

Increased Seizure Activity in Florida Associated with Hurricane Irma, September 2017

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Objective

Using Florida's syndromic surveillance data, to describe the increase in seizure activity in the days after Hurricane Irma made landfall in 2017

Introduction

On September 10, 2017, Irma made landfall in the Florida Keys as a Category 4 hurricane and subsequently tracked up the west side of the state. Due to the size of the storm, it impacted nearly all of Florida. The Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE-FL), the state's syndromic surveillance system, captures 98% of the emergency department (ED) visits statewide and has historically served a vital function in providing near real-time ED data that are used to track post-disaster morbidity and mortality. After previous hurricanes and tropical storms, increases in carbon monoxide poisonings, animal bites, and injuries have been documented. During post-Irma surveillance, an additional increase in seizure-related ED visits was observed.

Methods

Twice-daily Hurricane Irma surveillance reports were produced from Sept 10-22, 2017. In addition to specialized queries specific to storm surveillance, analysis was conducted using ESSENCE-FL's syndrome and subsyndrome categories. The subsyndrome category of *Seizure* captures ED visits which list the words seizure or convulsion in the patient chief complaint. Daily number of seizure visits were compared against a 28-day baseline using an exponentially weighted moving average algorithm. Additionally, daily seizure visits as a percentage of total ED visits were calculated and plotted.

Results

On September 11, 12, and 13, ED visits for seizures were increased above the expected levels. On these dates respectively, 336 visits (270 expected, $p < 0.01$), 349 visits (278 expected, $p < 0.01$), and 306 visits (267 expected, $p < 0.01$) seizure visits occurred statewide. September 10 showed the largest increase in seizure visits as a percent of all visits.

Conclusions

Routine post-storm surveillance was able to identify an increase in seizure visits at EDs in Florida. This hurricane-related increase, while not detected using our syndromic surveillance system during previous storms, supports findings of increased emergency medical service calls for convulsions and seizures after Hurricanes Katrina and Rita (both in 2005) found by other researchers [1]. Due to the size, strength, and projected path of Hurricane Irma, stress (a known seizure trigger) is a possible biological explanation for the increase that was observed. A greater understanding of storm-related public health threats allows the Florida Department of Health to better plan for these events and communicate this information to the public and our partners. Post-storm analysis was complicated by large changes in overall ED volumes during and immediately following the hurricane, and further exploration of the association found in this study is encouraged.

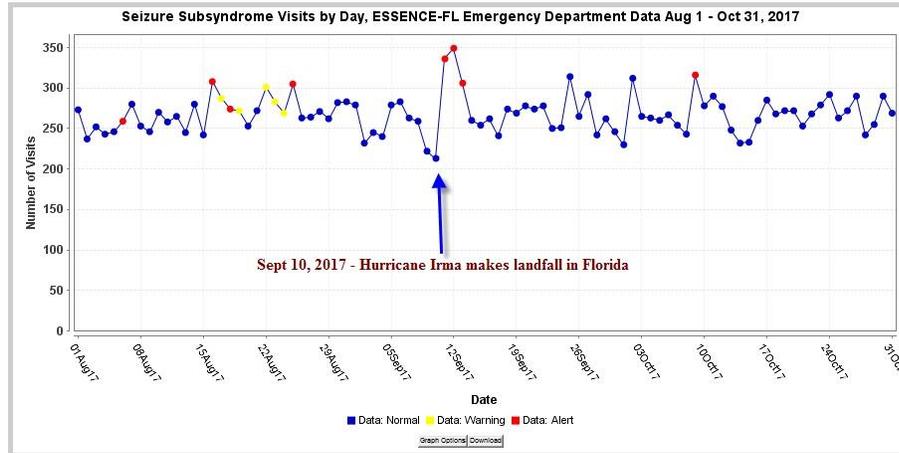
References

1. Davis JS, Allan BJ, Pearlman AM, Carvajal DP, Schulman CI. 2012. Optimal emergency personnel allocation after a natural disaster. *Am J Disaster Med.* 7(1), 31-36. [PubMed https://doi.org/10.5055/ajdm.2012.0078](https://doi.org/10.5055/ajdm.2012.0078)



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Figure 1



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