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Bioterrorism surveillance using automated ambulatory care encounter records.

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Background: The advent of domestic bioterrorism has increased the need for enhanced surveillance and early detection of potential bioterrorism events. We previously showed that coded diagnoses contained automated encounter records could be used to identify illness syndromes BMC Public Health 2001 1: 9 (http://www.biomedcentral.com/1471-2458/1/9)

Purpose: We describe here a real time bioterrorism surveillance system currently operational in eastern Massachusetts, based on routinely collected, electronic, ambulatory care encounter records from a large group practice.

Methods: Selected diagnoses are amalgamated into eight syndrome groups. Counts of new episodes, rates calculated using current membership data, and an estimate of the probability of observing at least this number of new episodes are used for syndrome surveillance. Census tracts with unusually large counts are identified by comparing observed with expected syndrome frequencies from a generalized linear mixed model using four years historical data. Weekly counts of new ambulatory lower respiratory episodes were compared with weekly hospital admissions.

Results: Surveillance reports for the entire region and for each census tract are posted daily for the prior 24 hours on a protected website (http://www.btsurveillance.org). Relatively small numbers of new ambulatory syndrome episodes in a single census tract are typically sufficiently unusual to warrant further investigation. During 1996-1999, ambulatory visits for lower respiratory syndromes were best correlated with hospital admissions occurring two weeks later (correlation = 0.92).

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Conclusion: *This system complements emergency room and hospital based surveillance by adding the capacity to rapidly identify clusters of illness while symptoms are relatively mild and non-specific, and before increases might be noted in other settings. The system is largely automated and will operate continuously during periods when emergency services are not on heightened alert. We believe these methods can be speedily implemented in other health care settings that use electronic medical records. These methods are also applicable to other real time systems, including claims files and telephone help lines.*

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