UTILIZATION OF POISON CENTER DATA FOR SURVEILLANCE OF WATER CONTAMINATION

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Objectives: Poison centers (PCs) serve a vital role in surveillance and are poised to help identify chemical or biological contaminants in the environment. As health departments surveil water quality, routine communication with PCs and data sharing may prompt early action in cases of public water contamination and subsequently divert significant public health emergencies. This study aimed to evaluate the extent to which a PC serving a predominantly rural population could characterize water-related concerns, to recognize challenges that prevented optimal collection of data, and to recommend methods that would improve upon existing surveillance practices.

Methods: Using the PC database, 10 search strategies using a combination of contaminants, exposure sites/routes, and water-related codes were employed to retrospectively characterize demographics, exposures, and geographical aspects of water-related calls over a 12-year period. In order to determine feasibility of new changes within the PC, strategies for heightening internal and external communication, guidance for complete and standardized coding of data fields, and sample templates were issued to PC staff.

Results: The PC identified 487 water-related calls, of which the majority (61%) were due to exposures. Slightly over half of exposures occurred in children (<= 19 years). Call volumes by specificcounty ranged up to 19 calls, while penetrance varied significantly across the different counties; higher proportions were observed in rural/low and medium population counties compared to more urban areas. Most exposures occurred at home, with minimal clinical effects. Key substances identified were bleach (n=34), copper (n=27), and lead (n=26). The primary challenges observed during this study period included the use of multiple codes, missing data fields, absence of follow up, and limited communication with the health departments in our coverage area. As a result, water-related exposure and information calls underestimate the true burden observed by our PC. Addressing these issues at each poison center (PC) need to take place before potential changes can be further expanded to the national level using the National Poison Data System (NPDS).

Conclusions: Although many United States citizens receive their water from a community water system that is heavily monitored and regulated, a significant proportion – particularly those in rural areas – rely on private ground water or wells that are susceptible to multiple contaminants. PCs are poised to capture real time data for environmental surveillance, but limited documentation and poor communication with public health entities will result in underestimates of the true burden of contamination outbreaks. Assessing strengths and challenges of a single PC's role with environmental issues with subsequent improvements can ultimately be expanded to all PCs.