

Results With ≤ 1 time per week as reference, exercising 2–3 times per week at baseline was associated with higher levels of VO₂max. During the first 8-week follow-up, VO₂max increased with 2.8 mL · kg⁻¹ · min⁻¹ (95% CI = 1.4, 4.3), while

52% of the participants reported increased daily PA. Likewise, total cholesterol and LDL were reduced by 0.12 mmol/L and 0.13 mmol/L, respectively (95% CI = -0.22, -0.01 and -0.22, -0.04). In addition, mediators of inflammation, decreased substantially during the 8-week follow-up. Analyses that also include data from the 15-month follow-up will be presented at the conference.

Conclusions Exercise several times a week among workers in road maintenance is associated with increased VO₂max, lower blood pressure, a favourable lipid status and lower inflammation compared to lower weekly activity. The study suggests that an employer initiated, motivational, PA program could have health benefits for the participating employees.

O28-4 AN INTERNATIONAL PERSPECTIVE ON COMMON CORE COMPETENCIES FOR OCCUPATIONAL PHYSICIANS: A MODIFIED DELPHI STUDY

¹Drushka Lalloo*, ^{1,2}Evangelia Demou, ³Sibel Kiran, ⁴Marianne Cloeren, ⁵René Mendes, ¹Ewan B Macdonald. ¹Healthy Working Lives Group, University of Glasgow, Glasgow, UK; ²MRC/CSO Social and Public Health Sciences Unit, University of Glasgow, Glasgow, UK; ³Department of Occupational Health and Medicine, Hacettepe University, Sıhhiye-Ankara, Turkey; ⁴Managed Care Advisors, Bethesda, USA; ⁵National Association of Occupational Medicine (ANAMT/Brazil), São Paulo, Brazil

10.1136/oemed-2016-103951.143

Background The competencies required of occupational physicians (OPs) have been the subject of peer reviewed research in Europe and individual countries around the world. Although occupational health (OH) practice can vary among countries, there are core values, knowledge and skills characterising the specialty. In the European Union (EU), there has been development of guidance on training and common competencies, but little research has extended beyond this.

Aims The aim of this study was to obtain consensus on and identify the common core competencies required for OPs around the world. **Methods** A modified Delphi study was carried out amongst representative organisations and networks of OPs in a range of countries around the world. It was conducted in two Rounds ('rating' and 'ranking') using a questionnaire based on the specialist training syllabus of a number of countries, expert panel reviews and conference discussions.

Results Responses were received from 51 countries around the world, with the majority from Europe (60%; 59%) and North and South America (24%; 32%) in Rounds 1 and 2, respectively. General principles of assessment & management of occupational hazards to health and good clinical care were jointly considered most important in ranking when compared with the other topic areas. Assessment of disability & fitness for work, communication skills and legal & ethical issues completed the top 5. In both Rounds, research methods and teaching & educational supervision were considered least important.

Conclusions This study has established the current priorities amongst OPs across 51 countries of the common competencies required for OH practice. These mutually identified priorities can serve as a platform to develop local training curricula and common core competencies/qualifications within specific geographical regions or internationally, particularly with globalisation of commerce and free movement within the EU. They can also help inform global policy on OH service delivery and quality standards.

Oral Session 29 – Cardio-Metabolic Disorders

O29-1 ASSOCIATIONS BETWEEN LOW-LEVEL ENVIRONMENTAL HEAVY METALS AND CIRCULATING MARKERS OF INFLAMMATION AMONG TRAFFIC ENFORCERS OF THE METROPOLITAN MANILA DEVELOPMENT AUTHORITY (MMDA) HEALTH STUDY

^{1,2}Emmanuel S Baja*, ^{1,2,3}Godofreda V Dalmacion. ¹Institute of Clinical Epidemiology, National Institutes of Health, University of the Philippines Manila, Manila, Philippines; ²Department of Clinical Epidemiology, College of Medicine, University of the Philippines Manila, Manila, Philippines; ³Department of Pharmacology and Toxicology, College of Medicine, University of the Philippines Manila

10.1136/oemed-2016-103951.144

Introduction Several studies have linked heavy metal exposure to oxidative stress and alteration of immune response. We conducted a repeated measures study to examine the relationships between heavy metals in the blood and circulating markers of inflammation, and whether these associations were modified by participant characteristics.

Methods We assessed heavy metals in blood specifically cadmium (Cd), mercury (Hg) and lead (Pb) and studied measurements of C-reactive protein (CRP), soluble vascular cell adhesion molecule-1 (sVCAM-1), and soluble intracellular adhesion molecule-1 (sICAM-1) for 140 traffic enforcers of the Metropolitan Manila Development Authority (MMDA) health study. We fitted linear mixed-effects models with random subject-specific intercepts to estimate the effect of heavy metal exposure on the change in mean circulating inflammatory markers and adjusted for potential confounders. We also looked at effect modification by participant characteristics.

