SARS Surveillance Project

Internet-Enabled Multi-Region Surveillance for Rapidly Emerging Disease

OBJECTIVES

1. Rapid development of emergency department (ED) triage-based screening for SARS across U.S.
2. Enable deployment of ED syndromic surveillance for SARS in multiple regions with Regional Emergency Medicine Internet (REMI)
3. Evaluate REMI as an agile method to create and distribute clinical surveillance tools in a rapidly emerging global epidemic.

TIMELINE

March 15, 2003: CDC requests surveillance for Sudden Acute Respiratory Syndrome (SARS)

March 17: SARS ED-triage tool created and distributed to Milwaukee, WI emergency departments on EMSystem

March 19-June 25: Surveillance in Milwaukee emergency departments

March 24-April 20: CDC remotely downloads data for Early Aberration Reporting System (EARS) analysis

Early April: American College of Emergency Physicians (ACEP) newsletter urges subscribers to download triage tool; volunteer for syndrome reporting

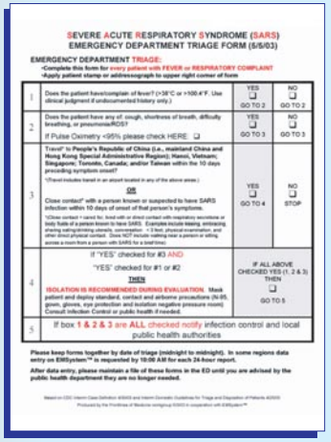
April 3 and May 3: E-mail notification sent of triage tool updates

April 23-May 31: Surveillance in Denver, CO emergency departments

May 1-June 12: Surveillance in Akron, OH emergency departments

May 12-Oct 13: Surveillance in Tarrant County (Fort Worth, TX) emergency departments

METHODS


SEVERE ACUTE RESPIRATORY SYNDROME (SARS)
EMERGENCY DEPARTMENT TRIAGE FORM (5/5/03)

EMERGENCY DEPARTMENT TRIAGE:

Triage Tool: One page format developed; updated to match changing CDC SARS Case Definitions and triage advice:

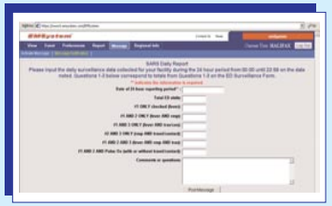
Distribution: ACEP electronic newsletter linked interested persons to Frontlines of Medicine SARS-SP website. Triage tool available at site; users encouraged to add their e-mail address to an update notification database.

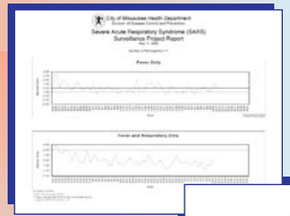
Syndromic Surveillance: **IF** EDs expressed willingness to transmit **AND** the local or state public health agency agreed to receive surveillance data, both were given access to secure EMSystem® surveillance web-pages to report or download. Daily counts of patients in different triage tool categories and total ED census were logged each morning.

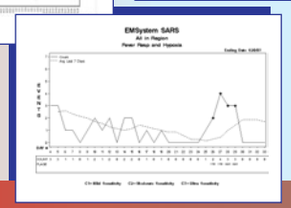
EMSystem® had been used for syndromic surveillance before in Milwaukee. In Denver and Tarrant County EDs already used EMSystem® but for other functions. In Akron a regional EMSystem® site was established at no charge, and used for the first time by EDs and public health agency.

Only visit counts were transmitted, no identities or personal health information. Data from each ED could not be viewed by other EDs.

EDs entered data each morning on the EMSystem® screen, below:



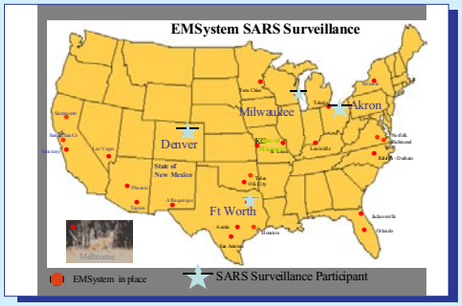




Analysis: Local health authority downloaded data daily for review. Data were also downloaded remotely by US Centers for Disease Control and Prevention into the Early Aberration Reporting System (EARS) program for a 28-day period with results e-mailed to the local health authority.

