rates were observed overall (HR=1.37, 1.25–1.49), among foremen/forewomen (HR=1.35, 1.04–1.77), excavating and grading occupations (HR=1.37, 1.18–1.58), labourers (HR=1.55, 1.29–1.86), and non-specified excavating/grading/paving occupations (HR=1.35, 1.15–1.59). Non-significant positive rates of bladder cancer were also observed overall (HR=1.08, 0.93–1.26), among excavating and grading workers (HR=1.13, 0.88–1.45), and non-specified excavating/grading/paving occupations (HR=1.29, 1.00–1.68).

Conclusion These results identify construction groups with high cancer risk, including excavating and grading occupations, potentially due to DEE exposure, though co-exposure to other carcinogens (e.g. silica) is possible. Targeted prevention resources could reduce exposure and subsequently occupational cancer risk, but would benefit from more detailed DEE exposure information.

0-32 THE VALUE OF PLAIN CHEST RADIOGRAPH AS A DIAGNOSTIC TOOL FOR TB RELATIVE TO GENEXPERT AMONG EX-GOLD MINERS IN LESOTHO

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Background The World Health Organisation and many national guidelines for TB management recommend treatment initiation in the presence of symptoms such as cough, weight loss, night sweats and or fever, and radiological changes suggestive of TB with or without bacteriological confirmation. However, none of the studies that investigated the value of plain chest radiograph (CXR) has been done in the Southern African ex-gold miner population. Given the characteristics of this population - a high prevalence of silicosis, past TB and recurrent TB and post-TB lung destruction - application of the above recommendation may lead to unnecessary TB treatment.

Objectives To assess the performance of the screening CXR in the diagnosis of active TB disease among former gold miners from the South African mines using GeneXpert as the reference standard.

Methods We analysed the medical history information, CXR, and GeneXpert test results in a group of ex-miners examined between 2017 and 2018 at Mafeteng Occupational Health Service Centre (OHSC), Lesotho. We excluded those on TB treatment and those within twelve months of TB-treatment completion at the time of the visit. CXRs were read by a medical doctor with training and experience in the reading of pneumoconiosis and TB. A set of 300 of the CXRs were cross-read by two occupational medicine specialists with mining medicine experience, with 80–90% agreement with clinic readings.

Results We analysed information on 2572 subjects. The prevalence of active TB on GeneXpert was 3%, with CXR sensitivity 0.97, specificity 0.41, positive predictive value 0.05, and negative predictive value 0.99.

Conclusion A CXR negative for TB is a valuable tool in ruling out active TB disease among ex-gold miners. However, its poor predictive value, given the high background prevalence of silicosis and previous TB in this population, makes bacteriological confirmation necessary before initiating TB treatment in ex-gold miners.

0-72 HOW TO PREDICT OBSTRUCTIVE SLEEP APNOEA IN PROFESSIONAL DRIVERS?

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Objective Developing better tools to screen obstructive sleep apnea (OSA) in professional drivers is fundamental in occupational health services, given the serious consequences this condition can have on their safety.

Methods 1928 professional drivers were screened for OSA for three years using Berlin and Epworth questionnaires. 10.3% were suspected to be positive for OSA and sent for polysomnography tests. We had a return of 39 data. We analysed the results with the MAP index because it has shown a high sensitivity and specificity in studies on professional drivers. The MAP index is easy to use and combines self-reported apnea symptoms (snoring and cessation of breathing) as well as objective data like age, sex, and body mass index (BMI). As the apnoea symptoms regarding snoring and observed apnoea are often not properly reported, we included the questions of the Berlin questionnaire about tiredness in order to improve the predictability and calculated a MAP2. To determine diagnostic test accuracy, we calculated both MAP indexes with apnea-hypopnea index (AHI) criteria already published in articles. Sensitivity, specificity, negative and positive predictive values (NPV, PPV) and area under curve (AUC) for receiver operating characteristic (ROC) were analysed. Predictive utility of both indexes was examined by characteristic variables, age (< 50 or ≥ 50 years) and BMI (< 30 or ≥ 30 kg/m²).

Results Employing the MAP_index1 for OSA, the sensitivity obtained was 63.3% and specificity was 41.2%. The PPV was 58.3% and NPV was 46.7%. The AUC was 0.524 (95% CI 0.339–0.709). The accuracy was higher in younger versus older drivers (AUC 0.701 versus 0.620). Sensitivity for Map index2 was 59.1% and specificity was 52.9%. The PPV was 61.9% and the NPV was 50.0%. The AUC was 0.560 (95% CI 0.376–0.744).

Conclusions The MAP 2 was had lower sensitivity but higher specificity. It cannot be considered as a better tool to predict obstructive sleep apnoea.

0-254 TEMPORAL TREND AND SPATIAL PATTERN OF MORTALITY FOR MALIGNANT PLEURAL MESOTHELIOMA IN TAIWAN DURING 1975–2019

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Introduction Malignant pleural mesothelioma (MPM) is a rare but aggressive malignancy associated with asbestos exposure for more than 80% of cases. The average latency of MPM is twenty to forty years. The history of asbestos use in Taiwan showed the massive importation during 1960–1980, but was under control by legislation since 1989, and was totally banned by legislation since 2018.

