

Early Identification of *Salmonella* Cases Using Syndromic Surveillance

Heather Brown, MPH¹, Al Romanosky, MD, PhD¹, Sadia Aslam, MPH¹,
Alvina Chu, MHS², David Blythe, MD, MPH²

Office of Preparedness and Response¹, Epidemiology and Disease Control Programs², Maryland
Department of Health and Mental Hygiene

OBJECTIVE

The purpose of this paper is to describe the use of syndromic surveillance emergency department (ED) data as a tool for enhanced case finding of outbreak-related illnesses.

BACKGROUND

On June 7, 2008, federal food protection and public health agencies alerted consumers of a nationwide outbreak of *Salmonella* Saintpaul infections. As of June 30, 2008, 851 persons infected with *Salmonella* Saintpaul with the same genetic fingerprint had been identified in 36 states and the District of Columbia since April 2008¹. On June 13, 2008, Maryland confirmed its first case of *Salmonella* Saintpaul infection matching the national outbreak strain and as of June 30, 2008, 29 cases of *Salmonella* related to the outbreak have been identified.

METHODS

The Maryland Department of Health and Mental Hygiene (DHMH) conducts enhanced surveillance using the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE). In Maryland, 30% of acute care hospitals in the state, residing in the Baltimore Metro and National Capital Regions, send ED data to ESSENCE. Although syndromic surveillance is not generally used to detect individual cases of disease, after the US Food and Drug Administration alert regarding the nationwide *Salmonella* outbreak, DHMH used ESSENCE as one tool for enhanced case finding. Previously, during the multistate outbreak of *Salmonella* Tennessee associated with peanut butter in Feb 2007¹, ESSENCE detected an increase in persons reporting to Maryland hospitals with chief complaints of both *Salmonella* and peanut butter consumption. For the current outbreak of *Salmonella* Saintpaul infections, a query was developed to search for patients with chief complaints related to *Salmonella* or tomatoes during Apr - Jun 2008. In addition, a retrospective query was developed to search for chief complaints of *Salmonella* from Jan 2007- Apr 2008. Follow up investigations of these potential cases were conducted to obtain information on patient discharge diagnosis and laboratory results, and if applicable, length of time for case reporting and identification at various points in the reporting process. Cases identified using ESSENCE were compared to notifiable diseases reports.

RESULTS

Using the case finding query, 3 chief complaints of *Salmonella* were found in ESSENCE from Apr - Jun 2008. Confirmatory PFGE testing by the State Laboratories Administration revealed that one of these cases was associated with the nationwide *Salmonella* Saintpaul outbreak. The case visited the ED on Jun 6 and information regarding that visit was available in ESSENCE the following day. The case was reported to DHMH on Jun 13 as a laboratory confirmed case of salmonellosis. The case was not identified as associated with the national outbreak until Jun 26. The retrospective query for *Salmonella* identified a total of 3 additional chief complaints of *Salmonella* since Jan 2007. Further investigation of these potential cases revealed that none were laboratory confirmed nor associated with the outbreak.

CONCLUSION

Despite widespread publicity about the outbreak, ESSENCE did not detect large numbers of chief complaints related to *Salmonella*. Syndromic surveillance did detect one *Salmonella* case related to the current national outbreak. This case was detected in ESSENCE one week earlier than its report date to the state health department and about 3 weeks earlier than when it was identified as part of the outbreak. Interviewing case patients about possible exposures and food consumption histories is a crucial step in the investigation of sources for potential foodborne outbreaks. Reducing the amount of time from infection to recognition may minimize recall bias, improve clinical and exposure histories, and allow public health to identify possible sources of illness and intervene as soon as possible to prevent ongoing exposure. Possible future steps would be to establish a routine query of ESSENCE data for *Salmonella* as well as other enteric disease diagnoses and a protocol for investigation of identified cases as a method for earlier identification in the context of an outbreak with ongoing exposures.

REFERENCES

1. Centers for Disease Control and Prevention, <http://www.cdc.gov/>
Further Information: Heather Brown
hbrown@dhmh.state.md.us
<http://bioterrorism.dhmh.state.md.us/>