or had a condition resembling autism (group 1), 33% responded positively. Persons belonging to the group with considerable and permanent, intellectual functional impairment after brain damage in adulthood (group 2), experienced least possibilities to work (11%). Among those with other lasting physical or mental functional impairments (group 3), 22% experienced that PA gave them a possibility to work. Of those who had responded positively, 25% were born in Sweden and 22% were born abroad.

**Conclusions** Personal assistance seems to provide possibilities of active participation in the labour market for persons with substantial and permanent disability.

**Characterisation of Wet Work and Glove Use in Healthcare Occupations**

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**Objectives** Wet work (contact and/or use of liquids) could lead to skin exposures to chemical irritants and sensitizers among healthcare workers. The objective of this study was to characterise the frequency and duration of glove use when wet work was performed by healthcare workers.

**Method** Direct observational studies were conducted from 2009 to 2011 at five hospitals on selected healthcare occupations. Information on tasks, chemical product use, and glove use was collected at five-minute intervals by trained research technicians using a standardised data collection form.

**Results** Between five and 51 person-days were observed for each occupation. Any glove use during wet work ranged from 62% to 100% of person-days for occupations with more than 10 person-days observed. Endoscopy technicians had the highest proportion of time of glove use when wet work was observed (1845/2055 min = 90%), followed by medical equipment preparers, dental assistants, and housekeepers (1645/1950 min = 84%), 315/395 min = 80%, and 6090/7720 min = 79% respectively). Floor strippers/waxers (585/1225 min = 48%), respiratory therapists (65/160 min = 41%), and clinical laboratory technicians (10/60 min = 17%) had lower proportions of time of glove use. When a sensitizer was used during wet work, the proportion of time of glove use increased among all healthcare occupations with adequate data.

**Conclusions** This analysis demonstrates that the duration of wet work and glove use vary by healthcare occupation. This assessment will be valuable for developing health and safety training programs and identifying possible avenues for intervention.