Objective The aim of study is to investigate the temporal trend and spatial pattern of mortality for malignant pleural mesothelioma in Taiwan during recent decades.

Method The standardized rates of mortality for MPM (ICD-9: 163, ICD-10: C45.0 & C45.9) in Taiwan were computed at national and regional levels during 1975–2019; the sex ratios of male to female deaths for MPM were also computed at regional level.

Result The trend of national mortality for MPM in Taiwan is still increasing in twenty to thirty years after the asbestos control, especially among male population; the pattern of regional mortality for MPM reflects the distribution of the asbestos-related industrial settlements in the country.

Conclusion In adequate response to the epidemic of asbestos-related diseases, it is necessary to implement a national comprehensive program for the surveillance, diagnosis, and treatment healthcare to protect workers and community people.

0-284 ENHANCING OCCUPATIONAL DISEASE SURVEILLANCE USING A JOB EXPOSURE MATRIX

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Introduction Surveillance is useful for identifying occupations and industries at high risk of disease. However, less is known about workers' risks from exposure to specific occupational hazards.

Objectives Apply a job-exposure matrix to occupational disease risk estimates to enhance surveillance efforts.

Methods The Occupational Disease Surveillance System (ODSS) uses Cox proportional hazards models to derive health risks for 30+ health outcomes. The Canadian job-exposure matrix (CANJEM) is a general population JEM that provides exposure data on over 250 hazards by occupation and industry. Exposure data for prevalence, intensity (non-exposed, low, medium, high), and duration of exposure (proportion of workweek exposed) were extracted. Hazard ratios (HRs) for silicosis and lung cancer from the ODSS were linked to silica exposure metrics from CANJEM by occupation (4-digit Canadian Classification and Dictionary of Occupations) and industry (3-digit 1970 Standard Industrial Classification).

Results There were 163 occupations and 141 industries exposed to silica according to CANJEM. Among occupations with >5 cases and ≥50% prevalence, the mean HRs were 18.33 (range: 16.5–19.7) and 1.25 (0.77–1.87) for silicosis and lung cancer respectively. Similar results were seen with occupations with ≥ medium intensity, and ≥25% duration of exposure. Occupations with both ≥50% prevalence and ≥ medium intensity had mean HRs 18.33 (16.5–19.7) and 1.44 (1.16–1.87) for silicosis and lung cancer respectively. Industry results had similar distributions for lung cancer HRs, and lower mean HRs for silicosis (at ≥50% prevalence HR: 8.57, range: 1.48–19.3).

Conclusion Using silica, we demonstrated that incorporating exposure information can help to identify and quantify workers' exposure risk. Incorporating multiple exposure metrics improved detection of high-risk groups although is less sensitive. Understanding the role of exposure on health risk may allow prevention strategies to be implemented more pragmatically.

Exposure Assessment

0-94 DEVELOPMENT OF TASK-SPECIFIC ENDOTOXIN CONCENTRATIONS FOR AGRICULTURAL ACTIVITIES USING META-REGRESSION OF PUBLISHED DATA

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Introduction Endotoxin has been hypothesized to partly account for the observed deficit of lung cancer in farmers; however, most epidemiologic studies have relied on surrogate metrics, such as number of animals.

Objective To obtain task-specific estimates of endotoxin exposure for agricultural tasks using meta-regression models of published data.

Methods We extracted the geometric means (GM, in EU/m³) and geometric standard deviations (GSD) of endotoxin measures for various farming activities from 43 published studies (1989–2018). We linked each measure to an activity within the questionnaire used in the Biomarkers of Exposure and Effect in Agriculture Study. When necessary, we calculated the GM and GSD from other available measures. We used mixed-effects meta-regression models with the weighted log-transformed GM as the dependent measure, task as the independent measure, and summary statistic identifier as a random effect to account for between-study heterogeneity. We grouped the tasks into three categories (crop, animal, stored seed/grain), and analyzed each category separately. We conducted sensitivity analyses by restricting data to only North America, only task-based, and only inhalable fraction.

Results We extracted 30 crop, 90 livestock, and 10 seed/grain-related summary statistics. Among animal tasks, most had predicted GMs above 1000 EU/m³, including work in poultry confinement (GM=1470 EU/m³), cleaning poultry confinements (1470), grinding feed (1410), work in swine confinement (1310), cleaning swine confinement (1270), feeding swine (1070), and veterinarian services (1030). Among crop tasks, predicted GMs were below 100 EU/m³, including harvesting corn/grains (30), hauling grain (60), and mowing (80). For stored seed/grain tasks, the predicted GM of cleaning grain bins was 1130 EU/m³ and other work with stored grains/seeds was 230 EU/m³.

Conclusion Our characterization of task-specific endotoxin concentrations can be used in conjunction with questionnaire responses on agricultural activities, including task duration, to improve future endotoxin assessments in epidemiologic studies.

0-122 DETERMINANTS OF TASK-BASED EXPOSURES TO ALPHA-DIKETONES IN COFFEE ROASTING AND PACKAGING FACILITIES

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Introduction Coffee production is a global industry and is estimated to increase by 15.4 million lbs in 2021. Coffee