

# WORKING P A P E R

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## Lessons Learned from the State and Local Public Health Response to Hurricane Katrina

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## **SUMMARY**

Hurricane Katrina was one of the largest and most costly natural disasters in U.S. history, and its effects will be felt for many years to come. Though there were many compelling stories of individual acts of heroism in response to the disaster, it is widely agreed that most aspects of the response, including the public health and medical response, fell short of expectations. Hurricane Katrina tested the public health system in terms of its emergency response role; a number of problem areas were exposed in the process. It is important to examine the public health response to Hurricane Katrina to determine what worked well and what did not, so that public health agencies can learn from its experiences and improve its preparedness before another disaster (whether natural or manmade) strikes.

This study seeks to contribute to this effort by collecting and synthesizing the public health lessons learned from the response to Hurricane Katrina. We focused our efforts on areas that we knew were tested by Hurricane Katrina and around which significant problems arose, including the coordination of the medical workforce, the coordination of medical supplies and equipment, communications, and caring for special needs populations. Our findings are based on a review of relevant documents such as government reports, newspaper articles, and national and state-level emergency response plans, as well as a series of interviews with public health officials and other governmental and emergency management personnel in Louisiana, Mississippi, Georgia, Texas, and Florida.

### **THE CHANGING ROLE OF PUBLIC HEALTH**

Hurricane Katrina revealed new challenges for the public health system with respect to its roles and responsibilities in emergency response. Traditionally, public health agencies have had responsibility for three broad types of functions: addressing population health issues by collecting and analyzing data on the health needs of a community (assessment), implementing the necessary action steps to meet the community's health needs through direct service provision and/or regulation (assurance), and advocating for the use of evidence-based research in the implementation of public policy that promotes the public's health (policy development).

The heightened attention in the United States toward emergent infectious disease, the threat of bioterrorism, and the inevitability of natural disasters has placed new emphasis on how well emergency response is reflected and/or incorporated in these three public health functions. At the same time, public health agencies have been required to marshal resources and build competencies in new areas, including command and control in emergency response, use of protective equipment, flexible problem solving, and disaster communications.

### **There Remains a Lack of Consensus Regarding the Role of Public Health in an Emergency**

Our analysis found wide disagreement regarding the role of public health agencies in the provision of health care during an emergency. While it was clear to all that public health has the responsibility to *assure* that health care services are available in an emergency, there was disagreement over the extent to which public health agencies have the responsibility to *provide* that care. The majority of interviewees (cutting across public health, hospitals, emergency management, and other government agencies) felt that public health agencies do not have the skills or capacity to assume significant responsibility for providing direct health services. However, a sizeable minority argued that public health has an obligation to supply direct health services, and that this duty is expanded during an emergency response given the immeasurable need.

### **Incorporating Emergency Response Functions and Approaches into Public Health Has Reshaped the Field**

The experience of Hurricane Katrina represents a definitive milestone in post 9/11 preparedness in terms of the incorporation of emergency management in public health. All states are now using emergency management approaches such as the use of the Incident Command System (ICS). Public health leaders noted that the incorporation of emergency management into the role of public health has raised public health's visibility to the community, focused more attention on the assurance core function, and emphasized new partnerships with other emergency responders, the private sector, and the community as well.

At the same time, tensions remain between those who want public health to fully embrace emergency management approaches and those that are more reluctant. Public health leaders in states impacted by Katrina cautioned that a complete transformation of public health to the emergency management model might overshadow public health's community assessment skills (which emphasize careful and deliberate examination of an issue from all sides).

## **Public Health Role in Emergency Response Should Be Better Defined**

Our findings suggest that public health agencies need to work with the other agencies involved in public health emergency response to better define their respective roles in disaster response and develop a plan that institutionalizes these roles. In particular, agencies must coordinate with their response partners to specify how medical care services will be provided in an emergency and by whom. The experience of Katrina indicates that emergency management practices could be better integrated into traditional public health functions, and several characteristics of traditional public health work (e.g., ability to work in communities and use multidimensional approaches to assess need) could be more fully incorporated into emergency response planning and training.

