

Medical care and evacuations suffered from a lack of advance preparations, inadequate communications, and difficulties coordinating efforts

Summary

Public health preparedness and medical assistance are critical components to any disaster response plan

Hurricane Katrina tested the nation's planning and preparedness for a major public health threat and highlighted the importance of strong cooperation and partnerships among health agencies at all levels of government. The threat of any type of disaster emphasizes the need for planning and practice. Public health preparedness and medical assistance are critical components to any disaster response plan — the faster the health community responds, the more quickly control strategies can be developed and appropriate treatments can be identified. And the faster human suffering is diminished.

The annual hurricane season is a continuous challenge to public health infrastructures and a strain on resources. As seen in the preparation for and response to Katrina, medical personnel, supplies, and equipment were in constant need in the Gulf coast region. Despite deficiencies in coordination, communication, and capacity, public health and medical support services

effectively treated a massive and overwhelming evacuee population. Federalized teams of medical first responders were deployed to the affected region to provide assistance. Millions of dollars worth of medical supplies and assets were consumed. Some Department of Health and Human Services (HHS) assets, like the Federal Medical Shelters, had never been used or tested prior to Katrina but were deployed and were, for the most part, considered effective.

Despite difficulties, the medical assistance and response to Hurricane Katrina was a success. Thousands of lives were saved because of the hard work and enduring efforts of public health officials and medical volunteers. Poor planning and preparedness, however, were also too big a part of the story, resulting in delays and shortages of resources, and loss of life in the region.

This chapter outlines what medical personnel and supplies were pre-positioned, and deployed post-landfall, to the affected area and how those assets were utilized. It explains the plans in place prior to Hurricane Katrina for health care facilities and shelters. The findings in this chapter conclude several deficiencies in public health and medical response plans exist at all levels of government and within medical care facilities. Ultimately, better planning and initiative would have resulted in a more proactive, coordinated, efficient, and effective response.

Personnel

HHS and the Department of Homeland Security (DHS) have the capabilities to mobilize and deploy teams of medical personnel to disaster areas. HHS controls the Public Health Service Commissioned Corps, the Medical Reserves Corps, and personnel from its agencies such as the Centers for Disease Control and Prevention (CDC), National Institutes of Health, Substance Abuse and Mental Health Services Administration, and the Food and Drug Administration. DHS, specifically FEMA, has direct control over the National Disaster Medical System (NDMS), which supplies and organizes teams of medical personnel in each state who stand ready to deploy at any moment. Unfortunately, limited numbers of personnel were pre-positioned prior to landfall, and most deployments were delayed until after the storm hit and the magnitude of devastation was realized.



FEMA

Supplies

In addition to medical personnel, HHS, FEMA, and the Department of Defense (DOD) have medical supplies at their disposal to respond to a public health emergency. HHS has control over the Strategic National Stockpile (SNS), a national repository of pharmaceuticals and medical supplies. NDMS personnel teams are always accompanied by large caches of supplies and drugs. DOD has a mobile medical unit capability as well. Limited amounts of supplies, however, were staged in the region prior to landfall. Several officials argued the magnitude of the storm's devastation could not have been predicted, and the amount of supplies needed was unknown until the fog cleared. Despite that argument, more supplies and personnel could have been pre-positioned prior to landfall.



Evacuation plans, communication, and coordination must be executed well for effective response

During the days following Hurricane Katrina, around the clock media coverage of patients and staff trapped in New Orleans hospitals inundated television screens across the country. The nation watched in horror. How long would it take for evacuations to begin? And why had these hospitals not evacuated before the storm?

The Select Committee focused part of its medical investigation on these questions, as well as the overarching issues of impaired communications and lack of coordination. The Select Committee acknowledges this chapter does not tell the story of every hospital devastated

by Hurricane Katrina. Nor does it include every detail of the communications and coordination difficulties which impeded the medical response.

Rather, this chapter provides findings based on an in-depth examination of specific plans in place before the storm, and a timeline of events that *actually* took place after the storm. Similarly, the Select Committee recognizes this section of the report focuses on the evacuations of New Orleans medical facilities in particular. Because New Orleans hospitals and facilities experienced the most complete failure of equipment and communications, and because the need to evacuate New Orleans hospital patients was so extreme, the Select Committee chose these institutions as its focal point.

