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ACUTE OCCUPATIONAL PESTICIDE POISONING IN ILLINOIS 2010–2015: DATA LINKAGE OF HOSPITAL DISCHARGE AND POISON CONTROL CENTER DATABASES

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Introduction Pesticides have a wide application in agriculture, landscaping, pest control services and others, to control pests, weeds, and other organisms that pose a threat to agricultural production and the health of the public. Acute occupational pesticide poisoning is a persisting challenge to these workers, many of whom are vulnerable and suffer adverse health consequences negatively impacting their ability to work. Surveillance is critical to identifying cases, sites, and mechanisms to target interventions.

Methods Cases of acute occupational pesticide poisoning were identified and linked across the Illinois hospital discharge and the poison control center databases from 2010–2015 on the variables; exposure agent, date of admission, age, gender, variable and zip code of residence. Data was analyzed by SAS (v.9.3; Cary, NC).

Results 358 cases of acute occupational pesticide poisoning were identified; 50 cases were overlapping. The majority of cases were from structural, rather than agricultural uses. Most exposures were due to toxic effects of ‘unspecified pesticides’ such as herbicides, fungicides (60%) and gases, fumes or vapors (36%) per the ICD-9 diagnoses codes. The main route of exposure was by inhalation (40.2%). Males and female exposures were 65% and 33% respectively. Most workers were aged between 20–30 years.

Discussion 66 cases per year is low compared to other agricultural states. Use of multiple data sources in the absence of a robust reporting system can be informative and guide interventions. It is essential that acute occupational pesticide poisoning is adequately captured to estimate its burden and guide interventions for prevention and control. Healthcare providers and data registers must be encouraged to document the work-relatedness since workers can then access workers’ compensation insurance and preventive efforts can be better targeted. Data linkage provides a useful method for estimating the incidence, and enhancing the surveillance of acute pesticide poisonings among workers.

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COMBINATION OF MIRNAS, MESOTHELIN AND FIBULIN-3 AS POTENTIAL BIOMARKERS IN MALIGNANT PLEURAL MESOTHELIOMA AND ASBESTOS-EXPOSED SUBJECTS

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Introduction Malignant Pleural Mesothelioma (MPM) is an aggressive cancer mainly caused by asbestos exposure. Due to its long latency and insidious onset, MPM is often diagnosed in advanced stages with poor prognosis. In addition, asbestos is still

used in many non-European countries and the incidence of MPM is expected to increase. In this context, the need of reliable diagnostic markers for early MPM diagnosis is of paramount importance. Along with the more frequently studied biological markers (mesothelin, fibulin-3), new emerging biomarkers include miRNA expression in peripheral blood.

Methods We previously investigated 23 MPM patients and 19 subjects with past asbestos exposure (PAE) to examine if a specific miRNA signature in plasmatic extracellular vesicles (EV) might help to discriminate between MPM and PAE (*PLoS One*, 2017). Criteria for enrollment, blood collection, miRNA extraction, screening and validation have been previously described. We found a two miRNA (miR-103a-3p and mir-30-3ep) diagnostic signature that discriminates the two groups with high accuracy (AUC 0.942), high sensitivity (95.5%) and good specificity (80.0%).

We are currently expanding our study population to additionally include 25 MPM cases, 50 subjects with PAE, and 20 subjects with other respiratory diseases. Alongside miRNA expression, plasma mesothelin and fibulin-3 will be also measured.

Results The diagnostic performance (AUC, Sensitivity and Specificity) of the best five miRNAs previously detected in our study will be examined in combination with plasma mesothelin and fibulin-3, taking into account major confounders (e.g. age, gender, BMI and smoking habit).

Conclusions The combination of biological markers belonging to different molecular pathways might help in identifying a panel of biomarkers able to improve the overall diagnostic performance as suggested by Weber et al. (*PLoS One*, 2014), who recently showed an improved AUC of 0.93 when combining mesothelin and miR-103a-3p.

Health Services Research

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ANALYSIS AND A PREDICTION MODEL OF PATTERN OF VISITS TO MEDICAL INSTITUTIONS AMONG WORKING INDIVIDUALS WITH LIFESTYLE-RELATED DISEASES IN JAPAN

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Introduction We analysed, developed, and evaluated a prediction model of the pattern of visits to medical institutions after annual health check-ups among Japanese individuals with hypertension (HT), diabetes mellitus (DM), or dyslipidemia (DL).

Methods Using claims and health check-up data maintained by the Japan Medical Data Centre from 2008 to 2016, we identified 5 33 955 individuals (20 to 74 years old) with HT, DM, or DL without claim data for the corresponding diseases for the 4 months prior to the health checkups. We calculated overall and disease-specific cumulative non-visit rates after health check-ups using Kaplan-Meier estimators. The prediction model was derived from randomly collected 1 17 671

individuals with risk factors selected by stepwise logistic regression, followed by validation on another data with the same number.