## **LESSONS LEARNED FROM THE PUBLIC HEALTH RESPONSE TO HURRICANE KATRINA**

We now summarize key observations from our analyses of workforce, medical supplies and pharmaceuticals, communications, and special needs care.

### **Responsibility of Public Health in Hospitals and Nursing Homes with Workforce Issues Is Not Well Established**

In all the states we visited, there was an obvious need for additional health care personnel to assist with the patient surge in hospitals, the patient and evacuee volume moving through triage centers, the general shelter population's primary care needs, and the specialized health care needs of those in the special needs shelters. Maintaining a sufficient workforce was challenging because of the level of physical and emotional stress experienced by first responders.

The role of public health in addressing workforce issues is unclear. Other than providing regulatory oversight and managing its own clinics, public health has no designated role in managing the public or private health care workforce. During an emergency, the role of public health in this capacity is to *assure* that health and medical services are provided to the public, not necessarily to deliver acute health care services. Local and state public health departments' roles varied regarding care at triage sites and general mass care shelters in the aftermath of Hurricane Katrina (e.g., monitoring for infectious diseases, providing nurses to help staff the triage centers and shelter clinics, opening and staffing special needs shelters).

## **Coordination of Health Care Personnel Was Difficult in All Care Settings**

As news spread of Hurricane Katrina's devastation, many health care professionals volunteered their time and effort. However, public health lacked systems to coordinate volunteers and match their skills to sites' identified needs. The absence of an agreed-upon method for verifying the credentials and skills of the health care professionals was problematic.

## **Public Health Might Build on Its Traditional Roles to Assist in Addressing Workforce Issues**

In preparing for future emergency situations, it will be useful for public health practitioners to consider how it might use some of its traditional functions to assist other health care organizations in addressing workforce issues. For example, public health could apply its traditional responsibility of educating the public to improve the public's awareness of sheltering issues in a disaster. Information could be provided regarding appropriate shelters, which would likely relieve some of the hospital staffing burden that can occur when the public goes to the hospitals for shelter rather than the appropriate sites. As another example, public health could develop systems to match better volunteer personnel resources with identified needs.

## **There Were Problems in Managing Supply and Distribution of Pharmaceuticals and Medical Equipment**

Responsive medical support in the form of medical supplies and pharmaceuticals was crucial to enable health care providers to provide medical care to hurricane victims and evacuees. Interviewees noted that while supplies were delivered to the affected areas, there was no effective way to inventory and allocate them in efficient and equitable ways.

Supplies lacked medications and medical equipment required by people with special needs. Many patients with chronic medical problems either did not receive their medications in a timely fashion, or did not receive the exact or equivalent medication. A deficiency in oxygen supplies in some states caused serious problems for oxygen dependent evacuees and caused health department staff to spend substantial time and resources attempting to replenish oxygen supplies.

## **Public and Private Organizations' Efforts Lacked Coordination**

After the hurricane had passed, both public and private organizations provided medications and supplies to evacuees. The state of Florida had caches of supplies pre-positioned around the state. Many states relied upon the Strategic National Stockpile (SNS), although some reported

that many of the supplies in the SNS did not match their needs because it was configured for responses to a bioterrorist attack.

Private-sector companies, including large drug store chains, played important roles in addressing pharmaceutical shortfalls but did not have a clear picture of what supplies were needed. Public health agencies also had difficulties in getting the funds to reimburse private-sector companies in a timely fashion. In particular, interviewees felt the Stafford Act, the federal reimbursement mechanism for emergency situations, created unnecessary delays.

### **Better Planning Can Help Address Supply and Distribution Issues**

To expedite the delivery of medical supplies to storm-hit areas, public health agencies at the state and local level may, as part of their preparedness planning, want to pre-designate strategic areas for supplies and consider establishing advance arrangements with private suppliers. It will also be important for public health to 1) develop a comprehensive and rapid system to conduct a needs assessments and 2) provide a centralized means of receiving, inventorying, and allocating resources at the state level. Current reimbursement rules should be clarified as part of preparedness planning efforts.

