

Using syndromic surveillance data to identify emerging trends in designer drug use

Alise Brown*, William Storm and Brian Fowler

Ohio Department of Health, Columbus, OH, USA

Objective

Correlation and time-series analyses were completed to evaluate the emerging trends in designer drug use for 'bath salts' in Ohio using emergency department (ED) chief complaint and poison control center (PCC) human exposure data.

Introduction

Syndromic surveillance of ED and PCC data has been widely used for the detection, tracking and monitoring of health events (e.g., bioterrorism, disease outbreaks and environmental exposures) over the past decade (1). In recent years, these data have been found to be useful for public health programs not normally associated with syndromic surveillance (e.g., injury prevention, drug abuse and environmental health (1)). In 2010, the first calls referencing exposure to products marketed as 'legal highs' and 'bath salts' were received by PCCs in the United States (2). Synthetic drugs, such as those commonly known as bath salts, often are labeled as 'not for human consumption' and, thereby, circumvent normal legal control procedures that control the sale and distribution of recreational drugs (3). The purpose of this study was to evaluate the emerging trends for the use of bath salts in Ohio.

Methods

Syndromic surveillance data from ED chief complaints were collected and analyzed from Ohio's syndromic surveillance application, EpiCenter for 2010–2011. Because the term bath salts refers to a grouping of drugs, and the effects of ingestion or inhalation of these drugs can vary widely, a specific classifier was created to define ED visits related to bath salts. This classifier included many variations of the common street names for bath salts. Human exposure calls to the PCCs in Ohio related to use of bath salts were also collected and analyzed from the National Poison Data System (NPDS) during the same time period. These data were combined and a correlation analysis was performed, using SAS v 9.2 to evaluate the relationship between the two data types and to illustrate the trends in

designer drug use for bath salts. Due to small daily counts of both ED visits and PCC exposure calls, the data were totaled by month for all time-series and correlation analyses.

Results

In 2010, there were very small numbers ($n < 5$) of both ED visits and PCC calls for bath salts. In 2011, ED visits and PCC calls related to bath salts increased dramatically. ED visits for bath salts totaled 166 and PCC calls totaled 480 through July 2011. A time-series chart of these data, analyzed by month, as shown in figure 1. Pearson correlation analysis showed a strong relationship between ED visits and PCC calls for bath salts ($r = 0.83$, $p = 0.02$).

Conclusions

These results suggest an emerging, upward trend in the use of bath salts in Ohio beginning in early 2011. Syndromic surveillance provides a useful and inexpensive way to track trends in designer drug use. In order to identify these types of trends, knowledge of the subject matter and common name of the substance being tracked is essential. Although this type of analysis significantly underestimates the number of people using drugs, it can be used to identify the arrival and pace of adoption of a new drug. This information can be used by prevention programs and lawmakers to reduce the likelihood of widespread adoption. In mid-July 2011, Ohio passed legislation banning the sale of products containing the chemicals found in bath salts. The law took effect on October 15, 2011. The Ohio Department of Health will continue to monitor ED and PCC data for the next designer drug.

Keywords

Syndromic surveillance; designer drugs; 'bath salts'

References

- Lombardo JS, Buckeridge DL, eds. Disease surveillance: a public health informatics approach. New Jersey: John Wiley & Sons; 2007.
- Spiller HA, Ryan ML, Weston RG, and Janson J. Clinical Experience with and analytical confirmation of "Bath Salts" and Legal Highs" (Synthetic Cathinones) in the United States. Clin Toxicol. 2011;49:499–505. Available at <http://www.ncbi.nlm.nih.gov/pubmed/21824061>. Accessed July 15, 2011.
- Department of Justice/DEA; Legislative Hearing to address Bioterrorism, Controlled Substances, and Public Health Issues; Department of Justice web site; http://www.justice.gov/dea/speeches/110721_rannazzisi_hearing.PDF; August 19, 2011.

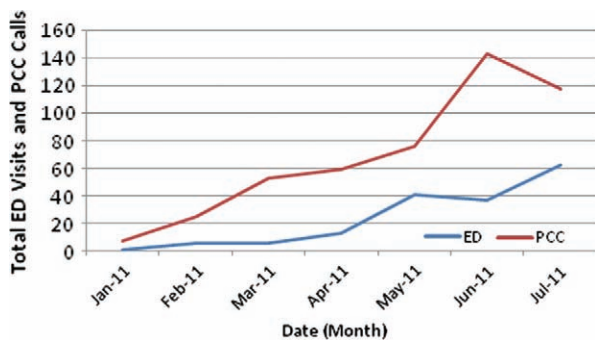


Fig. 1. Emergency Department (ED) Visits and Poison Control Center (PCC) Calls for Use of Bath Salts, Ohio, 2011 YTD.

*Alise Brown

E-mail: alise.brown@odh.ohio.gov