

Syndromic Surveillance in Support of an Urban Violence Intervention

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OBJECTIVE

Our objective was to adapt the city's syndromic surveillance system to help guide a violence intervention initiative in response to an upsurge in serious assaults and homicides in Boston.

BACKGROUND

As syndromic surveillance systems designed for the early detection of bioterrorism have matured, their capacity to track other important health-related events is being assessed in many jurisdictions. In Boston, the need for near real-time data on incidents of interpersonal violence was the impetus for syndromic surveillance system modifications to enhance the city's ability to identify potential points of intervention and respond quickly to changes in the pattern of violent incidents.

METHODS

The Boston Public Health Commission's Communicable Disease Control Division developed violence syndromes using the chief complaint data it receives daily from all Boston emergency departments. These were defined as weapon related (gunshots and stabbings/slashings) and other assaults. Preliminary findings were used in early 2006 to inform a citywide violence initiative.

The violence syndromes were used to describe the number and distribution of cases of injuries treated at Boston hospitals in 2005 that were attributable to assaults or to gunshots, stabbings, or slashings. Distributions were computed by victim characteristics (age, sex, and neighborhood of residence) and by the day of the week that injuries were incurred.

These results were compared with prior-year data reported through other systems, as an initial estimate of data quality. They were used in planning by the health department and collaborating public agencies and hospitals in the spring and summer of 2006.

RESULTS

In 2005, a total of 458,376 ED visits were reported by all 9 Boston acute care hospitals. Of the 458,376 visits, 4,177 were due to incidents of violence. 3,555 were classified as assaults (0.8% of all ED visits), and 622 (0.1%) were weapon related. Occurrences

peaked on late Saturday evenings; the assault syndrome correlated with alcohol-related ED visits.

Characteristics of assault syndrome cases were as follows: 65% male, 54% ages 20-39, and 64% Boston residents. Characteristics of the weapon-related cases were as follows: 85% male, 59% ages 20-39, and 51% Boston residents. In a subgroup of female victims, 15-19 year-olds accounted for 17% of the assault cases and 29% of the weapon-related cases.

It was not possible to differentiate between new visits of violence-related injuries and repeat visits to EDs for conditions treated previously. Chief complaint data differed in some respects from the data reported by ICD-9 codes, which is typically received and appended 2-14 days after the visit. Nevertheless, the system demonstrated a capacity to provide violence indicators far more quickly than other data sources, with citywide case ascertainment and adequate data quality for use in public health program planning and monitoring.

CONCLUSIONS

The prominence of violence as a public health issue and the ready adaptability of the city's syndromic surveillance system to an emergent need for violence data engendered support for significant expansion and utilization of the city's syndromic surveillance system. Surveillance of additional health conditions and events of concern to the local public health community appear, on the basis of this initial experience, to be feasible. This capacity, in turn, is expected to permit faster and better informed public health responses to important health events ranging from drug overdoses to asthma exacerbations.

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