### **Communication Within and Across Organizations Was Poor**

Some communications problems during Hurricane Katrina were due, not so much to technical failure on the part of the communications infrastructure, but to a lack of coordination between the relevant parties, whether within public health agencies or between public health and other public or private entities. For example, in some cases, one part of the health department did not know what another part was doing, leading to a duplication in tasks. In other cases, hospital administrators noted that they had received multiple visits by public health personnel asking them to fill out the same paperwork multiple times.

### **The Incident Command System Typically Facilitated Agency Communication**

One of the communications success stories arising from our analysis concerns the implementation of an Incident Command System (ICS) and the National Incident Management System (NIMS). Interviewees indicated that when personnel across agencies were familiar with ICS, the response ran more smoothly because people knew both their individual roles and the responsibilities of the agencies they represented. In addition, interviewees indicated that ICS provided a common language and process to all responders, so personnel could focus on decision making rather than trying to explain the process, thus saving time.

## **Public Health Requires Mixture of Communication Technologies, Better Planning**

Many of the communications problems that public health departments encountered during Hurricane Katrina can be overcome through improved planning and training. Interorganizational communications could be improved significantly if participating organizations know precisely who they will interact with during an emergency, know their respective roles and responsibilities, and know what to expect from each other. In particular, public health needs to incorporate non-traditional partners (e.g., the military, NGOs, private-sector organizations, and other government agencies, including mental health) into the planning process--and to do so at an early stage. On a technical level, an effective communications plan requires a mixture of communications technologies and techniques to ensure that when one method fails, another is available.

## **States Faced Challenges in Defining Special Needs Populations**

As has been widely reported, the evacuation and sheltering of special needs populations were put to the test by Hurricane Katrina. Individuals with special needs who live in the community (as opposed to nursing homes or assisted living facilities) require separate shelters, which in some states are the responsibility of the public health department. One underlying challenge for states is to establish criteria for identifying special needs populations, particularly during an emergency to ensure their prompt evacuation and to direct them to appropriate shelter arrangements. "Special needs" is a generic term that can be applied to a number of different disabled and elderly populations, as well as low-income populations, people with serious mental illness, people with intellectual or cognitive disabilities, people with sensory impairments (e.g., low vision, impaired hearing), and those with mobility problems or activity limitations. Also included may be those who rely on special equipment such as oxygen or wheelchairs, or those who lack transportation during a disaster.

Even in states with clear definitions of what constitutes a special need, finding those populations can be challenging, especially in the aftermath of a hurricane or other emergency. Many special needs populations do not have regular contact with the health care system and therefore may be overlooked. Florida allows special needs populations (defined in terms of medical needs) to pre-register, although most of these populations are not required to do so; state

and local officials noted that only a small portion of those who show up at special needs shelters were pre-registered.

### **Procuring Transport and Shelter for Community-Based Special Needs Populations Was Often Difficult**

Transportation of special needs populations became a serious issue in the aftermath of Hurricane Katrina. Individuals who were triaged to special needs shelters often lacked any means of getting to the shelter, to medical facilities for treatment, or doctors' appointments (once at the shelter). In some cases, transportation was also needed to move special needs populations from one shelter to another to manage overflow.

In each state we visited, public health had an important role in assuring that shelter was provided to special needs populations. However, the exact role of the public health department in setting up and operating the shelters differed across states. In Louisiana, for example, the Department of Social Services has responsibility for administering special needs shelters while the Department of Health and Hospitals is responsible for the medical care provided in the shelters. In Georgia, the Department of Public Health established a special needs shelter, but required help from local hospitals with staffing and supplies.

### **The Magnitude of the Need for Mental Health Services Was Unanticipated**

The need to provide mental health care in shelters posed another significant problem. Prior to the storm, many shelter operators had not anticipated the magnitude of the need for mental health care, nor had they realized the extent to which a disaster such as Katrina would itself cause mental health problems, transforming individuals who would otherwise be self-supporting and healthy into special needs populations. The states we visited generally did not have sufficient professional staff to care for mental health populations, and inpatient psychiatric beds were scarce.

### **Nursing Homes Faced Challenges in Evacuating, Finding Host Facilities**

Although the responsibility for nursing home populations normally falls to the nursing home administrators, public health occasionally played an important role in coordinating with administrators to ensure that nursing home residents received adequate care in the aftermath of

the storm. Many nursing home administrators, especially in Louisiana, faced challenges in deciding when to evacuate and in making plans for how the evacuation would be carried out.

