The Impact of Hurricane Katrina Evacuees from Louisiana and Mississippi on Georgia Emergency Departments: Syndromic Surveillance and Disasters

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Objective

To describe the victims of Hurricane Katrina who evacuated to GA and to assess their impact on emergency departments (EDs) enrolled in GA's syndromic surveillance (SS) system.

Background

On August 29, 2005, Hurricane Katrina made landfall just east of New Orleans, LA at 6:10AM CST and again at the LA/MS border at 10:00AM CST as a Category 3 hurricane, causing mass destruction along their coastlines [1]. The devastation in LA and MS forced many residents to evacuate. Outside of the hurricane affected areas of LA, MS, and AL, GA received the second largest number of evacuees (approximately 125,000).

Methods

When Hurricane Katrina made landfall, the GA Department of Human Resources, Division of Public Health had seven hospital-based EDs in two health districts (East Metro–Atlanta and Coastal–Savannah and Brunswick) enrolled in SS. Chief complaint, physician diagnosis, and demographic information, including zip code, were used to characterize those Hurricane Katrina evacuees who utilized one of the enrolled EDs for healthcare shortly following Hurricane Katrina. We compared the 8 months preceding (1/1/2005-8/28/2005) with the 1 month following (8/29/2005-9/28/2005) Hurricane Katrina for LA and MS residents visiting GA EDs. We compared differences in the demographic composition and reasons for presenting to the ED using the z-test for two proportions, and we used Pearson's correlation coefficient to detect significant relationships between demographic variables derived from US Census data [2] and case counts by individual zip codes. Additionally, we applied the CDC's Early Aberration Reporting System (EARS) to the data [3]. Significant case counts were further investigated using Geographic Information Systems (GIS) and chart reviews, when possible, to detect geographic clusters and confirm the relationships, such as single families, among involved cases.

Results

There was a 7-fold increase in the rate of ED visits by LA and MS residents from the pre- to the post-Katrina time periods studied (156/8 months vs. 143/1 month). No significant demographic differences were found between pre- and post-hurricane time periods. No significant correlations were noted between the number of ED visits by individual zip codes and their racial, poverty, or age distributions as determined using US Census data.

No significant changes in the reasons for seeking ED care were seen; however, a >2.5-fold increase in medication refill visits was observed (Table).

Several spatial- and temporal-related clusters were identified. The majority of these were due to motor vehicle accidents involving evacuees and families presenting to the ED for various reasons.

Reasons LA and MS Residents Presented to GA EDs

	Pre-Katrina (N=156)		Post-Katrina (N=143)		P-value
Syndrome (CC)	*n*	*%*	*n*	*%*	
Any Respiratory	18	11.5	23	16.1	0.2537
Diarrhea	3	1.9	2	1.4	0.7239
Headache	6	3.8	2	1.4	0.1902
Heat/Cold Exposed	5	3.2	3	2.1	0.5534
Injury	31	19.9	20	14.0	0.1765
Medication Refill	2	1.3	5	3.5	0.2059
Mental Health	1	0.6	1	0.7	0.9508
Nausea/Vomit	4	2.6	5	3.5	0.6374
Other	86	55.1	82	57.3	0.9508

Conclusions

The majority of Hurricane Katrina evacuees were sheltered in areas not covered by SS, thus data from the areas of largest evacuee concentration are not represented. We are seeking retrospective data from hospital-based EDs in these areas and are in the process of enrolling them in GA's SS system to perform a more complete analysis of these data.

This study demonstrates a novel use for ED-based SS. The increase in ED visits for medication refills and the family clusters identified likely indicate the use of EDs as primary care sources. While these analyses were performed retrospectively, the methods could be easily adapted to monitor the data prospectively in order to evaluate health seeking behavior and ED impact of evacuees from both natural and man-made disasters as the event unfolds.

References

[1] NOAA, Hurricane Katrina forecast timeline; http://commerce.senate.gov/pdf/Katrina_NOAA_Timeline.pdf. Accessed: May 22, 2006.

[2] U.S. Census Bureau; Census 200; http://www.census.gov/main/www/cen2000.html. Accessed: May 10, 2006.

[3] Hutwagner L, Thompson W, Seeman GM, Treadwell T, The bioterrorism preparedness response early aberration reporting system (EARS), J Urban Health. 2003 Jun:80(2 Suppl 1):i89-96.

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