

Long-term sickness absence is increasing in 27 European member states and Norway. Promoting good health and attendance, instead of penalising absence, has become a growing policy issue (Edwards & Greasley, 2010). As most employees will return to work spontaneously, resources for return to work projects should be focused on the high-risk group for long-term sickness absence.

In this project a questionnaire was developed to predict the risk of long-term sickness absence.

The development of the questionnaire started with a literature review of the predictive factors for long-term sickness absence, and with a review of existing questionnaires that question long-term sickness absence. The questionnaire will be validated in a pilot study of 10 000 participants. These data will be used to calculate its predictive value and to build a model to predict the risk of long-term sickness absence.

The literature study revealed 16 predictors for long-term sickness absence. The most predictive factor is, according to existing research, the patient's expectancy regarding their return to work. As the other factors are not unambiguously strong predictors, the pilot study will explore the predictive value of the complete model and each separate parameter. A new questionnaire was developed based on both reviews and the 16 predictors they revealed. The questionnaire is not specific for a certain illness, nor for use in a specific country.

The questionnaire developed in this research will support physicians to assess the risk of long-term sickness absence, and to guide more employees successfully and sustainably back to work.

Poster Presentation

Exposure Assessment

0121 DATA ANALYSIS FOR BIOLOGICAL MONITORING IN SOUTH KOREA'S OCCUPATIONAL HEALTH FIELD

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Object This study aims to provide a basis for policy to control the reliability of biological monitoring laboratories in occupational health by analysing data on annual biological monitoring.

Method We collected the survey requesting the number of data provided in 2014 and 2015, which laboratories participating in proficiency test program on biological monitoring responded to. Statistical data for biological monitoring (2003–2004) to reveal the current status of biological monitoring practices in the hospitals or occupational health laboratories were extracted from the KOSHA.

Result The total number of data of biological markers was up to 2 70 000 cases and 4 70 000 cases in 2013, 2014, respectively. Among them, the most dominant markers with regard to organic solvent exposure were urinary hippuric acid, methylhippuric acid and 2,5-hexanedione with 3 47 000 cases reported for 2 years. As for metal exposure, lead and

cadmium in blood were the most frequently checked markers with 1 16 000 cases for 2 years. Among 180 occupational health organisations, 44% of them sent their samples to other laboratories for analysis. The problem of lack of proficiency test data was evident in biological markers including 2,5-hexanedione, N-methylformamide, and trichloroacetic acid, which were analysed in major big laboratories. Strict policy on these laboratories as well as tactics to encourage small laboratories to join more proficiency test items, were suggested.

Conclusion From the database of biological monitoring, the lack of reliability of biological monitoring in many biological markers was revealed. Future action to improve the reliability of all the biological monitoring analysis is requested.

Oral Presentation

Exposure Assessment

0123 RECONSTRUCTION OF INDIVIDUAL RADIATION DOSES IN A COHORT OF FRENCH NUCLEAR WORKERS: CONSIDERING DOSES UNDER THE RECORDING THRESHOLD

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Context The French nuclear worker cohort enables the evaluation of potential health effects of protracted low doses of ionising radiation. Dosimeters worn by the workers record annual individual exposure. However, below a certain value called recording threshold, dose quantification is too imprecise to be recorded and the dose is then considered to be null. This study aims to evaluate the magnitude of doses below the recording threshold with regards to the recorded doses.

Methods The cohort includes 59 004 workers, hired from 1950 and followed-up until 2004. A comprehensive review of the dosimetry practices in the facilities participating in the study was performed. Data on recording thresholds, minimal detectable levels and dosimeter reading frequencies was collected and analysed. Scenarios based on monthly data were used to impute doses under the threshold.

Results Recording threshold doses and reading frequencies decreased substantially over the cohort's follow-up period (from 0.5 to 0.2 milliSievert and from bimonthly to quarterly respectively) but the annual percentage of null recorded doses increased (from 51% to 91%). Results from the imputation of below the threshold doses will be presented.

Conclusion The estimation of doses under the threshold is complex, needs a precise reconstruction of the monitoring history, and requires modelling assumptions. Preliminary results indicate that the availability of monthly data plays a crucial role in evaluating the magnitude of doses under the recording threshold.

Declaration of potential conflict of interest: The work under consideration gets into the general framework of a research program with shared financial support by IRSN, AREVA and EDF.