Prior to and during Hurricane Katrina, many nursing homes in the affected areas experienced problems related to the poor execution of emergency plans. In some cases, facilities ignored their own emergency plans completely. In other cases, the impact of the storm was far greater than anticipated and existing resources were woefully inadequate. Nursing facilities that are part of a larger corporate chain often had corporate resources to support their decision to evacuate; however, the “mom and pop” owned facilities did not have the same resources available to them. There were also some reported problems in tracking nursing home residents after evacuation.

### **Public Health Needs to Lead Effort to Define Special Needs Populations**

Public health should continue to lead the effort to define special needs and develop methods for identifying individuals in the community meeting these criteria in advance, if possible. Public health also needs to clarify its role in providing staff and assuring transportation to shelters. States might consider establishing a team-based approach to staffing, under which multi-capability teams divide responsibilities across shifts. Public health might identify opportunities to partner with other organizations to provide transportation for special needs patients and ensure adequate security at shelters. Public health should also work to establish better relations with nursing homes and to ensure that they are involved in emergency response planning. Special effort also needs to be directed toward caring for mental health needs during an emergency.

## CONCLUSIONS AND RECOMMENDATIONS

Many of the breakdowns we observed in communications, the distribution of needed medical and other supplies, and serving special needs populations primarily occurred because there was considerable ambiguity regarding the respective roles of federal, state, and local public health agencies and other governmental institutions. This finding highlights the idea that coordination between all involved organizations must be improved to mount an effective response. In this regard, we were particularly struck by how public health's experience during Katrina raised issues related to its assurance function –i.e., linking people with services–and whether, and to what extent, health departments should engage in the direct provision of care during public health emergencies. This issue became especially critical in caring for special needs populations.

Many of the problems that arose in the response to Katrina could have been prevented or minimized if public health agencies had done a better job in educating the public beforehand on the individual's roles and responsibilities in emergency response. Stronger partnerships and improved planning among the partners, should also lead to the more effective use of volunteers.

We close with a brief set of recommendations that reflect largely cross-cutting concerns. We should point out that although these recommendations relate to the lessons learned from Hurricane Katrina and in some cases are specific to hurricane preparedness, most apply more broadly to other types of disasters, whether natural or manmade.

**Conduct Drills and Exercises with Multiple Levels of Government and Non-Governmental Partners.** A good way to address the need for clarifying roles and responsibilities for public health partners is for state and local health departments to make a greater effort to include a wider range of community partners in planning activities and exercises for both natural and manmade disasters. Exercises should cover a variety of scenarios, including natural disasters, especially those that might require evacuation of a large number of people. Moreover, it is important to conduct drills and exercises that test specific capabilities because they are much more likely than generic exercises to result in performance improvements.

**Explore Prospect of Extending ICS Training and Planning to Key Private Sector Partners.** The effectiveness of ICS in public health emergencies could be strengthened if private sector partners were included in the training and planning processes. Such partners include, but are not limited to, school officials, pharmacies and pharmaceutical companies,

medical equipment suppliers, long-term care facility operators, and representatives from large local businesses.

**Develop Systems for Quickly Matching Available Resources with Needs.** Effective matching requires coordination between state and local officials. At the local level, communities need to be able to quickly conduct a needs assessment, so they can request the specific set of resources that will serve their needs. At the state level, officials need to identify the resources that are available both within the state and from outside sources and determine how to best allocate those resources to address needs across the affected areas.

**Each Community Must Examine How it Can Increase Its Level of Public Health Preparedness.** To mount an effective and efficient response, officials at all levels of government, business owners, and individuals must all contribute their resources and ingenuity. Due to differences in how the public health system is organized across geographic areas, there is no single definition of the public health's role in an emergency. Rather, each community must bring the relevant organizations together to determine how to best allocate responsibility for the public health emergency response within their community. The outcome of such a meeting should be institutionalized through incorporation into the emergency response plan, the use of Memoranda of Understanding (MOUs) between organizations, and any other mechanism that will allow the community to hold organizations accountable for the roles and responsibilities they have agreed to take on.