

Using a real-time syndromic surveillance system to track heat-related illnesses during a heat wave

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Objective

To evaluate the usefulness of utilizing real-time hospital emergency department chief complaint data to estimate counts of patients presenting at emergency departments with heat-related illness during the July 2011 heat wave in Indianapolis.

Introduction

In 2004, the Marion County Public Health Department (MCPHD), which serves a county population over 890,000, began using a real-time syndromic surveillance system, ESSENCE (Electronic Surveillance System for the Early Notification of Community-based Epidemics) to assist in detecting possible disease outbreaks. Today, about 1600 emergency department visits occur daily in Marion County's 14 emergency departments. Epidemiologists from MCPHD have contributed to the city's extreme temperature plans for the last few years. While most of the previous increases in heat-related illnesses in Marion County have been attributed to prolonged heat exposure in connection with local auto races, the county had not activated the county wide emergency response plan in several years. From Tuesday, July 19 through Friday, July 22, 2011, the Marion County Extreme Temperature Plan was put into action in response to several days of a high heat index.

Methods

As the written plan indicated, a MCPHD epidemiologist checked ESSENCE every 3 hours and sent updated numbers to the Emergency Operations Center three times a day via e-mail. The query used the following terms: 'heat', or, 'dehyd', or, 'hot', and not, 'gunshot'. This is one of several pieces of information used to guide decision making when

considering opening additional cooling centers and creating press releases for the public.

Results

The MCPHD sister's agency is the area hospital that accepts medically underserved patients. With this access to the patient system, the electronic medical records of 21 people meeting the search criteria and seeking care at this emergency department between June 1, 2011, and July 29, 2011 were reviewed. An extended time period was reviewed to see if there were obvious differences in the counts of patients or terminology used in the chief complaint once the heat wave was upon the city. Five (24%) sought care in June 2011, 16 (76%) in July. Fifty percent of those seeking care for heat-related issues were seen in a 2-day period in July. Six people (29%) developed symptoms while at work. Work-related tasks included roofing, painting, working in metal tanks and driving trucks without air conditioning. Two homeless persons (10%) sought care during the 2-day time frame when half of the cases were identified as well as four of the six who developed symptoms while at work. Alcohol and drugs may have been a contributing factor for three (14%) of those seeking care. Nine individuals (43%) were treated for medical conditions, such as chronic obstructive pulmonary disease, diabetes, urinary tract infections, gastrointestinal infections or pneumonia.

Conclusions

Although the current query did produce a few 'false positives', the MCPHD staff has decided to continue the use of the same terminology since a significant amount of the cases detected were indeed heat related. The counts from the days of the heat wave were significantly higher than in previous summer months. The use of syndromic surveillance during a heat event can provide meaningful information for decision makers in emergency preparedness.

Keywords

Heat; syndromic; preparedness

References

1. Marion County, Indiana Extreme Heat and Cold Contingency Plan. <http://www.indy.gov/eGov/City/DPS/DHS/Preparedness/Documents/Appendix%20G-Heat%20Cold%20Plan%202009-2%20wo%20contact.pdf>.

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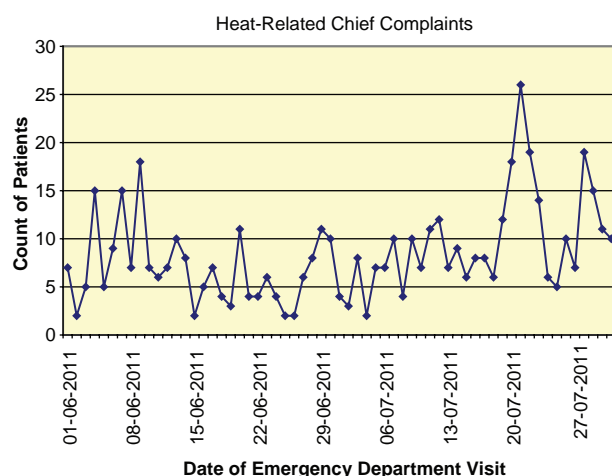


Fig. 1. Heat-Related Chief Complaints, Marion County, Indiana, June 1, 2011 to July 31, 2011.