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Weather Outlook: Cloudy with a Chance of…— Classification of Storm-Related ED Visits

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Objective

To introduce and describe methods for evaluating and refining custom classifier keyword lists for syndromic surveillance of several post-severe weather event conditions and to report findings from New Jersey's syndromic surveillance of selected conditions in the aftermath of Hurricane Sandy.

Introduction

Hurricane 'Superstorm' Sandy struck New Jersey on October 29, 2012, causing harm to the health of New Jersey residents and billions of dollars of damage to businesses, transportation, and infrastructure. Monitoring health outcomes for increased illness and injury due to a severe weather event is important in measuring the severity of conditions and the efficacy of state response, as well as in emergency response preparations for future severe weather events. Following the experience with Hurricane Sandy and the foreseeable need to be prepared for future severe weather events, NJDOH initiated a project to develop a suite of 20 indicators in EpiCenter, an online system which collects emergency department chief complaint data in real-time, to perform syndromic surveillance of extreme weather–related conditions.

Methods

The development of 20 severe weather event indicators followed a two-stage evaluation of keyword lists using diagnostic codes. The statistical measures of sensitivity, specificity, and positive predictive value were computed for both the initial keyword list and the final keyword list. Application of nine identified severe weather event classifiers was performed by comparing graphs of one-month, three-months, and one-year time periods following Hurricane Sandy compared against the same time period from the following year.

Results

The updated keyword lists for anxiety/adjustment disorders, disrupted outpatient medical care (dialysis and medication refills), gastrointestinal illness, upper respiratory illness, asthma, and substance abuse resulted in improved accuracy when compared to initial keyword lists and are recommended for use as new customized classifiers when analyzing severe weather events. Evaluation did not significantly improve accuracy of the initial EpiCenter classification for CO Poisoning, and further research is recommended for the application of disrupted outpatient medical care: oxygen needs.

When the time period after Hurricane Sandy was compared to the same time period during the following year, the impact of the extreme weather event on increases of ED visits for each of the evaluated classifiers became clear. Though ED visits for gastrointestinal disease were anticipated to be a post-storm concern, no peak was seen relative to preceding or following months.

Conclusions

Overall, this endeavor has provided NJDOH with a clearer picture of the effects of Hurricane Sandy and has yielded valuable information on how the state should prepare to monitor the effects of the next severe weather event.