

# Early Detection and Integrated Response to Seasonal Influenza

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## OBJECTIVE

To use an electronic real-time Emergency Department (ED) monitoring tool to involve public health, acute care and laboratory stakeholders in an integrated alerting and response process for community-wide influenza.

## BACKGROUND

A syndromic surveillance system has been implemented at Kingston, Frontenac and Lennox & Addington (KFL&A) Public Health in Kingston Ontario as part of a pilot project funded by the Ontario Ministry of Health and Long-Term Care – Public Health Division. The information captured by the Real-time Outbreak and Disease Surveillance (RODS)-based syndromic surveillance system includes Febrile Respiratory Illness (FRI) screening results (implemented since SARS) for ED visits and information detailing hospital admissions.

Conventional public health notification of circulating influenza occurs by the first laboratory confirmation of influenza. In outbreak situations, respiratory illness is reportable in institutions such as long-term care. In the event of pandemic influenza, experts have highlighted the absolute necessity of early warning to mitigate disease spread. For this reason, ED syndromic surveillance is being tested for its ability to provide early warning of circulating influenza and to facilitate an integrated response process according to approved investigation protocols.

## METHODS

Historical data for ED visits to KFL&A hospitals was obtained for 4 influenza seasons (2002-2005). Influenza seasons were examined to compare the level of ED visits by syndrome (respiratory and fever/influenza-like-illness (ILI)), alerts generated by the system, and date of notification to public health of positive influenza cultures. The start of influenza season in a community is considered to be 4 consecutive weeks with a positive influenza culture (1). Admissions and FRI screening were captured electronically for the 2005/06 season only. This information was used to prospectively monitor the system and validate the alerts for the 2005/06 influenza season.

## RESULTS

Retrospective investigation of previous influenza seasons demonstrated that in all previous influenza seasons, the RODS Recursive Least Squares (RLS) algorithm produced repeated alerts for increasing respiratory visits 1-3 weeks preceding the documented start of influenza season. In the 2005/06 season, the initial respiratory RLS alert was on Dec 31/05 (Figure 1). This alert

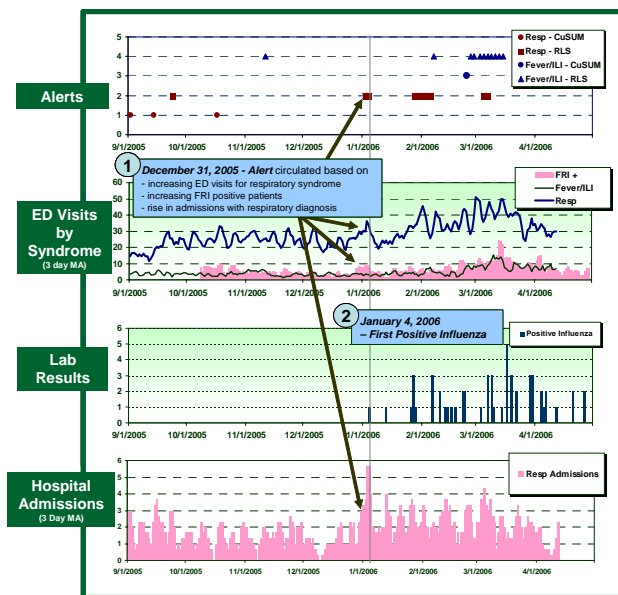


Figure 1: Prospective Monitoring of a Syndromic Surveillance System for Influenza Activity in the Community, 2005/06

corresponded to an increase in both FRI positive ED patients and hospital admissions for respiratory syndrome.

Stakeholders (ED managers/physicians/nurses, infection control, public health, laboratory) were notified of these trends on Dec 31/05 and requested to increase culturing of suspect cases. The first laboratory confirmed influenza A test result was received Jan 4/06. By distributing alerts to stakeholders as per protocol, the system enabled active surveillance (enhanced culturing) for the influenza virus, identification of circulating strains and implementation of appropriate control measures. A second peak of respiratory illness occurred in late Jan/06, while ED visits for the fever/ILI syndrome peaked in mid-March with the circulating influenza B not covered in the 2005/06 vaccine.

## CONCLUSIONS

The presence of respiratory illness in the community was detected by the ED syndromic surveillance system. The development of communication protocols resulted in an integrated alerting system that enabled early detection of circulating strains and implementation of appropriate control measures.

## REFERENCES

[1] Ontario Ministry of Health and Long-Term Care. Ontario Influenza Bulletin. Accessed June 2006.

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