

Active Surveillance of Foodborne Illnesses Using a Novel Syndrome Database

Mary Derby¹, R.N., MPH, Jude McNally¹, R.Ph., James Ranger-Moore¹, Ph.D., Lisa Hulette², B.A., Rodrigo Villar¹, M.D., Michael Lebowitz¹, Ph.D., Jefferey Burgess¹, M.D.

¹The University of Arizona, Tucson, Arizona

²Pima County Health Department, Tucson, Arizona

OBJECTIVE

This study was designed to test the use of high disease transmission risk criteria in callers to a regional poison control center meeting a pre-defined case definition for diarrheal/gastrointestinal syndrome as part of an active surveillance program reporting to a county public health department.

BACKGROUND

Poison control centers (PCCs) provide a new source of real-time symptom data that could enhance surveillance systems for foodborne disease outbreaks (FBDOs) through more timely public health department interventions. PCCs provide treatment advice to callers with suspected foodborne illnesses before they seek medical care. The Arizona Poison and Drug and Information Center (APDIC) and the Pima County Health Department (PCHD) are currently evaluating the usefulness of the APDIC's data collection and triage system to provide early detection of FBDOs in Pima County. Our previous study found that PCC callers with a diarrheal/gastrointestinal syndrome were not duplicative of the cases investigated by PCHD, suggesting that they represent two independent data sets [1]. Evaluating the usefulness of a syndromic surveillance system in terms of its impact on public health is consistent with the CDC's objectives for improving surveillance [2]. Systems that identify too many cases may overwhelm a health department's surveillance ability, while too few cases may prevent effective identification of outbreaks.

METHODS

We developed an algorithm to identify callers to the APDIC at high disease transmission risk, and/or other public health threats, including the following criteria: 1) ≥ 2 calls not from the same household with the same exposure/24 hours; 2) ≥ 3 calls/24 hours; 3) high-risk criteria (child care provider or attendee, health care provider or long-term care attendant, food handler or contact with livestock or reptiles); 4) an increase in severity of symptoms (e.g., bloody diarrhea, fever or illness ≥ 4 days); and 5) un-intentional or intentional food contamination. We analyzed calls with gastrointestinal symptoms attributable to foodborne illness to the APDIC from July 1 through September 30, 2002. We then applied the algorithm to the calls that met the pre-defined diarrheal/gastrointestinal case definition to evaluate the

algorithm's ability to detect high disease transmission risk callers. Information on suspected source of exposure (e.g., restaurant) was also collected.

RESULTS

Over the three-month period there were 74 calls (93 cases) that met the case definition. Of these calls, none met criterion 1, 23 calls met criterion 2, none met criterion 3, 12 calls met criterion 4, and none met criterion 5. Four daily alerts would have been triggered by calls meeting criterion 2. While there were no occurrences of criterion 1, APDIC received one call with multiple cases, reporting 14 teachers from the same school with the same presumed exposure and another call reporting 4 children with the same food exposure at the movies. Twenty-four callers (40 cases) reported their suspected exposure was from a public food establishment.

CONCLUSIONS

The APDIC database provides a novel source for active surveillance for individuals that may pose a high disease transmission risk who might otherwise not be captured. The number of ill callers identified in each call may provide a better indicator than number of calls in a 24 hour period. If criteria 1 and 2 were revised to include number of ill callers rather than number of calls, the algorithm would have generated six daily alerts over the 92 day period, instead of the four seen under the current definition. The health department felt the increase would not overwhelm their surveillance system.

The APDIC database does not currently collect data to evaluate criterion 3, and the database will be modified to collect these data. Because criterion 4 and numbers of callers identifying restaurant exposures may overwhelm county health department resources, a protocol will be developed to manage these calls before prospective active surveillance.

REFERENCES

- [1] Derby MP, McNally J, Ranger-Moore J, Villar RG, Hysong TA, Lebowitz MD, Burgess JL. Poison control center-based syndromic surveillance for foodborne illness. *MMWR* 2005;54 (Suppl):35-40.
- [2] CDC. Framework for evaluating public health surveillance systems for early detection of outbreaks: recommendations from the CDC Working Group. *MMWR* 2004;53(No.RR-5):1-11.

Further Information: Mary Derby, mpderby@email.arizona.edu