Results Blood Pb concentration was related to increased CRP. A 10% increase in Pb was associated with a 5.4% increase in CRP level [95% confidence interval (CI): 1.5–9.3]. The association between Pb and CRP was stronger among traffic enforcers who were nonsmokers (7.2% increase; 95% CI: 1.6–12.7) vs. smokers (3.8% increase; 95% CI: -1.4–9.1), traffic enforcers who were females (10.5% increase; 95% CI: -0.7–21.7) vs. males (4.6% increase; 95% CI: 0.5–8.8), or traffic enforcers who were not hypertensive (6.7% increase; 95% CI: -4.4–17.8) vs. hypertensive (5.2% increase; 95% CI: 1.0–9.4). However, no associations between all the three heavy metals, and sICAM-1 and sVCAM-1, and between Hg and Cd metals and CRP were found.

Conclusions Lead (Pb) is associated with increased CRP in the blood. Pb in blood may increase CRP among traffic enforcers who are female, traffic enforcers who are not hypertensive and nonsmoking traffic enforcers. Moreover, the study provides additional evidence that lead (Pb) via the inflammation pathway may have an important role in cardiopulmonary toxicity.

O29-2 ISCHAEMIC HEART DISEASE FROM DIESEL EXHAUST EXPOSURE AMONG UNDERGROUND, NON-METAL MINERS IN THE UNITED STATES

¹Sadie Costello*, ¹Andreas Neophytou, ²Michael Attfield, ³Aaron Blair, ³Roel Vermeulen, ³Debra T Silverman, ¹Ellen Eisen. ¹University of California, Berkeley, Berkeley, USA; ²National Institute for Occupational Safety and Health, Morgantown, USA; ³National Cancer Institute, Bethesda, USA

10.1136/oemed-2016-103951.145

Abstracts

Most occupational studies of diesel exhaust have focused primarily on lung cancer. Diesel exhaust is also a risk factor for ischaemic heart disease (IHD) in the ambient environment at concentrations far below those found in dieselized mines, however little is known about the association between occupational exposure to diesel and IHD. We studied IHD mortality (N = 191) in relation to diesel exhaust among 7,122 male, underground workers hired after the start of dieselization in The Diesel Exhaust in Miners Study (DEMS), a NCI/NIOSH cohort study of non-metal miners at eight US mines originally designed to study diesel exhaust and lung cancer mortality. Historical air measurements and surrogate exposure data, along with study industrial hygiene air measurements, were used to develop quantitative estimates of exposure of diesel exhaust (measured as respirable elemental carbon) and respirable dust for each worker in each job-year since dieselization. Cox proportional hazard models with splines were used to examine the shape of the exposure-response curve for cumulative exposure to diesel exhaust and IHD mortality among workers. Baseline hazards were stratified on the type of mine (limestone, potash, trona, and salt) and adjusted for age, birth year, race and the cumulative exposure to respirable dust. The hazard ratios (HR) for ischaemic heart disease from diesel exhaust were log-linear from the smallest exposure to levels of 6 mg/m³-years, the 98th percentile of exposure among the cases and rose to a maximum HR of 1.7 (with wide confidence intervals). The HR at 1.4 mg/m³-years, the mean of cumulative diesel exhaust among the cases, was 1.17 (95% CI: 1.03, 1.30). These results suggest that in addition to increasing the risk of respirable disease among miners, exposure to diesel exhaust underground may also increase the risk of mortality from ischaemic heart disease.

029-3 OIL SPILL CLEANUP WORK AND INCIDENT CORONARY HEART DISEASE IN THE GULF STUDY

¹Jean Strelitz*, ¹Lawrence Engel, ²Richard Kwok, ²Aubrey Miller, ³Aaron Blair, ²Dale Sandler. ¹University of North Carolina at Chapel Hill, USA; ²National Institute of Environmental Health Sciences, Research Triangle Park, USA; ³National Cancer Institute, Bethesda, USA

10.1136/oemed-2016-103951.146

Introduction Workers involved in cleanup of the 2010 Deepwater Horizon oil spill faced exposures to crude oil, burning oil, and dispersants, in addition to physical and emotional stress. These exposures may contribute to the incidence of coronary heart disease (CHD). We assessed associations between several oil spill exposure proxies and incident nonfatal CHD.

