

Acute Care Alerting and Integrated Public Health Investigation and Response to Syndromic Surveillance Alerts: Example of a Local Food Borne Outbreak

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OBJECTIVE

To highlight the key role of Emergency Department syndromic surveillance in linking acute care and public health, thus enabling collaborative detection, monitoring and management of a local food borne outbreak.

BACKGROUND

Kingston, Frontenac and Lennox & Addington (KFL&A) Public Health, located in Kingston, Ontario is conducting Emergency Department (ED) Syndromic Surveillance funded by the Ontario Ministry of Health and Long-Term Care – Public Health Division. The modified Real-time Outbreak and Disease Surveillance (RODS)-based system captures real-time ED visits from 7 area hospitals and real-time admissions from 3 area hospitals. The primary goal of this system is to provide early warning of gastrointestinal (GI) or respiratory (Resp) outbreaks and facilitate acute care/public health communication and information sharing through an integrated electronic information system and approved protocols for communication and alert investigation.

Over the past year, 4 alerts (2 GI, 2 Resp) have been issued to stakeholders (ED, acute care nurses/physicians, infection control, laboratory, public health). In November 2005, a local outbreak of *Salmonella* Enteritidis (SE) occurred in Kingston, Ontario consistent with a province-wide increase in SE Phage Type 13. At the time of the outbreak, the ED Syndromic Surveillance system operating in Kingston was the only system of its kind in use within the province of Ontario.

METHODS

Concurrent investigations involved monitoring of the syndromic surveillance tool, communication with public health, laboratories and acute care institutions and collaborative investigation. Retrospective investigation involved analysis of hospital ED records using the Center for Disease Control and Prevention's Early Aberration Reporting System (EARS) for GI syndrome. Retrospective analysis validated the sensitivity of an ED (chief complaint) syndromic surveillance system to detect and monitor a community-wide *Salmonella* outbreak.

RESULTS

Concurrent Investigation: The initial cases presenting to the ED on Nov. 17/05 (Figure 1) showed similar demographics 20-30yrs of age and chief complaints (diarrhea +/- other symptoms). GI cases were mapped according to geographic location of residence and showed spatial clustering around Queen's University housing and the downtown area. A clinician monitoring the line lists captured by the system detected this cluster of similar pa-

tients. An alert was sent to local EDs to enhance culture testing and public health was notified of the cluster. Laboratory records were checked on a daily basis and a continuous feedback loop was established with all stakeholders leading to efficient identification of the source of the local outbreak (mung bean sprouts), which in turn identified the source of the provincial outbreak. The system was monitored for admissions related to GI illness. Volumes of ED visits, including acuity levels to assess severity of illness, were used to monitor the effectiveness of public health interventions (removal of sprouts from stores, public messaging, etc.) during the response and recovery phase of the outbreak (Figure 1).

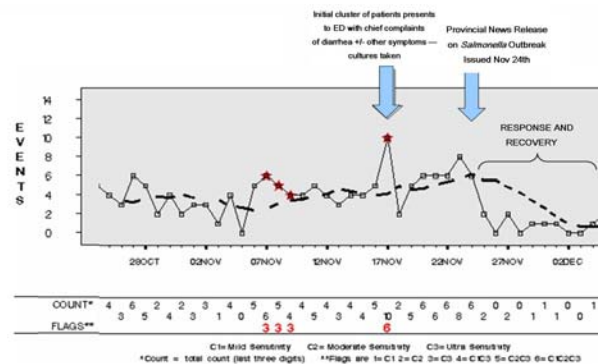


Figure 1– EARS graph of ED visits for GI syndrome during a local food borne outbreak in Kingston, Ontario Nov/Dec 2005

Retrospective Investigation: Chart review and case interviews revealed diarrhea to be a common symptom among all ill cases. Levels of GI syndrome (diarrhea +/- other symptoms) were clearly elevated (all 3 EARS CUSUM alerts fired) on November 17, 2005 when the initial outbreak patients presented at the ED (Figure 1).

CONCLUSIONS

Concurrent and retrospective investigations revealed the sensitivity of the ED syndromic surveillance tool to detect a local GI outbreak. The integration of syndromic surveillance alerts within the acute care sector and public health has enhanced communication and facilitated management and collaborative investigation of a community-wide *Salmonella* outbreak. As the pilot ED syndromic surveillance site within the province, the identification of the source of the larger provincial outbreak highlights the potential utility of the tool and demonstrates the importance of heightened awareness and communication.

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