# Syndromic Surveillance Signal Investigation in Los Angeles County

**Jennifer Belden MPH, Patricia Araki MPH, Curtis Croker MPH, Akbar Sharip MPH, Rita Velikina MPH, Bessie Hwang MD MPH, Moon Kim MD MPH, Raymond Aller MD**

*County of Los Angeles, Department of Health Services, Public Health, Acute Communicable Disease Control Program, Bioterrorism Preparedness and Response Unit*

### OBJECTIVE

To describe the methods used by Los Angeles County (LAC), Department of Health Services, Bioterrorism Preparedness and Response (BT P&R) Unit in determining the response to unusual disease/syndromic activity in LAC hospitals.

### BACKGROUND

In the fall of 2001, the BT P&R Unit initiated a syndromic surveillance system utilizing chief complaint data collected from Emergency Departments (ED) throughout LAC. Chief complaint data were organized into four syndromes (gastrointestinal, neurological, rash and respiratory) based on key words/phrases that appear in the patient's record. Syndrome data are analyzed daily; counts for each syndrome are calculated and compared to a threshold to determine if a "signal" or aberration has occurred (EARS algorithm). A signal is defined as a case count elevated above threshold for a particular syndrome at an individual hospital.

### METHOD

The syndromic surveillance signal log data was analyzed to determine the number and types of signals experienced by LAC during Fiscal Year (FY) 2004-2005. When a signal is detected in the syndromic surveillance system an assessment is made to determine the level of investigation. The level of investigation is determined using previously established criteria and is based on prior local experience, a review of the line listing and data from all other surveillance systems and sources (i.e., Terrorism Early Warning Group, Pro-Med, Epi-X, ESSENCE, BioSense, ReddiNet®, VCMR, Outbreak log, coroner data, Over-the-Counter sales, etc.). If the signal level of investigation is determined to be moderate, the information is relayed to Public Health Nurses (PHNs) and hospital Infection Control Practitioners (ICP) for further investigation. The PHNs will work with the affected hospital and may initiate an immediate chart review depending on the level of investigation for the signal. All signals detected by the syndromic surveillance system are recorded in a signal log for future analysis.

### RESULTS

A total of 59 signals were detected by the syndromic surveillance system. Of the 59 signals, 21 (36%) were gastrointestinal, 15 (25%) were rash, 15 (25%) were respiratory, and 8 (14%) were neurological. Level of investigation was, for the majority of signals (41 out of 59), determined to be low. Review of FY 2004-2005 signals revealed that the majority of signals could be closed after review of the line listing of chief complaints. Eighteen of 59 signals were determined to be moderate and sent to the PHNs for further investigation. A moderate level of investigation occurred most frequently in the neuro syndrome and least frequently in the respiratory syndrome.

### CONCLUSIONS

In order to further enhance current syndromic surveillance capabilities, LAC must continue to evaluate best practices for signal investigation. Neuro signals occurred least frequently of all syndromes, yet were more likely to result in a moderate level of investigation indicating that the keywords used to define this syndrome are highly correlated with neurological illness. Review of the keywords used to define the respiratory syndrome is necessary in order to improve the quality of the signals generated in this category. Improving methods for categorizing data into syndromes and excluding complaints that are not BT-related will lead to improved efficacy of the syndromic surveillance system and a decrease in the number of false signals generated. As a result of using these different methods to assess level of investigation, we hope to increase the effective use of resources for syndromic surveillance signal investigations.

### REFERENCES

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