



D35 Community Bio-Surveillance: A Role For the Medical Examiner in Enhanced Public Health Surveillance

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The attendee will understand the role of a medical examiner in an enhanced community-wide bio-surveillance model.

Objective: Establishment and dissemination of real-time, multi-jurisdictional, low cost healthcare and medical examiner surveillance of six sentinel syndromes and unexplained/sudden deaths by the City of Milwaukee Health Department (MHD) to detect an event or trend signaling possible bioterrorist activity or natural disease outbreak during high profile public events in Milwaukee.

Background: In June-July of 2002, 1.2 million visitors visited Milwaukee for the Major League Baseball All Star Game, Greater Milwaukee Open golf tournament, Great Circus Parade and Summerfest. Enhanced disease surveillance was already operational and included: regional laboratory information¹, communicable disease reporting network², poison control and nurse hotlines, qualitative reporting of sale volumes for OTC³/prescription drugs by category, and reports of illness at select long-term care facilities. Timely statistics on syndromes suggestive of bioagent exposure were desired, but the MHD lacked staff resources and systems for on-site chart abstraction similar to that employed at the 2002 Salt Lake City or 2000 Atlanta Olympic games⁴. However, the MHD had developed strong relationships with local emergency departments (EDs) that had experience using the secure, EMSysystem™ website and with the county Medical Examiner (ME) through previous collaborations. EMSysystem™ had been successfully used for interactively linking county EDs with local public health (i.e., ED diversions, extreme heat alerts)⁵. The MHD believed this infrastructure could be used as a platform to collect voluntary syndromic reporting by EDs, mortality data from the medical examiner, and ultimately be linked with existing community surveillance to create a daily "surveillance dashboard" facilitating review before, during and after high profile public events.

Planning and Methods: Syndromic surveillance forms used by the Salt Lake County Health Department during the 2002 Winter Olympics were revised to create simple checklists and tally sheets where the presence or absence of six sentinel pre-defined syndromes could be recorded. ED managers agreed to attach the forms to all charts for completion during or after evaluation by medical personnel. Similar collection of syndromic data was arranged on a voluntary basis at select urgent care sites and primary care practices. ED staff were prompted daily by EMSysystem™ to report 24-hour counts of patients meeting syndrome criteria, as well as total patients seen. Patient identification was not reported, but every syndrome checklist would be stamped with the information and maintained at the clinical site in the event of follow-up investigation. In addition, the county medical examiner agreed to report daily counts of "unexplained, sudden or suspicious death with fever," and total reportable deaths. Decedent Investigative reports meeting the case definition were provided to MHD for follow-up. This information was transmitted via email and fax to the MHD each 24-hour period. Project reporting included the establishment of baseline levels and occurred over a four-week period lasting eight days after the conclusion of the final special event. Absolute syndrome counts and the proportion of syndrome cases to all patients seen were calculated daily and collated with other disease surveillance and posted on the secure and dedicated EMSysystem™ website.

Results: Eight EDs, two community physicians, two urgent care clinics, one county medical examiner and one large retailer of OTC/prescription pharmaceuticals participated throughout the four-week-biosurveillance project. After some initial and minor inconsistencies in frequency and completeness of data, all sites routinely reported both syndromic case counts and overall site volumes to the MHD. The EDs reported a total of 314 cases meeting syndromic criteria out of 26706 patient encounters. In comparison, the community physicians and urgent care clinics reported a total of 214 cases meeting syndromic criteria (primarily pharyngitis associated with groups of patients seen from area youth camps and retreats) out of 2242 total encounters. The county medical examiner reported two cases of unexplained/sudden death during the four-week period that were reviewed and after further consultation found not to be unusual. No unexpected disease occurrences, clusters or other unusual surveillance data were observed during the biosurveillance project. The EMSysystem™ website was also used during the pilot period to send e-mail/text pager alerts related to extreme heat conditions and the region's first 2002 finding of avian West Nile Virus. Survey findings about participants' experiences with the program will be evaluated and used in future modification of the model. Early on, staff identified problems with standardization of syndromic reports by clinicians and the completeness of case (numerator) as well as patient encounter (denominator) totals. The ability to develop this type of system required, but also strengthened, meaningful collaboration between public and private healthcare entities. The existence of a regional and familiar Internet-based link between EDs and public health (i.e., EMSysystem™) greatly facilitated the ED surveillance effort.

Conclusion: Real-time syndromic surveillance by hospital EDs and other healthcare providers and routine sharing of data between other public health community partners such as the medical examiner,



pharmacies, and poison control may reduce the lag between onset, recognition and response critical to effective control of man-made or natural epidemics. At very modest cost, the City of Milwaukee Health Department established and sustained a daily voluntary reporting system over a four-week period and created a “surveillance dashboard” using secure website communications provided by EMSystem™. While this pilot demonstrates that meaningful quantities of information may be collected and transmitted by health providers for finite periods, insufficient information is available to evaluate the sensitivity, specificity or predictive value of the syndromic surveillance tools used. However, it is believed that the model validates implementation of a biosurveillance system for a limited duration in preparation and as a backdrop to high profile public events. As such, the model underscores the importance and need for active surveillance as a component in preparation and response to public health emergencies.

¹ E*lab fax network links labs serving 35 hospital and 50 clinics.

² SurvNet County-wide Communicable Disease Surveillance Network facilitated by the City of Milwaukee. Excellence in Information Technology Award (1999) National Association of County and City Health Officers.

³ Over The Counter

⁴ Risk I and Stevens M. Analysis and reporting of data during the Olympics. 3rd National NEDSS Stakeholders Meeting, Atlanta, GA May 8-10, 2002. Heryford, A., Boodleman, L., “Public Health’s Winter Games: Bioterrorism Surveillance in Wyoming”. Northwest Public Health, Spring/Summer, (2000): 16-17.

⁵ EMSystem. Real-time web-based Diversion and Disaster Information Management. <http://www.emsystem.com>.

Public Health, Bio-Surveillance, Syndromic Surveillance