Oral Presentation

Shift Work

0125 SHIFT WORK, CHRONOTYPE AND THE RISK OF CARDIOMETABOLIC DISTURBANCES

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Introduction Shift work has been associated with cardiometabolic risk factors, but the relation is not clear for all risk factors, and the role of chronotype is largely unknown. We examined associations between shift work and cardiometabolic risk factors, and explored these associations in different chronotypes.

Methods Risk factors (anthropometry, blood pressure, lipids, glucose, gamma-glutamyltransferase, C-reactive protein, uric acid, and glomerular filtration rate) were assessed among 7768 adults in 1987–1991, with repeated measurements every five years. In the ongoing 6th examination wave data on shift work history have been collected, with data from 2013–2015 being available. In 2016, linear mixed models and logistic generalised estimating equations were used to estimate associations between shift work and risk factors one year later.

Results Shift workers had more often overweight (OR: 1.44, 95% CI: 1.06–1.95) and a higher body mass index (BMI) (β : 0.56 kg/m², 95% CI: 0.10–1.03) than day workers. A significant difference in BMI between day and shift workers was observed among evening chronotypes (β : 0.97 kg/m², 95% CI: 0.21–1.73), but not among morning chronotypes (β : 0.04 kg/m², 95% CI: –0.85–0.93). No other significant associations between shift work and risk factors were found in the chronotype strata, except for glucose among intermediate chronotypes (β : –0.36, 95% CI: –0.62–0.11). No differences by frequency of night shifts and duration of shift work were observed.

Conclusions Shift workers, in particular evening chronotypes, have a higher risk of overweight than day workers. More research is however needed to verify our results, and establish whether tailored interventions by chronotype are wanted.

Oral Presentation

Policy/Impact

0126 OCCUPATIONAL BURDEN ESTIMATION: IS IT HAVING ANY IMPACT?

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Introduction Several recent occupational burden estimation studies have identified major risk factors contributing to important morbidity burdens. This paper discusses their impact.

Methods European studies include (1) the British occupational cancer burden study and (2) an EU socio-economic health impact assessment of introducing binding occupational exposure limits (OEL) for 25 workplace carcinogens. The global burden of occupational disease project (3) includes estimation for carcinogens, asthmagens, particulate matter, noise, and risk factors for low back pain and injury.

Results The British study (1) has informed the Health and Safety Executive's long latency programme and their guidance and practical interventions for risk reduction. The results have facilitated estimation of the financial impact of these cancers; the majority of the cost is borne by workers. It has also contributed to the successful Institution for Occupational Safety and Health 'No time to lose' campaigns to help industry to deliver effective workplace cancer prevention programmes.

The EU study (2) illustrates the use of cost/benefit analyses in OEL decision making processes. 'Efficient' cost/benefit ratios and 'disproportionate' compliance costs to small/medium sized enterprises are weighed against health-based predictions.

The global burden study (3) highlights inequalities in work-related disease burden between countries.

Discussion Occupational burden studies increase awareness of occupational disease generally and for particular diseases and galvanise different stakeholders to work together on prevention. They highlight potential inequalities to different sectors of society. However, they can be 'burdensome' regarding cost and effort and debate is needed on timing of and appropriate methods for future updates.

Oral Presentation

Other

0127 IF HEAVY LIFTING CAUSES RETINAL DETACHMENT, WHAT IS THE MECHANISM? IMPLICATIONS OF PATHOPHYSIOLOGY FOR EPIDEMIOLOGY

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Objectives Two epidemiologic studies have found evidence of increasing risk of retinal detachment (RD) with increasing occupational lifting and related physical efforts. Beyond case reports, there is little evidence to explain this association. We hypothesise two alternative mechanisms and explore their implications for epidemiology.

Methods Through literature review and discussions with retinologists, we developed hypotheses that predict different etiologic time windows for an effect of lifting on RD. The role of myopia in RD is better-understood, and provides important clues about possible roles of physical activity. Inter-ocular pressure (IOP) is likely to play a mediating role, and there are experimental studies of the effects of physical activity on IOP that may also provide useful evidence for understanding RD.

Results and Conclusions *Hypothesis 1*: brief increases in IOP caused by lifting increase the risk of retinal tears during posterior vitreous detachment (PVD) - a normal ageing process. This suggests that there may be an elevated risk of retinal tear in the weeks following PVD. If this is correct, lifting