

Using Syndromic Surveillance Data for Enhanced Case-Capture of Conditions of Public Health Interest

Brit H. Colanter, MPH, Jeffrey M. Johnson, MPH, Azarnoush Maroufi, MPH,
Michele M. Ginsberg, M.D., Jennifer A. Nelson, MPH

County of San Diego, Health & Human Services Agency, San Diego, California

OBJECTIVE

This paper describes an assessment of an enhanced surveillance process used to identify reportable diseases and conditions of public health importance from emergency department (ED) chief complaint data in San Diego County (COSD).

BACKGROUND

Syndromic surveillance can be a useful tool for the early recognition of outbreaks and trends in ED data. In addition, as a more timely data source than traditional disease reporting, syndromic data may also be leveraged to identify individual disease cases, increasing the utility for first time or redundant case recognition.

COSD performs daily ED syndromic surveillance. In order to assess the utility for early identification of specific conditions of public health interest (e.g., salmonellosis, meningitis, hazardous exposures, heat-related illness), a novel process entitled Priority Infectious Conditions Capture (PICC), was developed.

METHODS

Data on emergency department encounters are sent to COSD daily from 8 hospitals. These data include: date and time of visit, age, zip code, chief complaint, mode of arrival, and disposition. PICC uses a SAS-based algorithm to query the chief complaint data for specific key words. Results of interest are reviewed by staff; follow-up is conducted as needed.

Both retrospective and prospective evaluations of PICC findings were conducted. Descriptive analysis of PICC findings was performed retrospectively for the year 2006. In addition, detected meningitis cases admitted to a hospital were prospectively evaluated during a 19 week timeframe (Oct. 23, 2006 – April 5, 2007). Follow up to validate the diagnoses was conducted by requesting additional patient information from the hospital.

RESULTS

A total of 2,045 ED occurrences of interest were identified for the year 2006, representing 0.65% of all ED visits and an average of 7.9 ED visits to review per day. The most frequent conditions of public health interest were influenza (44.3%) and food poisoning (11.3%). 222 (10.9%) listed a legally reportable condition, of which 67 (30.2%) were confirmed cases that were eventually reported to COSD. The

most frequent reportable conditions observed were meningitis (73.4%), encephalitis (4.9%), and pertussis (2.7%). Identification of cases such as scombroid, chlorine gas exposure, and radiologic exposure, which were confirmed and reported, prompted public health intervention and collaboration with other agencies (e.g. Environmental Health; HAZMAT).

Meningitis is reportable to COSD within one day of identification.¹ However, meningitis traditionally tends to be under-reported. In light of the recent emphasis on West Nile Virus (WNV) surveillance (by testing viral meningitis specimens) and the importance of early identification of bacterial meningitis for implementation of control measures, COSD chose to prospectively review ED visits for meningitis. During the 19 weeks, 36 patients admitted with meningitis as a chief complaint were identified. After further review of these suspect cases, 23 (64%) were confirmed. No additional patient information was available for 13 (36%) suspect cases. Of the 23 confirmed meningitis cases, 1 (4.3%) was bacterial (*Streptococcus pneumoniae*), 3 (13.0%) were fungal (*Cryptococcus*), 6 (26.1%) unknown/other, and 13 (56.5%) aseptic/viral meningitis. Although these 23 confirmed cases were reported to COSD, 6 (26%) were reported only after COSD actively requested patient information. Using PICC, COSD identified meningitis cases an average of 2 days earlier than traditional passive reporting. All 19 aseptic/viral and unknown type meningitis cases were referred for WNV testing, and 17 (94.4%) submitted specimens. None were positive for WNV; 2 were positive for Enterovirus.

CONCLUSIONS

A syndromic surveillance-based key-word search using a novel process was successful in early identification of conditions of public health interest. Meningitis cases were identified and reported to public health earlier and more frequently than traditional processes. The de-identified nature of syndromic data necessitates the identification of more efficient methods to validate and confirm cases if this process is to be used on an ongoing basis.

REFERENCES

[1] Title 17, California Code of Regulations (CCR) §2500(j)(1) §2641-2643 Reportable Diseases and Conditions, Rev. 6/15/2007.

Further Information: Brit Colanter brit.colanter@sdcounty.ca.gov