Oral Presentation

Intervention Studies

0490 A RANDOMISED CONTROL CROSSOVER TRIAL OF A THEORY BASED INTERVENTION TO IMPROVE SUN-SAFE AND HEALTHY BEHAVIOURS IN CONSTRUCTION WORKERS: STUDY PROTOCOL

Amanda Nioi*, Charlotte Wendelboe-Nelson, John Cherrie. *School of Engineering and Physical Sciences, Heriot-Watt University, Edinburgh, UK*

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Exposure to sunlight can have both positive and negative health impacts. Excessive exposure to ultra-violet (UV) radiation from the sun can cause skin cancer, however, insufficient exposure to sunlight has a detrimental effect on the production of Vitamin D. In the construction industry there are already proactive behaviours for safety onsite, but sun-safety and health remains a low priority. There is limited research in understanding the barriers to adopting sun-safe behaviours and the association this may have with Vitamin D production. This paper reports the study protocol for a text messaging (SMS) and supportive smartphone app intervention, which aims to reduced UV exposure and promote appropriate dietary changes to boost Vitamin D intake. Approximately 60 adult construction workers will be recruited across Scotland and southern England. Randomisation to the intervention will occur at site level and participants will receive both the control (no text service) and intervention (daily text message and supportive app). The intervention messages will be delivered daily to participant's smartphone; they will also be sent a link to download the supportive app. There will be three waves of data collection across the year, each study epoch lasting 21 days (intervention messages sent on workdays only). The primary outcome measure is Vitamin D level (using blood spot sampling) this will be taken at the start and end of each 21 day cycle (control and intervention). This study will provide important information about the effectiveness of a technology-based intervention to promote sun-safe and healthy behaviours amongst outdoor construction workers.

Oral Presentation

Neurological Effects

0491 BRAIN HEALTH AND AGEING IN RETIRED RUGBY PLAYERS, THE BRAIN STUDY

¹Damien McElvenny*, ²Valentina Gallo, ³Catherine Hobbs, ⁴Seb Crutch, ⁴Huw Morris, ⁴Nick Fox, ⁴Henrik Zetterberg, ⁵Matt Cross, ⁵Simon Kemp, ²Andrea Malaspina, ⁶Nigel Arden, ⁶Madeline Davies, ³Neil Pearce. *¹Institute of Occupational Medicine, Edinburgh, UK; ²Queen Mary, University of London, London, UK; ³London School of Hygiene and Tropical Medicine, London, UK; ⁴University College, University of London, London, UK; ⁵Rugby Football Union, London, UK; ⁶University of Oxford, Oxford, UK*

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Evidence is accumulating on the possible increased risks of neurodegenerative diseases in former contact sport athletes. Each contact sport – with different protections and different playing dynamics – exposes its players to different types of potential

traumas. Evidence suggest that these are not necessarily comparable in terms of pathophysiology, and hence in terms of their potential long-term adverse effects on health. Increasing evidence on poorer general and neurological health among professional sportsmen exposed to repetitive concussions is accumulating; however there is little evidence from rugby players specifically.

This study is designed to assess the associations between history of concussion and general and neurological health in retired elite rugby players aged 50 years or more. We are recruiting a sample of approximately 200 retired rugby players aged 50 years or more and collecting a number of general and neurological health-related outcome measures via validated tests, in addition to biomarkers of neurodegeneration (neurofilaments and tau). We will also carry out a GWAS. This study will investigate the associations between concussion during the rugby career and subsequent measures of healthy ageing and subtle neurological and cognitive impairment. This evidence will be further explored using biomarkers and genetic characteristics of the participants, and investigating which playing history characteristics may be more relevant.

Thus, the study will estimate the burden of physical and neurological health of retired rugby players and will provide initial evidence on possible associations between rugby-related concussion and subsequent general and neurological health. This will both inform current policy, and inform the design of in-depth prospective studies if required.

Oral Presentation

Exposure Assessment

0492 ASSESSMENT OF EXPOSURE TO SUB-CONCUSSIVE HEAD IMPACTS IN FORMER PROFESSIONAL SOCCER PLAYERS

¹John Cherrie*, ¹Ioannis Basinas, ²Martie van Tongeren, ¹Damien McElvenny, ³Valentina Gallo, ⁴Neil Pearce. *¹Institute of Occupational Medicine, Edinburgh, UK; ²University of Manchester, Manchester, UK; ³Queen Mary, University of London, London, UK; ⁴London School of Hygiene and Tropical Medicine, London, UK*

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There is a lack of information on the most appropriate way to assess exposure to sub-concussive head impacts from heading footballs. In terms of relevance for future potential cognitive effects amongst former professional footballers. Reliable quantification of exposure is key to undertaking informative epidemiological studies of cognitive function or neurodegenerative effects amongst former players and is a prerequisite for the design of appropriate interventions to prevent risk of disease. We propose to identify the potential determinants of exposure of chronic sub-concussive head impacts due to heading a football, and how these might relate to the putative disease processes of interest. Information about frequency and intensity of impacts will be collected retrospectively using interviews with subjects, consultation with a panel of former players, analysis of available records, and archive video of games. Important changes that may have affected exposure over time, such as the weight of balls and the pattern of play, will be identified. We will integrate these data into one or more metrics for energy transfer and/or acceleration from head impacts, based on a biomechanical model of the impact process.