Evacuations

As it stands, Louisiana hospitals and nursing homes are responsible for having and implementing their own emergency evacuation plans. The Louisiana Hospital Association (LHA) does not provide specific emergency response or evacuation guidance and said, with respect to protecting patients and staff, the primary priority for all hospitals is to “shelter in place” versus evacuate. Hospitals are, however, expected to comply with requirements set forth by the Joint Commission on Accreditation of Healthcare Organizations.²

The majority of hospital CEOs, as well as state and local medical personnel with whom the Select Committee met, cited time and money as two key factors influencing their decision about whether to evacuate patients from a shelter or medical facility prior to a hurricane. Time is critical given that the majority of hospital and Department of Veterans Affairs Medical Center (VAMC) plans call for evacuation decisions to be made anywhere from 36 to 72 hours in advance of a hurricane's projected landfall — hospitalized patients require a significant amount of time and staff to be moved safely. In the case of Hurricane Katrina, the then Methodist Hospital CEO, Larry Graham, said when he realized Hurricane Katrina was going to hit New Orleans, there simply was not enough time to evacuate patients.

The second much-discussed factor, cost, is perhaps even more critical to the decision. Expenses for evacuating a hospital are astronomical, and in the case of for-profit hospitals, these costs are not reimbursable by FEMA. In

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most cases hospitals say that given their cost/risk analyses, it makes the most economic sense to ride out a storm and protect patients within the hospital rather than evacuate them. For example, going to Code Grey alone (without factoring in evacuation expenses), costs Louisiana State University's hospitals \$600,000 per day.³ Many members of the New Orleans medical community likewise made the point, had Hurricane Katrina not resulted in such catastrophic flooding, their facilities would have been prepared, and their decision not to evacuate patients would have been the most prudent course of action. With the factors of time and money in mind, this chapter seeks to understand evacuation plans in place prior to Katrina, and preparedness levels of hospitals and the government to fully evacuate New Orleans medical facilities.

Communication and Coordination

Medical responders and coordinating officers from the government, hospitals, and private entities, cited non-existent or limited communication capabilities as a primary obstacle to their response. Emergency plans in place prior to Hurricane Katrina did not prevent oversights and confusion in procedures for ensuring functional and sufficient communications equipment in the event of a disaster. A comparison of the VAMC plans for Louisiana, Mississippi, and Alabama, for example, demonstrates they are not standardized — some pieces of VAMCs' communications plans do clearly outline the who, what, where, and when of keeping communication systems operating, while other VAMC plans leave many questions unanswered. Most VAMC and hospital emergency plans, reviewed by Select Committee staff do not have one separate section devoted to communications preparation.

The LHA and its hospitals rely on multiple phone service providers, and all LHA hospitals rely on an emergency two-way radio such as Hospital Emergency Area Radio (HEAR) or 800 MHz radio.⁴ This chapter describes how VAMC and hospital emergency plans address emergency communications and equipment, as well as exactly how such plans and equipment failed medical responders when they most needed it.

One of the most common and pervasive themes in the response to Hurricane Katrina has been a systematic failure of communications at the local, state, and federal levels — a failure that hindered initiative. The accounts of New Orleans medical facilities and special needs shelters are no exception, underscoring how failed communications with the outside threatened the safety of medical staff and the lives of their patients. It was difficult to ascertain a clear timeline of communication capabilities and failures for medical first responders and personnel. Institutions did not have time to collect information for hourly or even daily reports of how communication equipment and systems were working or not. Medical responders and personnel simply did not have adequate communications capabilities immediately following the hurricane. The majority of cell phones were rendered inoperable because they could not be recharged. Satellite communications were unreliable, and the distribution of satellite phones appeared insufficient.

Government agencies also encountered problems with coordination due to red tape and general confusion over mission assignments, deployments, and command structure. On a large scale, command structure presented problems when HHS, the coordinating agency for Emergency Support Function 8 (ESF-8), and NDMS, the system that houses most of the resources needed for a medical response, did not share an understanding of who controlled NDMS during the emergency. Confusion resulted when these two entities were operating separately, albeit with efforts to coordinate with each other. On a smaller scale, e-mails from first responders and medical personnel immediately following the storm reflect coordination problems. Misunderstandings about deployment orders and mission assignments resulted in streams of e-mails expressing uncertainties and frustrations.