Results The overall cumulative non-visit rates at 3, 6, 9, and 12 months were 91.4%, 88.2%, 86.2%, and 84.4%, respectively. The disease-specific rates at 12 months were 84.3% for HT, 67.9% for DM, and 86.1% for DL. Limiting the analysis to those with extremely high blood pressure (BP) (systolic BP ≥ 160 mmHg), blood glucose levels (HbA1c $\geq 8.4\%$), or lipid levels (LDL-cholesterol levels ≥ 160 mg/dL) resulted in a slightly lower overall rate at 12 months (74.0%), with a relatively low rate for DM (51.9%). The prediction model, including factors such as age, working status, dietary habits, and the motivation of behavioural change showed modest discrimination ability for the pattern of visits to medical institutions (AUC=0.63), and well calibrated in validation data (Hosmer-Lemeshow $p=0.38$).

Conclusion Our study demonstrated that over 80% of Japanese individuals with lifestyle-related diseases did not visit medical institutions for 1 year after health check-ups. The pattern of visits to medical institutions model may be used for precision health counselling guidance for occupational health providers, which is a promising strategy to encourage individuals with lifestyle-related diseases to prevent diseases exacerbations.

1047 SCIENTIFIC INTEGRITY AND JOURNAL PUBLICATION PRACTICE IN OCCUPATIONAL HEALTH

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Introduction Unbiased dissemination of research findings is essential to inform evidence-based policy in occupational health. For that reason, independence of journals from vested interests is essential for good publication practice. The Committee on Publication Ethics (COPE) produces guidelines aimed at protecting the integrity of scientific research publication. Widely publicised cases involving journal failure to address Conflict of Interest in occupational health suggest that adherence to COPE guidelines may be limited. This study reviewed the published guidelines of 34 selected journals publishing on occupational health for stated adherence to ethical guidelines.

Methods From the first 60 citations generated from a PubMed Search on occupational hazards of pesticides, 46 journals were identified. After exclusion of disciplinary journals (e.g. on paediatrics, orthopaedics), non-English language journals and national/regional journals, a sample of 34 journals was generated. On-line instructions for authors, journal information and publication policies for these journals were reviewed and compared to the COPE Guidelines for attention to (a) editorial independence; (b) definition of conflict of interest.

Result Of the 34 journals, 16 (47%) reported following COPE guidelines; Only 3 journals (9%) explicitly cited editorial independence on their platform. Most journals (85%) explicitly provide for Conflict of Interest (CoI) procedures but most of those (90%) defined CoI in financial terms only with just under half (48%) recognising other forms of CoI.

Discussion Publication practices across journals are highly variable. Editorial independence appears either to be assumed or

be of less importance to journals in the field, who concentrate their attention on financial conflict of interest declarations. Such practices may not be sufficient to maintain scientific integrity in the dissemination of research findings and in supporting evidence based occupational health policy.

1116 MANAGEMENT SUPPORT FOR AN OCCUPATIONAL HEALTH AND SAFETY PROGRAMME – A MYTH OR REALITY?

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Introduction The success of an occupational health and safety programme depends on many factors, most notably the support of managers at all three levels, executive (top), middle and operational management is required to ensure a healthy and safe workplace.

Methods A phenomenological, exploratory, descriptive and contextual approach was followed by means of individual, in-depth, unstructured interviews. Purposive sampling was used in the accessible population of Occupational health nurse practitioners of the Pretoria region (n=30) from 8 manufacturing settings and the inclusion criteria of the sample was occupational health nursing practitioners(OHNP's) with a post basic qualification, in occupational health nursing, and practicing as OHNP's for at least 3–5 years in a manufacturing environment.

Results The lived experiences of OHNPs on the support of managers in an occupational health and safety programme in the manufacturing environment are interwoven within an organisational environment displaying tension between employee safety and productivity as evidenced in the OHNP's relationship with the organisational environment, the OHNPs relationship with line management, head office and top management and finally the relationship with the self.

Discussion The findings suggest that the road to constructive support for the OHNP in an occupational health and safety programme runs through holistic support structures which are able to harmonise the nature of the external organisational context, availability of resources, relationship with line management in the role of the OHS and OHNP as well as their own legal liability in their lack of understanding of the related legislative requirements. The role of the management style in fostering or inhibiting support was highlighted as well as the propensity of the OHNP towards self- management.

1144 CONTINUOUS QUALITY IMPROVEMENT (CQI) AS AN ALTERNATIVE TO STANDARD SETTING: THE DEMING CYCLE (PDCA) APPROACH TO ACHIEVING RISK REDUCTION

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Current approaches to regulatory risk management based on standard-setting assume that the standard represents a permanent best practice and a level of risk that is appropriate for the level of protection required by the community at risk. However, new information, improved scientific methodology, and the identification of novel risks often require review and