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Data Sharing Among Three States in the BioSense Platform during the 2017 US Solar Eclipse

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Objective

Describe cross-jurisdictional data sharing practices using ESSENCE and facilitated by the BioSense Platform for a national mass gathering event, and the dashboard views created to enhance local data for greater situational awareness.

Introduction

In 2016, the BioSense Platform for national syndromic surveillance made substantial enhancements including data processing changes, a national ESSENCE instance, and management tools to support diverse data sharing needs. On August 21, 2017, a total solar eclipse occurred over much of the United States. The event resulted in large gatherings over multiple days to areas in the Path of Totality (PoT). In the days leading up to the event, public health and emergency preparedness included syndromic surveillance in their monitoring plans. To support this effort, Illinois (IL), Kentucky (KY), and Tennessee (TN) established inter-jurisdictional aggregate data sharing to get a more inclusive view of cause-specific illness or injury in Emergency Department (ED) visits before, during, and after the eclipse.

Methods

Following best practices outlined by colleagues at Oregon Health Authority, in their July 2017 guidelines "Using ESSENCE for Mass Gathering Surveillance", the tristate collaboration between IL, KY, and TN provided participating state-level epidemiologists access to aggregate data in all three states. Dashboards for each state were created to include hospital ED visits in counties that fell in the PoT and shared to view trends in syndromes such as gastrointestinal illness (GI), influenza-like illness, heat-related illness (HRI), and substance abuse. Counts from event-specific keyword queries related to the eclipse were also shared.

Results

Shared dashboards included data from 64 facilities (31 IL, 10 KY, and 23 TN) and monitoring was performed from August 16 – August 23. During the monitoring period, 41,471 ED visits were reported from the shared facilities (10,610 IL; 7,740 KY; 23,157 TN). Out of state residents accounted between 3% to 8.6% of reported visits.

There was a sharp increase in ED visits referencing the eclipse across all three states during the monitoring period. A total of 71 visits were identified as eclipse-related (19 IL, 44 KY, and 8 TN). KY requested one hospital to identify patient encounters related to the eclipse by including the term "eclipse" in the patient chief complaint, IL and TN did not. Minor fluctuations in syndrome trends were observed across all three states.

Conclusions

Mass gatherings may cause a sudden increase of healthcare resource utilization in the municipalities where they occur. In IL and KY, the PoT occurred over a rural part of each state, whereas in TN the path went through a major metropolitan area. ED coverage and completeness varied across all three states. Expanded data access and visualization of syndromes in nearby states allowed IL, KY, and TN to enhance their surveillance efforts and verify observed syndromic trends across jurisdictional boundaries. The ESSENCE instance in the BioSense platform fostered a collaborative environment that quickly enabled the sharing of limited data across multiple jurisdictions during the August 21, 2017 total solar eclipse.

Keywords

data sharing; mass gathering; syndromic; eclipse

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