ESF-8 Background

HHS is the "principal agency for protecting the health of all Americans and providing essential human services, especially for those who are least able to help

themselves.”⁵ As such, HHS plays a role in the emergency management process. Under the National Response Plan (NRP), ESF-8 provides for the federal government to augment state and local resources and assist in response. Upon activation, ESF-8 “provides the mechanism for coordinated federal assistance to supplement state, local, and tribal resources in response to public health and medical care needs (to include veterinary and/or animal health issues when appropriate) for potential or actual Incidents of National Significance and/or during a developing potential health and medical situation.”⁶

The Assistant Secretary for Public Health Emergency Preparedness serves on behalf of the Secretary to coordinate the HHS preparation for, response to, and efforts to prevent public health and medical emergencies or disasters. ESF-8 is tasked with the assessment of public health and medical needs, including behavioral health, conducting public health surveillance, and the provision and deployment of medical care personnel and medical equipment and supplies.⁷

As the designated primary agency for ESF-8, HHS is responsible for:

- Orchestrating federal support within their functional area for an affected state;
- Providing staff for the operations functions at fixed and field facilities;
- Notifying and requesting assistance from support agencies;
- Managing mission assignments and coordinating with support agencies, as well as appropriate state agencies;
- Working with appropriate private-sector organizations to maximize use of all available resources;
- Supporting and keeping other ESFs and organizational elements informed of ESF operational priorities and activities;
- Executing contracts and procuring goods and services as needed;
- Ensuring financial and property accountability for ESF activities;
- Planning for short-term and long-term incident management and recovery operations; and
- Maintaining trained personnel to support interagency emergency response and support teams.⁸

While HHS has a number of internal assets to supplement state, local, and tribal government entities,

the NRP lists a number of additional external assets for HHS to use in coordinating the federal response. Support agencies under ESF-8 include DHS (FEMA and NDMS), DOD, VA, and the Department of Transportation (DOT).

Finding: Deployment of medical personnel was reactive, not proactive

Federalized teams were deployed and provided assistance in several locations after landfall

Thousands of people in the Gulf region were treated and hundreds of lives were saved due to the services provided by medical personnel in response to Hurricane Katrina. However, with few medical personnel teams pre-positioned prior to landfall, public health officials scrambled to mobilize and deploy personnel teams after the storm hit the Gulf coast. As a result, medical assistance in some areas was unnecessarily delayed by hours, even days. Personnel and supplies are readily available to decision-makers. With a few exceptions, the deployment of medical personnel was reactive, not proactive as most assets were not utilized until after the need was apparent. Ultimately, public health and medical support services were effectively but inefficiently delivered. Below is a comprehensive assessment of when and where medical personnel were deployed in the Gulf coast region to provide medical treatment and care.





FEMA

NDMS

FEMA is home to the NDMS. The mission of NDMS is to maintain a national capability to deliver quality medical care to the victims and responders of a domestic disaster.⁹ NDMS has medical, mortuary, and veterinarian assistance teams located around the country. These specialized teams include:

- 45 Disaster Medical Assistance Teams (DMATs), groups of professional and paraprofessional medical personnel capable of providing medical care following disasters;
- 11 Disaster Mortuary Operational Response Teams (DMORTs), which consist of private citizens with specialized training and experience to help in the recovery, identification and processing of deceased victims;
- Four National Medical Response Teams, to deal with the medical consequences of incidents potentially involving chemical, biological or nuclear materials;
- National Pharmacy Response Teams and National Nurse Response Teams, which include pharmacists and nurses to assist in mass-dispensing of medications during disasters along with mass vaccination campaigns.
- Five Veterinary Medical Assistance Teams, clinical veterinarians, pathologists, animal health technicians, microbiologists and others who assist animal disaster victims and provide care to search dogs; and
- Three International Medical Surgical Response Teams, highly specialized teams, trained and equipped to establish free standing field surgical facilities anywhere in the world.¹⁰

Fully operational DMATs have the ability to triage and treat up to 250 patients per day for up to three days without resupply.¹¹ Within four hours of alert status,

DMATs should be able to field a full 35-person roster. Within six hours after activation, DMATs should be deployment ready.¹²

Before Hurricane Katrina made landfall, NDMS only staged nine of its 45 DMATs in the Gulf coast region.¹³ Three DMATs and a Management Support Team were pre-positioned in each of the following locations: Anniston, Alabama, Memphis, Tennessee, and Houston, Texas. According to FEMA officials, the Superdome in New Orleans was the first NDMS assignment because it was a designated special needs shelter.¹⁴ DMAT Oklahoma 1 (OK-1 DMAT) was pre-staged in Houston, Texas on August 27 in anticipation of the storm. OK-1 DMAT efforts will be discussed more thoroughly in a later section of this chapter. In addition to OK-1 DMAT, other teams at the Superdome included NM-1, CA-6, and RI-1.

