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Using ESSENCE to Detect Bomb-Making Activity: What's Appropriate?

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Objective

To describe a novel application of ESSENCE by the Saint Louis County Department of Public Health (DPH) in preparation for a mass gathering and to encourage discussion about the appropriateness of sharing syndromic surveillance data with law enforcement partners.

Introduction

In preparation for mass gathering events, DPH conducts enhanced syndromic surveillance activities to detect potential cases of anthrax, tularemia, plague, and other potentially bioterrorism-related communicable diseases. While preparing for Saint Louis to host a Presidential Debate on October 9, 2016, DPH was asked by a partner organization whether we could also detect emergency department (ED) visits for injuries (e.g., burns to the hands or forearms) that could possibly indicate bomb-making activities.

Methods

Using the Electronic Surveillance System for the Notification of Community-Based Epidemics (ESSENCE), version 1.9, DPH developed a simple query to detect visits to EDs in Saint Louis City or Saint Louis County with chief complaints including the word "burn" and either "hand" or "arm." A DPH epidemiologist reviewed the results of the query daily for two weeks before and after the debate (i.e., from September 25, 2016 to October 23, 2016). If any single ED visit was thought to be "suspicious" – if, for example, the chief complaint mentioned an explosive or chemical mechanism of injury – then DPH would contact the ED for details and relay the resulting information to the county's Emergency Operations Center.

Results

During the 29 day surveillance period, ESSENCE detected 27 ED visits related to arm or hand burns. The ESSENCE query returned a median of 1 ED visit per day (IQR 0 to 2 visits). Of these, one was deemed to merit further investigation – two days before the debate, a patient presented to an ED in Saint Louis County complaining of a burned hand. The patient's chief complaint data also mentioned "explosion of unspecified explosive materials." Upon investigation, DPH learned that the patient had been injured by a homemade sparkler bomb. Subsequently, law enforcement determined that the sparkler bomb had been made without any malicious intent.

Conclusions

DPH succeeded in using ESSENCE to detect injuries related to bomb-making. However, this application of ESSENCE differs in at least two ways from more traditional uses of syndromic surveillance. First, conventional syndromic surveillance is designed to detect trends in ED visits resulting from an outbreak already in progress or a bioterrorist attack already carried out. In this case, syndromic surveillance was used to detect a single event that could be a prelude to an attack. The potential to prevent widespread injury or illness is a strength of this approach. Second, conventional syndromic surveillance identifies potential outbreak cases or, in the case of a bioterrorist attack, potential victims. In this case, syndromic surveillance was used to identify a potential perpetrator of an attack. While public health and law enforcement agencies would ideally coordinate their investigative efforts in the wake of an attack, this practice has led to conversations within DPH about the appropriateness of routinely sharing public health surveillance data with law enforcement.

Keywords

Mass gathering; ESSENCE; Injury; Preparedness

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