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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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10.1136/oemed-2018-ICOHabstracts.437

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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10.1136/oemed-2018-ICOHabstracts.438

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.

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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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10.1136/oemed-2018-ICOHabstracts.439

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