

ABSTRACT

Enhancement of ESSENCE-based chemical surveillance by incorporation of real-time poison information center data

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Introduction

Florida Department of Health (FDOH) has developed a statewide syndromic surveillance system based on the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE). Authorized users can currently access data from the Florida Poison Information Center Network (FPICN), Emergency Room chief complaints (ED), Florida reportable disease system (Merlin) and the Florida death records through ESSENCE under one portal. The purpose of this paper is to summarize efforts to enhance statewide real-time chemical surveillance by incorporating FPICN data into ESSENCE.

Methods

FDOH began by selecting elements from FPICN data fields needed for chemical surveillance. Chemical substances were reviewed and prioritized for real-time monitoring. Case definitions for priority substances/syndromes were created using combinations of clinical effects and laboratory diagnosis. The interim system was tested and released to Florida county health department users on March 2009. Surveillance standards were developed for reportable and non-reportable chemical exposure-related illnesses. The ESSENCE system was upgraded with the implementation of new syndrome categories, as well as advanced query and analytical functions on August 2010. All users are required to complete 3 h of online training before gaining access to FPICN data through ESSENCE.

Results

Priority chemicals are currently monitored through FPICN on a daily basis and results are compared with other data sets in ESSENCE. FDOH monitors about 50 chemical agents in near-real time including carbon monoxide, pesticides, arsenic, mercury, aquatic toxins and food-borne illness.

Exposure calls with acute health effects are also monitored in addition to chemical substances. Poison control data have been actively monitored during the Deep Water Horizon event as a key surveillance component. Currently, there are more than 85 users in 31 Florida counties with training and access to FPICN data through ESSENCE.

Challenges addressed during system development included data field selection and mapping between systems, case definition and syndrome alignment, initiation and maintenance of consistent data uploads to ESSENCE and assurance of accurate data transcription between the two systems. Incorporation of the poison center data component into ESSENCE has resulted in a more integrated working relationship between FDOH and FPICN. Both parties worked to address data and quality control issues.

Conclusions

The use of poison center data offers unique opportunities over conventional data sets used for surveillance providing data in real time from a non-hospital source. FPICN data along with ED data was extensively used to identify clusters of carbon monoxide and pesticide poisoning during year 2009–10. Additionally, FPICN data have been used to monitor national emergencies like the H1N1 flu outbreak and the Deep Water Horizon event.

Limitations include non-alignment of substance categories in the disparate systems and differences in definitions of exposure and illness, which limits the ability to determine true exposures from non-exposures and true illness from non-illness, based solely on FPICN call data. The collaboration between FDOH and FPICN provided an opportunity to successfully bridge the differing terminologies and ideologies embedded in each system. ESSENCE-PIC provides an epi-

miological interface to the FPICN data with flexibility to compare results among different data sources. Analysis of near-real-time FPICN data provides situational awareness of chemical-related illnesses by rapidly identifying potential clusters of poisoning or injury and allows public health officials to prevent additional morbidity or mortality from occurring in Florida. Florida's experience with real-time electronic surveillance demonstrates that ESSENCE-PIC will

help identify seasonal variation and occurrence of unusual chemical events.

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