Disaster Surveillance Revisited: Passive, Active and Electronic Syndromic Surveillance During Hurricane Katrina, New Orleans, LA – 2005

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Objective

This paper describes the public health surveillance response to hurricane Katrina in New Orleans and surrounding Parishes; particularly illustrating the methods, results, and lessons learned for implementing passive, active and electronic syndromic surveillance systems during a major disaster.

Background

Surveillance strategies following major natural disasters have varied widely with respect to methods used to collect and analyze data. Following Hurricane Katrina, public health concerns included infectious disease outbreaks, injuries, mental health and exacerbation of preexisting chronic conditions resulting from unprecedented population displacement and disruption of public health services and health-care infrastructure (1, 2).

Methods

Three surveillance methods were implemented in the New Orleans area in response to hurricane Katrina. A statewide passive emergency department (ED) reporting system implemented 3 days prior to landfall on August 28 collected daily ED census and estimated aggregate case-loads for potentially infectious illnesses and injuries. Active surveillance for injuries and illnesses using paper-based case report forms was rapidly implemented on September 9 (through October 15) in all functioning hospital EDs, community clinics, Disaster Medical Assistance Teams (DMAT) and temporary acute care facilities. Electronic ED-based syndromic surveillance was later implemented on October 17 for sustainable long-tern surveillance.

Results

Passive surveillance (14 to 20 EDs per day) identified a significant spike in ED census peaking on day 3 following hurricane Katrina landfall; and a consistently declining trend during the next 4 weeks to below long-term baselines. Through active surveillance, a total of 24,950 case report forms were collected and analyzed from 29 facilities (3, 4). Potential infectious diseases accounted for 16%, injuries (e.g., MVA, trauma, falls) represented 26%, and exacerbation of chronic illness (e.g., asthma, COPD) and medication refills accounted for the greatest percentage of healthcare visits (33%) by residents and relief workers. No significant outbreaks were identified through active surveillance; however respiratory and rash illness syndrome clusters were investigated among relief workers (5). Electronic ED-based syndromic surveillance replaced active surveillance system on October 17 in six hospitals.

Conclusions

Three surveillance systems were implemented in New Orleans following hurricane Katrina, each highlighting strengths and limitations. The number of hospitals reporting through passive ED surveillance varied daily, which introduced bias and limited interpretation of census data. Although resource intensive, operation of paper-based active surveillance was useful in providing timely patient-specific information on suspected illnesses, mechanisms of injury, and unmet needs of persons with chronic diseases or other conditions. However, analysis of surveillance forms was limited by missing data (~50% demographics, ~35% clinical and epidemiologic data). Several factors prevented earlier implementation of electronic syndromic surveillance: power outages, hospital IT staff shortage, large proportion of acute care facilities without electronic records, and need for specific etiologic information. In an effort to redefine and improve disaster surveillance, CDC has initiated a workgroup with federal (National Disaster Medical Service, American Red Cross), State and local partners with the goal to develop and evaluate standardized materials for data collection and analysis during future major disasters.

References

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