WA-1 DMAT from Washington was one of the few teams activated and deployed prior to landfall. It was staged in Houston and was poised to move to its mission assignment post-landfall, which ended up being Louis Armstrong International Airport in New Orleans (New Orleans Airport).¹⁵

FEMA activated OR-2 DMAT from Oregon on August 30 and immediately began treating patients when the team arrived at the New Orleans Airport on the afternoon of September 1.¹⁶ As previously mentioned, every DMAT includes a large cache of medical supplies and equipment. It is much easier to move personnel than supplies. Although the OR-2 DMAT's cache left Portland on August 31, it took almost five days for the three trucks of supplies to reach the airport.

By August 31, three DMATs, WA-1, CA-4, and TX-4, had arrived at the New Orleans Airport, where evacuated patients were being received.¹⁷ Eventually, eight DMATs would be stationed there to help provide medical care during the patient movement



FEMA

operations in New Orleans.¹⁸ The medical treatment provided and specific actions taken by the DMATs operating at the airport will be discussed in a later section of this chapter.

With Mississippi's hospital infrastructure decimated after Hurricane Katrina, nine DMATs and seven DMAT Strike Teams were sent to the state to provide medical care and augment the remaining functioning hospitals.¹⁹ Mississippi's State Health Officer, Dr. Brian W. Amy, testified that, "through coordination with the National Disaster Medical System, we positioned DMAT teams at every affected hospital and Strike teams at overflow hospitals in the affected areas. Of the 17,649 reported injuries, DMAT teams treated 15,500 patients in the initial days after landfall."²⁰



FEMA

In general, at most locations DMATs were deployed, the teams were met with overwhelming demand for patient assessment and treatment. Many of the teams operated under extreme fatigue with limited medical supplies, inadequate amounts of food and water, intermittent electricity, and no air-conditioning.

DMORTs, teams of private citizens with specialized training and experience to help in the recovery, identification and processing of deceased victims, were sent to the Gulf coast to assist in the recovery process of dead bodies. A standard DMORT team is comprised of 31 medical and forensic volunteer personnel with specific training in victim identification, mortuary services, and forensic pathology and anthropology methods. DMORTs include a combination of medical examiners, coroners, pathologists, forensic anthropologists, medical records, fingerprint technicians, forensic odontologists, dental assistants, radiologists, funeral directors, mental health professionals, and support personnel.²¹ Fully operational DMORTs should be able to deploy within 24 hours of notification.

With only two Portable Morgue Units (PMU) in

NDMS, one was sent to Louisiana and the other to Mississippi. PMUs are equipped to support DMORT services when no local morgue facilities are available. Each is manned by four DMORTs. FEMA did not have enough DMORTs and was forced to contract for additional personnel. HHS worked closely with DMORTs and FEMA by embedding Public Health Service (PHS) personnel in each team. A PHS senior officer and mental health officer were assigned to assist each DMORT.²²

On Thursday, September 1, 27 Region II DMORTs prepared to leave for Anniston, Alabama, a site designated as the eastern staging point for the DMORT response.²³

On Monday, September 5, one week after landfall, HHS Assistant Secretary for Public Health Emergency Preparedness Stewart



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Simonson requested "ample mobile mortuary services throughout the affected region."²⁴ An order for 200 mobile mortuary trucks was issued, with 130 designated to Louisiana and 70 to be delivered to Mississippi.²⁵ By the next day, mortuary services were being established in St. Gabriel, Louisiana with 96 personnel.²⁶ FEMA and Louisiana collaborated on drafting a body recovery plan which required the approval of then FEMA Director Michael Brown and Louisiana's newly appointed state medical examiner.²⁷ In Mississippi, mortuary services were established at the Naval Air Station in Gulfport. By September 6, one DMORT had set up facilities there.

U.S. Public Health Service Commissioned Corps

The U.S. Public Health Service Commissioned Corps, one of the seven uniformed services of the United States, is comprised of highly-trained and mobile health professionals who carry out programs to promote good health, understand and prevent disease and injury, assure safe and effective drugs and medical devices, deliver health services to federal beneficiaries, and supply health expertise in time of war or other national or international emergencies.

1,000 PHS Commissioned Corps Officers had been deployed to the region in support of the Hurricane Katrina medical response, making it the largest response in Corps history.

All Corps officers on deployment rosters were notified by the U.S. Surgeon General's office via e-mail on Saturday, August 27 that Hurricane Katrina could be a catastrophic event creating the need for medical assistance in the Gulf coast after landfall.²⁸ At the time of the e-mail, there was "no assessment of what will be needed at this point, but they will potentially ask the feds for medical, mental health, and pharmaceutical support, as well as EHOs, environmental and civil engineers to support the obvious needs for water, waste water and sewer, as well as infrastructure problems."²⁹ Commissioned Corps officers were asked to stand by and prepare for deployment as public health needs became apparent.

