

A Novel Approach to Using Chief Complaint-Driven Syndromic Surveillance: Use of CDC's EARS-X by Hospital Infection Control Practitioners

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Objective: Demonstrate the use and benefit to hospital-based infection control practitioners (ICP) of chief complaint data for syndromic surveillance in partnership with public health to assist with traditional public health disease investigations.

Background: Syndromic surveillance has traditionally been used by public health to supplement mandatory disease reporting. The use of chief complaints as a data source is common for early event detection. Though some public health syndromic surveillance systems allow individual hospitals to view their own data through a web interface, many ICPs have the experience and knowledge-base to conduct their own surveillance and analysis internally. Additionally, they often have interests specific to their hospital which may motivate them to conduct additional syndromic surveillance projects themselves. Lastly, in many cases, ICPs are better able to investigate problems with chief complaint syndrome categorization and aberrations within their own facility before notification of public health staff. A good understanding of the foundation of syndromic surveillance by hospital ICPs can be extremely beneficial when paired with public health to investigate possible cases and outbreaks. ICPs at Greenville Hospital System (GHS), composed of 1110 beds, a level I trauma center with an average of 85,000 visits per year plus three smaller outlying emergency rooms, has had interest in syndromic surveillance for many years and collected data manually for trend analysis using Microsoft Excel to monitor chief complaint data since August 2003.

Methods: The South Carolina Department of Health and Environmental Control (SC DHEC) looked at multiple analysis tools for syndromic surveillance data, including the Early Aberration Reporting System (EARS). SC DHEC has also worked closely with ICPs at GHS to pilot these tools using chief complaint data already gathered in-house. EARS-X v1.2 beta was shared with ICPs at GHS and manually-collected chief complaint data categorized into Real-time Outbreak and Disease Surveillance

(RODS) syndromes were run through EARS for analysis. In addition to already-established RODS syndrome categories, GHS and SC DHEC worked to create other categories with specific chief complaints for the monitoring for a specific disease or event. Of special interest to ICPs were four specific complaint sets for: pneumonia, flu-like illness, encephalitis, and chemical exposure. GHS used EARS to analyze chief complaint data for statistically significant increases in disease syndromes.

Results: When EARS analyzed complaint set data a statistically significant increase was noted on the same day for both the constitutional complaint set (RODS based) and flu-like complaint set in February 2006. When compared to the amount of positive rapid antigen flu tests at GHS, an aberration was noted on the first day of continuous positive influenza seen at the facility. Until EARS was available, aberrations were determined by direct observation of the graphical representation of the complaint set data. One investigation of multiple aberrations in the flu-like complaint set in September 2005 led to interviews with ER staff which determined incorrect usage of the flu-like illness chief complaint. A new chief complaint added to the triage nurse's choices and education of staff led to a discontinuation of the misuse of the flu-like illness chief complaint.

Conclusions: ICPs are in a position to partner with public health in utilizing complaint set categorizations and investigate aberrations within their own facility, while state and local health departments monitor regional and state level trends in data. Statistical analysis of complaint set data by a system such as EARS is a valuable step in determining the need for further investigation. The ability to custom design complaint set data is useful, especially when attempting to identify specific disease concerns, such as influenza. ICPs can also contribute to the data quality via direct and timely interactions with front-line staff responsible for chief complaint data entry.