

Use of the Connecticut Emergency Department Syndromic Surveillance System for Situational Awareness During Public Health Events

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OBJECTIVE

To evaluate the performance of the Connecticut (CT) emergency department syndromic surveillance (EDSS) system for situational awareness during specific public health events.

BACKGROUND

In CT, several syndromic surveillance systems have been established by the Department of Public Health (DPH) to detect and monitor potential public health threats. EDSS routinely categorizes chief complaint data into pre-defined syndrome categories, and also has the flexibility to define syndromes in real-time. Thus, DPH can use this system for situational awareness during public health events. Several recent events provided an opportunity to evaluate EDSS for this purpose: 1) two cases of cutaneous anthrax in CT in September 2007 [1]; 2) national and local media attention surrounding MRSA infections and published research in October 2007 [2] and 3) the introduction of rotavirus vaccine through the Vaccines for Children Program in July 2006 following its licensing in February 2006 [3].

METHODS

Anthrax event: A “skin lesion” syndrome was created and evaluated along with the pre-defined “rash” syndrome. The “skin lesion” syndrome was defined as any chief complaint with at least one of the following key full or partial words: skin, ulcer, lesion, papul, macul, abscess. The “rash” syndrome, based on smallpox, includes: vesic, herp, shingle, red bump, red spot, follic, pox, dermat, rash, zoster. Total visits during the one-week time periods before and after media attention began were compared using chi-square. ED data from the one area hospital were used.

MRSA event: Similar to the anthrax scenario, the “skin lesion” and “rash” syndromes were evaluated for the one week time periods before and after national and local media attention for MRSA began in October 2007. Data from all 17 hospitals contributing to EDSS during this time were used.

Rotavirus event: A pre-defined “diarrhea” syndrome was evaluated. Data from July 2005-June 2006 was defined as the baseline and were compared to July 2006-June 2008. Monthly visit frequencies and the percentage change in visits were analyzed.

RESULTS

Anthrax event: ED visits for “skin lesion” increased, in the week following the anthrax media attention compared to the week prior (5 visits vs. 1, $p=0.06$).

ED visits for “rash” and total ED visits did not increase during the same period.

MRSA event: In the week following initial MRSA media attention, ED “skin lesion” visits increased by 31% when compared to the week prior (132 vs. 101, $p=0.07$). When looking at the “rash” syndrome, visits significantly increased in when compared to the week prior (367 vs. 252, $p<0.0001$).

Rotavirus event: Compared to baseline, there was no difference in “diarrhea” visits in July 2006-June 2007 (4447 vs. 4136, $p=0.39$; 7.5% increase) and a significant decrease in July 2007-June 2008 (3460 vs. 4136, $p<0.0001$; 16.3% decrease). Age analysis showed decreases in both years for ages <1 year (p for trend <0.0001 , 15.3% and 28.7% decreases, respectively) and ages 1-4 years (p for trend <0.0001 , 2.5% and 31.3% decreases, respectively) when compared to baseline.

CONCLUSIONS

Three public health events in CT provided an opportunity to assess EDSS for situational awareness. Using a simple before and after comparison for both the anthrax and MRSA events, there appeared to be a modest possible increase in ED visits following heightened media attention and public concern about skin infections. Following introduction and increasing use of rotavirus vaccine, there appears to be some sustained decrease in the “diarrhea” syndrome, particularly in the age groups targeted for vaccination. However, additional analyses of both EDSS and other data sources are needed to fully determine whether these findings are causal. In CT, EDSS has been a useful tool to conduct rapid examination of the impact of both acute and longer-term public health “events” that lend themselves to syndromic analysis. Continued use of EDSS for these types of events is warranted and will better prepare DPH to monitor situations in real-time using pre-defined and new syndrome categories.

REFERENCES

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