

Evaluating Syndromic Signals from Ambulatory Care Data in Four States

W. Katherine Yih,¹ Candace Fuller,² Dawn Heisey-Grove,³ John Hsu,⁴
Benjamin A. Kruskal,⁵ Michael Leach,⁶ James Nordin,⁷ Jessie Patton-Levine,⁸ Ella Puga,⁸
Edward Sherwood,⁹ Irene Shui,¹ Richard Platt¹

¹ Department of Ambulatory Care and Prevention, Harvard Medical School and Harvard Pilgrim Health Care,
² Minnesota Department of Health, ³ Massachusetts Department of Public Health, ⁴ Kaiser Foundation Research
Institute, ⁵ Harvard Vanguard Medical Associates, ⁶ San Mateo County Health Department, ⁷ HealthPartners Re-
search Foundation, ⁸ Austin/Travis County health department, ⁹ Williamson County health department

OBJECTIVE

In this interim report we describe the signals detected by a real-time ambulatory care-based syndromic surveillance system and discuss their relationship to true outbreaks of illness.

BACKGROUND

The utility of syndromic surveillance systems to augment health departments' traditional surveillance for naturally occurring disease has not been prospectively evaluated.

METHODS

A previously described syndromic surveillance system based on ambulatory care data [1,2] has been in operation in four areas since February/March 2007. The locales (data-providers, health departments) are: greater Boston, Massachusetts (Harvard Vanguard Medical Associates, Massachusetts Department of Public Health); greater Minneapolis-St. Paul, Minnesota (HealthPartners, Minnesota Department of Health); greater Austin, Texas (Austin Regional Clinic and Austin Diagnostic Clinic, Austin/Travis Co. and Williamson Co. health departments); and San Mateo County, California (Kaiser Permanente Northern California, San Mateo Co. health department). Ten syndromes defined by ICD9 codes and similar to ones developed by a CDC-DoD working group are tracked. Signal detection is by the space-time permutation scan statistic available in SaTScan [3], using one year of historical data, a scanning window of 14 days, and a maximum circle size of 50% of the population. Health departments are automatically notified of signals with at least 3 cases and recurrence intervals (RI) exceeding 365 days.

Data on the alerts are automatically collected and stored by the system's data center; health departments collect data on all clusters of infectious disease that come to their attention and provide these data to the data center via the system's website in uniform databases developed by the Massachusetts Department of Public Health.

RESULTS

In the first 8 months of operation, 10 signals had recurrence intervals exceeding the 365-day threshold:

State	Syn-drome	Ob-served	Ex-pected	# zip codes	RI in days
CA	Hemor.	10	2	9	667
TX	Neuro.	7	1	32	2,000
TX	Up. GI	8	1	14	455
MN	Hemor.	5	0	9	500
MN	ILI	3	0	1	385
MA	Asthma	5	0	5	370
MA	Lesions	38	15	34	3,333
MA	Neuro.	4	0	5	769
MA	Rash	4	0	2	1,667
MA	Up. GI	27	9	16	1,000

Diagnostic information was reviewed for the 10 signals. None of the 10 corresponded to clusters of concern to the respective health department. The statistically most unusual signal, lesions in MA, consisted of uncomplicated cases of tick bite. During the surveillance period, the Minnesota Department of Health registered 36 non-institutional GI clusters in the Twin Cities surveillance area, including several norovirus outbreaks with dozens ill and an outbreak of *E. coli* O157:H7 from a pig roast with 26 ill. Sensitivity and positive predictive value to date are zero or incalculable.

CONCLUSIONS

During its first 8 months, this ambulatory care-based surveillance system has not detected clusters of concern to public health. Surveillance and evaluation will continue for one full year.

REFERENCES

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