

## Mental Health Emergency Department Visits in Houston: Developing a Post-Disaster Mental Health Surveillance System

Allison Stewart MPH., Mary Carvalho MPH., Debo Awosika-Olumo MD, MS, MPH  
*Houston Department of Health and Human Services*

### Objective

The objective of this project was to classify and extract mental health emergency department (ED) visits from the Houston Real-time Outbreak and Disease Surveillance (RODS) system. In addition, this project will offer a method for tracking increases in acute mental health outcomes, especially Post-Traumatic Stress Disorder (PTSD) and major depression, after disaster events.

### Background

The implementation of the RODS system in the greater Houston area occurred in 2004. The system uses a Naïve Bayes Classifier to categorize free-text chief complaints into 8 syndromes including a neurological category [1]. However, within the neurological complaints there is no division between mental health issues such as depression, suicide ideation, anxiety, or stress and general neurological complaints such as headaches, migraines, strokes, or embolisms. Distinctions between mental health outcomes, particularly PTSD and major depression, and generalized neurological complaints may be potentially important following disasters, especially in hurricane affected areas like the greater Houston area [3, 4].

### Methods

Specific key words for mental health issues, focusing on PTSD and major depression, were identified through a revision of existing literature and past chief complaint data in the RODS system. To extract mental health visits, key words used in SQL coding were variations of the following terms: “depression”, “anxiety”, “stress” and “suicide”. In order to pilot test the utility of this data for post-disaster surveillance, complaints were extracted prior to and following the 2005 Hurricanes Katrina and Rita. Three periods were defined: pre-hurricane period (01/01/2005--08/27/2005), during hurricane period (08/28/2005--09/23/2005), and post-hurricane period (09/24/2005--12/31/2006). Counts were converted to percent daily totals of all ER visits to account for the influx of evacuees from New Orleans and surrounding regions.

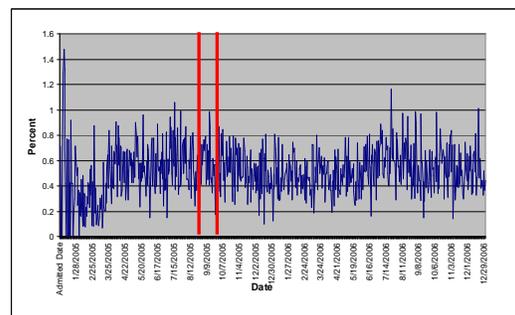


Figure 1- Plot of daily mental visits as a percent of total ER daily visits from January 1, 2005 to December 31, 2006. Red lines indicate the period between Hurricane's Katrina and Rita landfall.

### Results

Before August 28, 2005 there were 2062 cases (0.51%) that match the search criteria. Between August 28, 2005 and September 23, 2005 there were 342 cases (0.60%). From September 24, 2005 till December 31, 2006 there were 5037 cases (0.52%). Mental health visits, as a percent of the daily total ranged from 0 to 1.48% (Figure 1). The pilot data suggests a seasonal trend, with the lowest percent of mental visits occurring in the winter months. Additional results are pending.

### Conclusions

This pilot study will provide a means to assess mental health related conditions following disasters. It can also be used to examine the areas of the city that are most affected by mental health problems in order to effectively deliver services in these communities. Future research should include a validation study of the mental health data extracted from the RODS system as well as comparisons involving other variables in the dataset, like age and sex.

### References

- [1] RODS Version 4.2 User Manual. RODS laboratory, University of Pittsburgh. 2006: 5.
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- [3] Neria Y, Nandi A, Galea S. Post-traumatic stress disorder following disasters: a systematic review. *Psychol Med*. 2008 Apr;38(4):467-80.