Methods This analysis includes participants from the Gulf Long-term Follow-up (GuLF) STUDY who completed baseline interviews in 2011–2013. Participants include responders and non-responders who underwent mandatory worker safety training, government employees, and others. Total hydrocarbon (THC) exposure was estimated from a job exposure matrix characterised by cleanup tasks, and represents oil exposure. We estimated risk ratios (RR) and 95% confidence intervals for the associations of maximum THC exposure; work location; duration of cleanup work; and residential proximity to the spill with self-reported physician diagnosis of nonfatal CHD, adjusted for age, gender, education and smoking. **Results** Of the 31,609 participants included in the analyses, 77% worked on cleanup and 267 had new diagnoses of nonfatal CHD. Maximum THC exposure ≥ 3 parts per million (ppm) (vs < 0.03 ppm) was associated with a significant increased CHD risk [RR: 1.79 (1.09, 2.93)]. Working >180 days (vs 1–30 days)

was nonsignificantly associated with increased risk [RR: 1.60 (0.93, 2.75)]. Living in a coastal county affected by the spill (vs living further away) was associated with significantly increased risk [RR: 1.47 (1.07–2.03)]. Analyses that restricted to the 188 myocardial infarction cases or that excluded diagnoses that occurred during the active cleanup period showed similar patterns of association.

Conclusion This is the first study to assess the relationship between oil spill cleanup work and CHD. Additional research is needed to determine if the observed associations are related to specific chemical exposures during cleanup or other stressors associated with the spill.

029-4 THE ASSOCIATIONS BETWEEN BLOOD LEAD LEVEL AND CLINICALLY HOSPITALISED CIRCULATORY SYSTEM DISEASES IN FIFTY THOUSAND LEAD EXPOSED MALE WORKERS

¹Yeon-soon Ahn*, ²Youn-Sun Min. ¹Dongguk University Ilsan Hospital, Goyang, Republic of Korea; ²Dongguk University Gyeongju Hospital, Gyeongju, Republic of Korea

10.1136/oemed-2016-103951.147

The contribution of lead exposure to cardio-cerebrovascular disease is not yet fully understood. We examined the prospective associations of graded blood lead level (BLL) with hospital admission duo to cardio-cerebrovascular diseases among the lead-exposed male workers in Korea.

This cohort was constructed lead-exposed male workers who underwent a lead-associated medical check-up at least once between January 1, 2000 and December 31, 2004. The cardio-cerebrovascular disease based on hospital admission records were matched from 2000–2005 National Health Insurance Claim Data (NHICD). We used Cox proportional hazards models to estimate adjusted admission hazard ratio (AHR) for cardio-cerebrovascular diseases. Each BLL grade's (10 to 20 µg/dl and ≥ 20 µg/dl) relative risks were compared with the reference grade (<10 µg/dl).

The AHR (1.86, 95% CI: 1.22–2.84) of the ischaemic heart diseases (IHD) was significantly higher in the workers with BLL ≥ 20 µg/dl than with BLL ≤ 10 µg/dl. The AHR (1.54, 95% CI: 1.07–2.33) of cerebrovascular diseases was significantly higher in the workers with BLL 10 to 20 µg/dl than with BLL ≤ 10 µg/dl. There were a significant positive linear trend based on BLL grade in the IHD and cerebrovascular diseases.

This large prospective cohort with over fifty thousand lead exposed workers showed the probable causal relations between BLLs (with ≥ 20 µg/dl) and clinically diagnosed cardio-cerebrovascular diseases.

Oral Session 30 – Reproductive 2

030-1 MATERNAL EXPOSURE TO ENDOCRINE DISRUPTING CHEMICALS (PERFLUORO-ALKYLS, PHTHALATES AND PCB/DIOXINS) AND CHILDREN'S REPRODUCTIVE HORMONE LEVELS AT BIRTH; THE HOKKAIDO STUDY ON ENVIRONMENT AND CHILDREN'S HEALTH

Reiko Kishi*, Atsuko Araki, Chihiro Miyashita, Sachiko Itoh, Houman Goudarzi. Hokkaido University Centre for Environmental and Health Sciences, Sapporo, Japan

10.1136/oemed-2016-103951.148



O29-2 Ischaemic heart disease from diesel exhaust exposure among underground, non-metal miners in the united states

Sadie Costello, Andreas Neophytou, Michael Attfield, Aaron Blair, Roel Vermeulen, Debra T Silverman and Ellen Eisen

Occup Environ Med 2016 73: A53-A54
doi: 10.1136/oemed-2016-103951.145

Updated information and services can be found at:
http://oem.bmj.com/content/73/Suppl_1/A53.3

Email alerting service

These include:

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Topic Collections

Articles on similar topics can be found in the following collections

- [Air pollution, air quality](#) (207)
 - [Industrial workers](#) (96)
 - [Other](#) (154)
 - [Other exposures](#) (1020)
-

Notes

To request permissions go to:
<http://group.bmj.com/group/rights-licensing/permissions>

To order reprints go to:
<http://journals.bmj.com/cgi/reprintform>

To subscribe to BMJ go to:
<http://group.bmj.com/subscribe/>