

LETTER

Looking back at hurricane Katrina: lessons for 2006 and beyond

In 2005, for the first time in memory, the National Weather Service ran through an entire list of alphabetized proper names and resorted to naming hurricanes after Greek letters. All told, there were a record 28 tropical and subtropical storms formed, of which a record 15 became hurricanes. Two of the 2005 season's hurricanes, Katrina and Wilma, were among the top three most costly hurricanes in the history of American insurance. But that's counting only property. Epidemiology has suffered losses too: priceless cohorts were literally scattered to the winds by hurricane Katrina. The Bogalusa Heart Study, a longitudinal community study, committed to understanding the early natural history of arteriosclerosis from childhood to adulthood was a cohort now reaching early middle age; the Chronic Renal Insufficiency Cohort Study (CRICS), a 7-year prospective, multiethnic, multiracial study of approximately 3,000 patients, and countless other smaller research projects lost not only access to study participants but in some instances precious data and archived specimens. Counting is a specialty of epidemiology, and although the role of epidemiologists in immediate disaster relief and its aftermath is often invisible, in reality the act of counting both before and after a disaster is both critical and necessary.

Counting is not easy. Many counts of lives lost, persons displaced, and property damaged will be disputed now and into the future – because they include only those readily counted. Complicating matters is that not everyone wants to be counted, because of fear of deportation, stigma, mental illness, or other reasons. Moreover, simple counts are deceiving. Denominators matter. A lot. For example, we know that many elderly people housed in the Superdome and Convention Center died, but to this day we still have no idea if the proportion of elderly dying at the Superdome was higher or lower than the proportion dying among elderly choosing to or forced to remain in their homes.

Counting requires long-term commitment. The receding floodwaters in the Gulf Coast included potential pollutants as well as pathogenic bacteria and viruses. Millions of dollars have been spent trying to assess if there were adverse effects, and in litigation, following previous events where water, soil, or foodstuffs were contaminated. As New Orleans becomes re-populated, we will need to know who remained, who left and returned and when, and who left and settled

elsewhere – if we hope to determine if there were long-term adverse health effects from the storm and flooding. We will need to measure a range of outcomes, mental and physical, as well as the timing, duration, and intensity of exposures, not only to pollutants, but also to the emotional trauma of the storm's threat to life and livelihood. While there may be some short-term effect from pollutants, as we learned from Bhopal, 9/11 and other disasters, a primary impact in both the short- and long-term is often mental health. Mental health can be affected among both those directly impacted and those repeatedly exposed to events via the media. Understanding these complex associations is critical for preventing the devastating impact of disasters, and an essential component of our preparation for and response to future disasters.

Counting is costly. It uses time and resources that might be put into immediate health care and the rebuilding effort, or to prepare for future hurricane seasons. However, the opportunity costs of obtaining proper count both before and after disaster strikes is crucial for current and future planning, allocation of resources, and laying the groundwork for compassionate follow-up with appropriate intervention. We have now learned how many elderly were left to die in nursing homes while they waited for transport – even though each nursing home was required by law to have transportation in place for evacuation. No one counted how many transport companies existed or if the system might easily overload (as it did). Disaster relief coordinators were apparently unaware of the existence of frail and ill trapped in nursing homes and hospitals, and focused efforts on transporting the generally healthier, but more visible group taking refuge in the Super Dome. The numbers of elderly receiving in-home care that were left stranded in their homes will probably never be accurately known.

Counting enumerates those factors that break down in disaster planning and response. In the short-term, such factors include the number of shelters, the amount of water and ice needed, the number of nearby acute hospital beds required. In the longer-term, the number and duration of mobile housing units, classroom spaces, and counselors can and should be quantified. Counting in this case can help to model and potentially prevent past errors from recurring.

Katrina resulted in human loss that exceeded our imagination. The losses go beyond counting, as numbers of deaths, homes destroyed, and jobs and businesses lost cannot capture the irreplaceable: lives cut short, health and quality of life compromised, a way of life permanently lost and cultures permanently altered. Individual stories capture these losses, but not the magnitude of the challenges that face us. The fallout from hurricane Katrina continues, and commingles with the fallout from hurricanes Rita, Wilma and Beta. Our governments cannot afford a miscount. They need the infrastructure and epidemiologic expertise to assess not only the 2005 hurricane season's present and future impact, but that of future disasters if they are to respond adequately and limit the toll on human life and health now and in the future.

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