

Syndromic Surveillance of Emergency Department Chief Complaints post-Hurricane Wilma, Broward County, Florida 2005

Aaron Kite-Powell, M.S., John Livengood, M.D., MPhil.

Epidemiology Section, Broward County Health Department, Florida Department of Health

OBJECTIVE

We used the syndromic surveillance system ESSENCE (Electronic Surveillance System for the Early Notification of Community-based Epidemics) to describe the morbidity after Hurricane Wilma in Broward County, Florida.

BACKGROUND

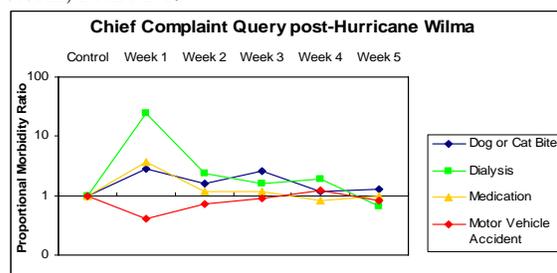
On October 24, 2005, Hurricane Wilma made landfall on the southwest coast of Florida as a category 3 storm. The storm moved toward the northeast and passed through Palm Beach and Broward Counties before entering the Atlantic Ocean. Hurricane force winds and rain caused extensive damage to electrical infrastructure and traffic lights, and temporarily displaced thousands of residents. Power outages in Broward County affected over 90% of its 1.8 million residents, with some outages lasting >2 weeks. Boil water notices were declared for much of the county. Acute care hospitals remained open during this time, although services provided by health care providers in other settings were interrupted due to structural damage and power outages.

METHODS

Daily surveillance of chief complaint data from 5 Broward County hospital emergency departments was established since August 2005. ESSENCE automatically codes the chief complaints into syndrome categories, and allows free text querying of chief complaint data. A retrospective analysis of syndrome categories and specific chief complaints was conducted using the 5 weeks prior to Hurricane Wilma (9/19/05 – 10/23/05) as a control period, and the 5 weeks post-Wilma (10/24/05 – 11/27/05) as the exposure period. There was no interruption in data flow during this time. A total of 48,022 records were accessed. The syndrome categories analyzed include gastrointestinal illness, respiratory illness, and rash illness. Specific queries were conducted to quantify chief complaints for animal bites, dialysis needs, medication refills, and motor vehicle accidents (MVA). Measures of disease (syndrome) frequency and effect measures (proportional morbidity ratios or PMR) were calculated for crude data, and for data stratified by week of exposure, age, and gender. Data management and analysis was conducted using MS Excel, SPSS v.11, and EpiInfo v.3.3.2.

RESULTS

The gastrointestinal and rash illness categories showed a weak negative association during the 5 weeks post-Hurricane Wilma, PMR 0.83(95%CI 0.79-0.87) and PMR 0.78(95%CI 0.67-0.91), respectively. Respiratory illness ED visits showed a weak positive association in the first week post-storm, PMR 1.19



(95%CI 1.10-1.30). Specific chief complaint queries for “dog or cat bite”, “dialysis”, and “medication” show moderate to strong positive associations during the first week post-storm, PMR 2.87(95%CI 1.86-4.42), PMR 24.74(95%CI 14.37-42.58) and, PMR 3.67 (95%CI 2.91-4.62) respectively. Visits for MVA shows a moderate negative association for the first 2 weeks after Hurricane Wilma, PMR 0.40(95%CI 0.30-0.52) and PMR 0.73 (95%CI 0.58-0.91), and a subsequent weak positive association by the 4th week post-storm, PMR 1.25(95%CI 1.04-1.50).

CONCLUSIONS

Syndromic surveillance data suggests that the proportional morbidity ratio associated with gastrointestinal and rash illness decreased in the 5 weeks after Hurricane Wilma, and increased slightly in the respiratory illness category in the first week post-storm. While most traffic signals were broken, decreased traffic volume in the 2 weeks post-storm may account for the reduction in injuries related to MVA. Animal bite related chief complaints increased in the week after Hurricane Wilma. ED visits associated with the need for dialysis increased significantly during the first week after Hurricane Wilma, suggesting community dialysis centers were inaccessible to the public. Requests related to medication refills also increased during the first week, highlighting the need to communicate the importance of keeping extra medication on hand in the event of disasters.