Oral Presentation

Methodology

MEASURING AND ESTIMATING PHYSIOLOGICAL RESPONSES TO OCCUPATIONAL HEAT EXPOSURE

There are direct and indirect health and performance detriments associated with occupational heat stress. This presentation will review methods and tools that can be used to examine physiological responses to occupational heat stress and highlight future directions for practice and research.

Technological advancements have opened new opportunities for the capture and monitoring of physiological responses and metrics, particularly in the field. Continued validation of new technologies is necessary to benchmark the reliability and validity of field-based measures and methods.

Measures of body temperature, metabolic workload, hydration status and psychophysiological responses can yield important information as to the strain induced from working in a hot environment. While there are a range of measurement techniques and methods to measure or estimate physiological responses, there are limitations that must be considered. These include the sensitivity, reliability and practicality of proposed measures. For example, gastro-intestinal temperature measures via a telemetric pill allows for direct, wireless, non-invasive measurement of deep internal temperature. However, water ingestion can influence telemetric pill readings while it remains in the stomach and the expense of such a system makes it prohibitive to use in large cohorts.

Continued validation of new technologies is necessary to benchmark the reliability and validity of field-based measures and methods with the ultimate goal being to better quantify exposure-response and exposure-effect relationships for workers’ health, wellbeing and productivity. Importantly, more comprehensive assessments of the heat strain experienced by different populations would aid the interpretation of climate change impact on worker’s health at a local and global level.

Poster Presentation

Respiratory

THE DIAGNOSIS OF PNEUMOCONIOSIS USING A SENSOR ARRAY TECHNIQUE

Pneumoconiosis is a traditional occupational disease and has reemerged in recent years. Current medical surveillance programs have flaws that may result in poor detection of early pneumoconiosis around the world. Pneumoconiosis could generate specific volatile organic compounds (VOCs) that may constitute a specific breath print for diagnosis. The objective of this study was to develop a breath test for pneumoconiosis using a sensor array technique. We conducted a case-control study that enrolled 36 asymptomatic cases of pneumoconiosis and 64 healthy controls between October and November 2016 to construct the prediction model. One litter of breath air was collected after five minutes of tidal breathing through a non-rebreathing valve with inspiratory VOC-filter, and storage by a Tedlar bag. The air was analysed by a 32...
Poster Presentation
Methodology

0245 BIG DATA AND OCCUPATIONAL HEALTH VIGILANCE: USE OF FRENCH MEDICO-ADMINISTRATIVE DATABASES FOR HYPOTHESIS GENERATION REGARDING OCCUPATIONAL RISKS IN AGRICULTURE

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Surveillance of diseases and associated exposures is a major issue in occupational health, especially identifying and preventing new threats for worker’s health. New complementary methods relying on exploitation of already existing data, such as those from health insurance, could be developed to look for relevant signals for early detection of emerging occupational diseases. In this context, a systematic data mining could be performed on databases from the “Mutualité Sociale Agricole” (MSA), the dedicated social security system to French agricultural workers, which covers about 3 million individuals. As this healthcare system holds a large amount of data, MSA databases could allow us to apply “big data” analytics in order to study occupational risks of French agricultural workers. Thereby, this innovative approach could permit to look for associations between diseases and occupational activities without any prior hypothesis and also could have the potential to be used on continuous data flow for vigilance.

The authorisation of the French National Commission on Informatics and Liberty allowed the cross-linking of MSA databases using a common anonymous identifier for each individual. The main methodological point is programming of unsupervised analysis, especially latent models of mixed factors, applied to the “occupational activity x diseases” matrices. Due to the lack of direct information about exposure, a complementary work is performed to estimate retrospectively the exposure to pesticides of agricultural workers.

This innovative method which will be presented, has the following advantages: 1) offers a systematic approach, 2) has a strong statistical power, 3) is costless about data acquisition.

Oral Presentation
Shift Work

0247 SHIFT WORK AND INCIDENCE OF CARDIOVASCULAR DISEASES IN THE DANISH NURSE COHORT

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This innovative method which will be presented, has the following advantages: 1) offers a systematic approach, 2) has a strong statistical power, 3) is costless about data acquisition.