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Near Real-Time Monitoring of Emergency Department Syndromic Surveillance Data During the 2013 Super Bowl and Mardi Gras Events in New Orleans, LA

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Objective

To demonstrate the value of syndromic surveillance as a tool to provide situational awareness during high profile events such as the Super Bowl and Mardi Gras in New Orleans, LA.

Introduction

The Louisiana Office of Public Health (OPH) conducts emergency department (ED) syndromic surveillance using the Louisiana Early Event Detection System (LEEDS). LEEDS automatically processes electronic chief complaint and diagnosis data to identify ED visits indicative of specific syndromes. The Infectious Disease Epidemiology section (IDEpi) of OPH uses LEEDS to monitor infectious disease and injury syndromes during natural or man-made disasters and high profile events. Past events monitored include hurricanes Katrina, Rita and Isaac, the Gulf Coast oil spill, yearly Mardi Gras festivities, marsh fires and chemical leaks. LEEDS has proven to be an invaluable tool in providing all-hazards public health situational awareness during these types of events by enabling near real-time monitoring of infectious disease and injury syndromes.

Methods

IDEpi monitored LEEDS for infectious disease and injury syndromes during the 2013 Super Bowl and Mardi Gras activities in New Orleans. The Super Bowl took place on February 3, Mardi Gras day fell on February 12, and the period of surveillance was January 7 through February 28, 2013. Data was collected and analyzed daily from all EDs (n=11) in the greater New Orleans area.

IDEpi monitored six infectious disease syndromes: fever, gastrointestinal complaints (GI), influenza-like illness (ILI), lower respiratory tract infections (LRTI), upper respiratory tract infections (URTI), and skin and soft tissue infections (SSTI); and five injury syndromes: alcohol use, drug abuse, personal injuries (lacerations, falls, etc.), violence, and motor vehicle accidents (MVA). The Early Aberration Reporting System (EARS) C2 method and Change Point Analysis (CPA) were used to monitor for aberrations in daily percentages of ED visits associated with each syndrome. C2 has been shown to effectively detect sudden major changes while CPA has been shown to detect more subtle changes in time-series data (1). Daily data were exported from LEEDS and analyzed in R statistics package.

Results

EARS C2 method was used to detect aberrations in percentage of ED visits attributed to each syndrome. Alarms were generated for fever (on January 20 and February 12), URTI (February 15), alcohol (February 2), drug abuse (February 10), personal injuries (January 20), violence (January 21), and MVA (February 23) (Figures 1 and 2). The syndrome aberrations that generated alerts were not sustained and therefore did not warrant investigation. CPA was used to detect changes in mean percentages of ED visits over the period. No change points were detected.

Conclusions

Monitoring syndromic surveillance data and utilizing C2 and CPA aberration detection methods provided OPH essential situational awareness during the Super Bowl and Mardi Gras events in New Orleans. This type of situational awareness is necessary to indicate if and when mobilization of public health resources and messaging may have been needed to prevent additional injury and illness. OPH will continue to utilize LEEDS as a valuable tool to provide all-hazards public health situational awareness during natural or man-made disasters and high profile events.

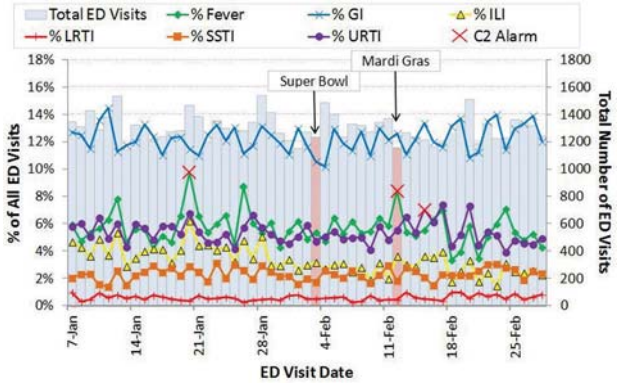

Figure 1. ED visits related to infectious disease syndromes – Greater New Orleans Area, January 7 – February 28, 2013

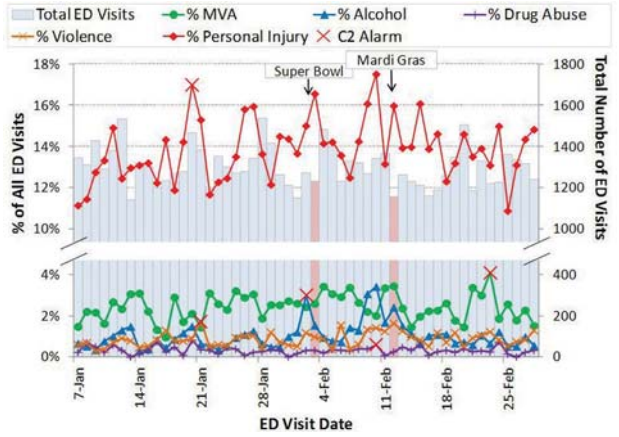

Figure 2. ED visits related to injury syndromes – Greater New Orleans Area, January 7 – February 28, 2013

Keywords

syndromic surveillance; situational awareness; aberration detection methods

References

1. Kass-Hout TA, Xu Z, McMurray P, Park S, Buckeridge DL, Brownstein JS, Finelli L, Groseclose SL. Application of change point analysis to daily influenza-like illness emergency department visits, J Am Med Inform Assoc. 2012;19(6)1075-1081.

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