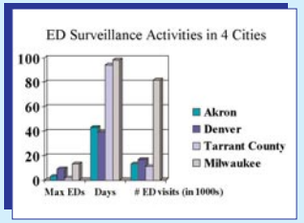
Post-surveillance evaluation: All four public health agencies completed an assessment of their experience with the surveillance system. Six of 13 participating Milwaukee EDs returned a questionnaire regarding their surveillance experience.

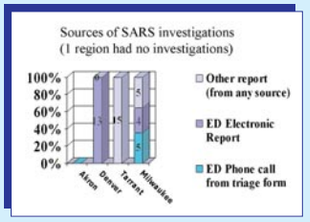
Map of Communities Operating EMSystem® and those using it for SARS surveillance



RESULTS

- About 500 visits to SARS-SP website; 257 persons submitted e-mail addresses for updates. Much smaller numbers visited the site to download revised forms even after notification of changes was delivered by e-mail.
- Unknown how many clinical sites actually used triage tool for their own purposes.
- Four local or state public health agencies received surveillance data. EDs in several other regions expressed interest in providing surveillance information where public health partners could not be recruited
- The four surveillance communities reported modest numbers of SARS investigations (42 total in 3 cities) and only one individual who CDC suspect criteria (1 total).





- Only Milwaukee investigated aberrations in syndrome counts. Telephone contact showed these to be due to counting or reporting errors. Chart reviews were not performed (except for individuals with travel or contact history that raised SARS suspicion).
- No public health agency learned of any individual requiring SARS investigation who passed undetected through EDs using the screening tool for surveillance.
- Every public health agency reported they were glad to participate and interested in similar efforts.
- Every public health agency noted need for close communication between public health surveillance personnel and EDs engaging in REMI-based surveillance.
- 4/6 Milwaukee EDs believed they had screened all patients according to protocol
- 5/6 EDs at least "somewhat agreed" that they felt more secure because they screened for SARS. 5/6 EDs at least "somewhat agreed" that using the triage form raised staffs' level of clinical suspicion for SARS.
- 4/6 at least "somewhat agreed" that tabulation and reporting of daily surveillance results was easy.
- Milwaukee EDs reported average triage form completion time of 2.6 minute per patient (median 3 minutes) and average daily screening reporting time of 17 minutes (median 5 minutes).
- Anecdotal feedback from Milwaukee EDs: SARS surveillance easier because
  1. previous experience with syndromic surveillance using REMI
  2. centralizing surveillance at the Triage desk

CONCLUSIONS

- Local public health agencies and private organizations crafted could create agile screening and surveillance tools from global alerts in a rapidly changing communicable disease emergency.
- Clinicians voluntarily sought out tools to protect themselves and patients from SARS.
- Clinician involvement in surveillance may yield an "astute clinician" effect.
- Emergency departments were willing to participate in surveillance initiatives with local or regional public health authorities.
- REMI allowed a syndromic surveillance system developed in one region to be adopted in distant regions.
- REMI eased recruitment of partners and enabled electronic data transmission. It did not reduce the need for person-to-person relationships to establish and improve surveillance. The *availability* of ready-built tools and networks did appear to *facilitate* the creation of such relationships.
- REMI permitted remote analysis and feedback of surveillance information at CDC, extending the analytic capability of local public health agencies.
- Prior experience of EDs with REMI surveillance facilitated rapid re-establishment of surveillance for novel and emergent problems
- It helped that the REMI network had 24-hour-a-day, 7-days-a-week technical assistance available as well as constantly available (asynchronous) instruction manuals online. Local public health surveillance personnel frequently had to call EDs to confirm whether apparent aberrations were real or due to data quality problems
- One national clinician organization (ACEP) participated in this project. Some public health organizations expressed reluctance to promote a project that lacked specific approval from CDC.
- CDC or states could use REMI networks for agile multi-regional surveillance in future emergencies.

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