Oral Presentation

Pesticides

0493 IMPROVING EXPOSURE ASSESSMENT METHODOLOGIES FOR OCCUPATIONAL EPIDEMIOLOGICAL STUDIES ON PESTICIDES

^{1,2}John Cherrie*. ¹Institute of Occupational Medicine, Edinburgh, UK; ²Institute of Biological Chemistry, Biophysics and Bioengineering, Heriot Watt University, Edinburgh, UK

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Retrospective assessment of occupational exposure to pesticides in epidemiological studies is challenging. The exposures are complex and may occur by skin contact, inadvertent ingestion and by inhalation. There is considerable variation in exposure within and between persons from use of pesticides, with weather, season and crops all affecting use. Product formulation and the type of application equipment may change over time. The use of personal protective equipment, which may have variable efficacy, has also changes over time. The general lack of historic environmental and biological monitoring measurements forces epidemiological researchers to rely on self-reports and exposure models. This presentation will briefly introduce the topics for discussion along with the questions for the panel and delegates so that they can consider these during the session presentations.

These questions are as follows:

- What methods have you successfully used epidemiological studies?
- What were the difficulties/weaknesses you encountered?
- What improvements could be made, both in methodologies and in data availability?
- How should the planned research best interact with the occupational epidemiology community?

* Authors reserve the right to update the discussion questions

Oral Presentation

Pesticides

0494 A REGULATORY PERSPECTIVE ON THE NEED FOR IMPROVING EXPOSURE ASSESSMENT FOR EPIDEMIOLOGICAL STUDIES ON PESTICIDES

Paul Hamey. Health and Safety Executive, York, UK

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Manufacturers intending to market pesticides are required to perform and submit extensive toxicology studies in animals to support risk assessments which demonstrate an absence of harm to human health in order to gain authorisation to supply their products. While such data provides necessary reassurance it is acknowledged that there are uncertainties in extrapolating from animal models to humans and in addition some human diseases lack appropriate models.

Epidemiological studies therefore are regarded as an important alternative source of information that may either support

animal data based risk assessments or indicate potential concerns not previously identified. For this reason within the UK the epidemiological literature has for some time been routinely considered with the aim of identifying any emerging concerns. More recently EU data requirements for pesticides have been amended to require applicants to conduct literature searches and to formally evaluate relevant epidemiology data. An additional recent action by the EFSA has been the commissioning of a systematic review of pesticide epidemiology published 2006–2012.

A large and growing database of epidemiology relating to pesticides exists. However, despite the regulatory efforts mentioned above the impact of such data on regulatory outcomes is negligible. Identification of specific pesticides and levels of exposure are often cited as significant limitations of studies. The regulatory requirements, limitations in the existing data, and suggestions for potential improvements will be discussed.

Oral Presentation

Pesticides

0495 OVERVIEW OF THE EXPOSURE ASSESSMENT METHODOLOGICAL ISSUES FOR EPIDEMIOLOGICAL STUDIES ON PESTICIDES

Hans Kromhout. Institute for Risk Assessment Science (IRAS), Utrecht University, Utrecht, The Netherlands

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Accurate assessment of (occupational) exposure to pesticides is hard to achieve. Applicators often apply multiple products and active ingredients over the course of a growing season. Which active ingredient is applied will also depend heavily about the pest at hand. Exposure to pesticides is therefore often to a mixture of active ingredients when assessed at annual or lifetime scale. Recollection of this information can become rather problematic when it covers multiple decades especially in the absence of spraying calendars or other recorded data. Also, applicators might have reasonable knowledge of tradenames and active ingredients, but farmworkers exposed via re-entry tasks like harvesting, pruning etc. in treated crops might only remember a pungent smell of a particular active ingredient or the crop they worked in. In middle- and low-income countries this might even become more problematic given that considerable proportions of applied pesticides may originate from unauthorised sources and sometimes reach local retailers via illegal cross-country trade. Re-packaging, lack of information in local languages and illiteracy will enhance these problems. In epidemiological studies several exposure assessment approaches have been applied including self-reports by farmers and applicators, crop-exposure matrices, semi-quantitative algorithms based on detailed information provided by study subjects and less frequently by measuring exposure and biomonitoring. In this presentation an overview of and trends in methods for assessment of exposure to pesticides in agricultural cohort and cross-sectional studies as well as community-based (case-control) studies will be presented. The (lack of) validity of different methods and approaches will be considered.