

Experience with Clinician-based Syndromic Surveillance in West Texas

Connie Lindley, DVM, PhD and Tigi Ward, BSN, MS

Texas Department of State Health Services Region I and the City of Lubbock Health Department

OBJECTIVE

It is widely agreed that “situational awareness” in disease surveillance is essential for intervening early in an infectious disease (or intoxication) outbreak. We report on 3.5 years of experience of a clinician-based system in a 25,000 square mile area of north-west Texas, a mixed urban, semi-rural and agricultural setting.

BACKGROUND

Classical disease monitoring in local public health jurisdictions has been based on a list of “notifiable diseases”, more or less consistent from state-to-state. While laboratories’ compliance with this requirement is, in general, excellent, clinician reporting is extremely poor [1]. In most circumstances, laboratory reporting is inherently delayed (perhaps by weeks), and most leaders in infectious disease and bioterrorism believe that recognition of abnormal spatio-temporal patterns within hours is essential [2]. Syndromic surveillance systems based on analysis of statistical aberrations in diagnosis code, chief complaint, or analysis of other data streams have been proposed and tested, but have largely failed to meet criteria of timeliness, sensitivity and specificity [3]. In addition, the vast majority of syndromic surveillance systems do not include veterinary surveillance, which may be important given that the vast majority of diseases of human public health importance are zoonotic in origin. Thus, we have tested the hypothesis put forward by Henderson that “the astute clinician” can serve as the best early-warning indicator [4], with minimal demands on clinician time while simultaneously providing situational awareness to the broad community of health care providers and political decision makers who require such information.

METHODS

A commercial, off-the-shelf clinician-based reporting system (SYRIS™, ARES Corporation, Burlingame, California) was introduced into the medical, veterinary, nursing, EMS and environmental health communities in 2003 by public health officials (PHOs) of the Lubbock Health Department. In 2004, the same system was expanded to the Department of State Health Service Public Health Region 1, covering 41 counties surrounding the Lubbock urban area. Approximately 1.2 million people reside in this area, and more than 100 physicians, 20 veterinarians, and 50 school nurses along with EMS services report patients meeting one of 15 syndromes (6 human, 9 veterinary). All access is via INTERNET connections, including low-speed (dial-up) connections.

RESULTS

There have been hundreds of case reports, presented via simple GIS interfaces which facilitates analysis, automatic alarming (based on specific case definitions under the control of local public health officials), and *two-way* communication between PHOs and clinicians (see Fig. 1 for an example). Retrospective review of laboratory and “notifiable disease” reports, as well as interviews with physicians reveals 100% sensitivity and essentially no false-positive reports. Clinician acceptance has been high and reporting consistent. Cost is acceptable for funding-limited typical public health departments (approximately 15 cents per capita). *Decreased* workload requirements are reported by PHOs using the system.

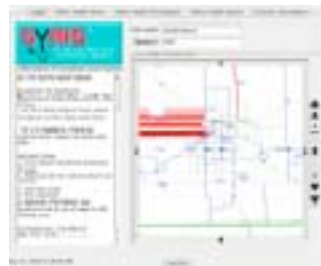


Figure 1 – SYRIS GIS reporting and analysis interface

CONCLUSIONS

Practical everyday experience – including during ad hoc emergencies such as Katrina evacuee management – have proven that real-time situational awareness using a clinician-based reporting tool is cost-effective and widely embraced by the clinical community.

REFERENCES

- [1] Doyle TJ, Glynn KM, Groseclose SM. Completeness of Notifiable Infectious Disease Reporting in the United States: An Analytical Literature Review. *American Journal of Epidemiology*. 2002; 155(9), 866-874.
- [2] Little Hoover Commission, Hearing Report 170a, 2005 pg 4 (Testimony of Robert Kadlec, MD, Staff Director, US Senate Subcommittee on Public Health Preparedness and Bioterrorism). <http://www.lhc.ca.gov/lhcdir/report170a.html> (last accessed June 25, 2006).
- [3] Pavlin JA. Medical Surveillance for Biological Terrorism Agents. *Human and Ecological Risk Assessment* 2005; 11 (3): 525–537.
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Further Information:

Tigi Ward: TWard@mail.ci.lubbock.tx.us or Connie Lindley: Connie.Lindley@dshs.state.tx.us