

BioDefend™ Syndromic Surveillance System Influenza Activity Detection

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Objective:

To evaluate the protocol that the Duval County Health Department (DCHD) epidemiology staff uses to respond to BioDefend™ (BD) syndromic surveillance system alarms. The response protocol utilizes all signals detected by BD and its secondary resources, within the DCHD jurisdiction.

Background:

Many syndromic surveillance (SS) systems have been developed and are operational, yet lack concise guidelines for investigating and conducting follow-ups on daily alarms. Daily emergency department (ED) visits from six reporting hospitals in the Duval County area are assessed and classified into a BD system entry by triage personnel. Alarms are categorized into alerts, 3 SD above a 30 day rolling mean, or warnings, 2-3 SD above the mean. Signals are monitored and in response, public health investigations and recommended interventions are initiated.

Methods:

The protocol was assembled using a number of templates from varied sources [3,4]. These sources were compiled to determine an algorithm for detection and subsequent public health response to system alarms [1,2]. Key components include the accurate recording, interpretation and analysis of the compiled syndromes. In addition, surveillance data are gathered from sentinel provider influenza like illness (ILI) surveillance, NRDM, reporting laboratories, EpiCom outbreak communications and emergency notification system, FDOH Merlin Disease Incidence Reports, and FluStar system for tracking & reporting flu, among several others. An algorithm defines system monitoring and detailed actions for response to system alarms. Syndromes and responses are divided into categories which required immediate vs. investigative action. A chart diagrams the use of secondary surveillance tools in conjunction with BD.

To assess the efficacy of the implemented protocol, ILI alerts during the 2006 flu season were retrospectively examined to analyze the response.

Results:

Within the first week of December 2006, an increase in ILI BD warnings from local ED admissions were observed. Per protocol, these warnings were monitored for possible trends. Subsequent BD ILI alarms

occurred in the following days, with a focus surrounding Hospital A. NRDM was accessed to determine a possible increase in OTC medication sales for the same period. An increase was observed in pediatric liquid and tablet cold relief, and anti-fever medications, as well as an overall increase in thermometer sales. The demographics of individuals that comprised the BD alerts were reexamined. A large proportion of individuals resided around Hospital A and had a mean age of 8.9 years old. The distribution of individuals matched the distribution of the regional increase in NRDM data. Subsequently, FDOH ILI surveillance data were examined. This data includes sentinel provider ILI data and laboratory isolates. For the same period, an increase was observed in statewide sentinel provider ILI visits coincidentally with an overall increase in laboratory isolates [5]. Duval County also reported localized ILI activity in the region, corresponding with the regional information accumulated from other sources.

Conclusions:

The identification of a seasonal disease trend captured by BioDefend™ and secondary systems demonstrates the importance of a concise protocol to compile, analyze, interpret, and respond to syndromic surveillance data. BD was the first SS system to detect the signal, followed closely by NRDM data. This reiterates the necessity of including multiple surveillance systems in the analysis and response to SS alarms. The protocol allowed for a systematic and timely response to BD alarms. In response, active surveillance, public health announcements, and the involvements of DCHD staff were initiated.

References:

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