

Use of the National Poison Data System after the 2011 Japan radiological incident for surveillance of incident-related exposures in the United States

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Objective

To describe how the National Poison Data System (NPDS) was used for surveillance of individuals with potential incident-related exposures in the United States resulting from the Japan earthquake radiological incident of 2011. Our secondary objective is to briefly describe the process used to confirm exposures identified through NPDS-based surveillance.

Introduction

NPDS is a national database of detailed information collected from each call, uploaded in near real-time, from the 57 participating regional poison centers (PCs) located across the United States. NPDS is owned and operated by the American Association of Poison Control Centers (AAPCC). Since 2001, scientists from the Centers for Disease Control and Prevention collaborated with AAPCC to use NPDS for surveillance of chemical, poison and radiological exposures. In March 2011, a 9.0 magnitude earthquake and tsunami damaged the reactors at the Fukushima Daiichi nuclear power plant in Japan, causing a radiological incident classified as a 'major accident' according to the International Nuclear Event Scale. The incident resulted in the release of radioactive iodine (I-131) into the global environment, which was detected in precipitation in parts of the United States. While no adverse health effects were expected, concerned citizens contacted public health officials at the local, state and federal levels. Many started to acquire and use potassium iodide (KI) and other iodide-containing products intended for thyroid protection from I-131, even though this was not a public health recommendation by state and federal public health agencies. Shortly after international media coverage began, regional PCs began receiving calls regarding the Japan radiological incident. State and federal health officials were interested in identifying health communication needs and targeting risk communication messages to address radiation concerns and KI usage recommendations as part of the public health response. This was done in part through NPDS-based surveillance.

Methods

A new, unique event code was created for staff of all 57 regional PCs to use for coding calls related to this incident. This enabled CDC and AAPCC to track incident-related information requests and exposure calls using NPDS. Calls involving either information requests or reported exposures to radiation, potassium iodide and other iodide-containing products were

identified, reviewed and tabulated daily. For each exposure call, individual PCs were then contacted by AAPCC officials to obtain additional data not uploaded to NPDS. CDC epidemiologists and toxicologists reviewed these data daily using set criteria to determine if a true exposure had occurred. Aggregate NPDS data were reported daily to CDC's Emergency Operations Center leadership to enhance situational awareness.

Results

During the time period that the CDC Emergency Operations Center (EOC) was activated for this response (March 11 to April 18), there were 404 calls nationally regarding the Japan radiological incident. Three hundred and forty (84%) were calls requesting information about KI, iodide/iodine containing products or radiation associated with the Japan radiological incident. The remaining 64 calls (16%) were potential incident-related exposure calls. Of these, KI (n=20), other iodide-containing products (n=17) and radiation (n=15) were reported most frequently. The number of information calls peaked on March 16 (n=54), and the number of exposure calls peaked on March 17 (n=9). Thirty-four (53%) of exposure calls were confirmed KI and iodide/iodine containing product exposures, 23 (36%) were calls regarding incident-related exposures, which were unable to be confirmed, and 7 (11%) were determined to be nonexposures.

Conclusions

Collaboration between CDC, AAPCC and PC staff were crucial to surveillance efforts during the Japan radiological incident response. National surveillance using NPDS demonstrated utility for conducting near real-time human health effects and exposure surveillance associated with a known public health emergency. Surveillance efforts identified confirmed exposures to KI and iodide-containing products. The CDC used this information, along with other media sources, to identify health communication needs and implement appropriate health messaging.

Keywords

Japan; radiation; surveillance

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