According to a briefing with U.S. Surgeon General, Vice Admiral Richard H. Carmona, PHS had pre-positioned 38 officers on Sunday, August 28 in Baton Rouge, Louisiana and Biloxi, Mississippi.³⁰ It was originally planned for the PHS officers to be stationed in New Orleans, but they were unable to get there before Hurricane Katrina made landfall. PHS officers were on the ground in New Orleans by late Monday, August 29.

Carmona suggested coordination with PHS, FEMA, and NDMS was difficult. HHS had trouble with tracking DMAT mission assignments and with staffing and communication. Despite the assignment of a Commissioned Corps officer liaison to FEMA to coordinate medical activities, coordination between the two agencies was lacking.³¹

PHS helped reestablish a public health infrastructure for some communities in the Gulf coast region. For example, when New Orleans Mayor Ray Nagin laid-off a majority of the city's public health employees, PHS helped to fill the gaps. "Public health services were never federalized—PHS just provided a federal presence. But the federal presence was absolutely stabilizing," Carmona said.³²

By September 9, more than 1,000 PHS Commissioned Corps officers had been deployed to the region in support of the Hurricane Katrina medical response, making it the largest response in Corps history. More officers were deployed in response to Katrina than after 9/11 and the anthrax postal incident in 2001.³³ Commissioned Corps officers supplemented several medical response assignments. They worked side-by-side with the DMATs at the New Orleans Airport; staffed the Federal Medical

Shelters at several locations in the Gulf coast; assisted with CDC activities; accompanied SNS assets; and helped provide mental health services to the affected region. In general, PHS is a valuable operational asset to HHS and was a critical component to the medical response to Hurricane Katrina. However, despite having the capability to mobilize Commissioned Corps officers at anytime, PHS failed to deploy a significant number of officers to the region prior to landfall.

Centers for Disease Control and Prevention

The CDC is a component of HHS that assists in carrying out its responsibilities for protecting the health and safety of all Americans and for providing essential human services, especially for those people who are least able to help themselves.³⁴ CDC controls the SNS, large quantities of medicine and medical supplies to protect the American public if there is a health emergency severe enough to cause local supplies to run out.

Before Hurricane Katrina made landfall, CDC activated the Emergency Operations Center (EOC) on August 25.³⁵ CDC personnel were on the ground in Louisiana with a Technical Advisory Response Unit (TARU) which accompanies SNS supplies.³⁶ In anticipation of the need to provide emergency medical services, 27 pallets³⁷ of medical supplies were pre-positioned on the ground prior to landfall.³⁸ On Sunday, August 28, these items were pulled from SNS with the mission assignment for some supplies to be delivered to the Superdome in New Orleans.³⁹ CDC also staffed and readied 12 teams of 20 people each to be deployed once the request from states for help was received.

CDC was responsible for deploying personnel and SNS assets, assisting state and local public health authorities with communicating food and water safety information, conducting disease surveillance, providing immunizations to displaced residents, and helping reestablish public health services in affected areas. Immediately following the hurricane, CDC's biggest concern was the risk of food-borne and water-borne illnesses.⁴⁰ CDC worked with the Louisiana Office of Public Health to assess reports on an outbreak of cholera and partnered with

the Environmental Protection Agency and local health departments to assess environmental risks of toxins and chemicals in the water and air. CDC also worked with DOD to provide mosquito-control resources in most of the affected areas. Teams were deployed to both Louisiana and Mississippi on a mosquito spray mission.

CDC provided access to Influenza, Tetanus-Diphtheria, Hepatitis A, and Hepatitis B vaccines to areas that were lacking them by coordinating the delivery, distribution, and administration of over three million doses of vaccine, with one million of the doses obtained from SNS.⁴¹ When New Orleans lost its public health department due to layoffs, CDC sent over 100 medical personnel to help reestablish services, conduct surveillance, and improve communication.⁴²

HHS Credentialed Volunteer Health Professionals

HHS designed a system that assists state and locals in verifying the credentials of volunteer healthcare workers. While stimulating the creation of over 900 medical teams, it also created confusion at the state level. Overall though, HHS was successful in mobilizing and credentialing medical professionals who volunteered in the Gulf coast following Hurricane Katrina. PHS set up a Katrina database to credential and verify medical professionals.



With the help of private companies, such as Kaiser Permanente, over 3,400 volunteers were processed and over 1,000 volunteers were deployed.⁴³ The database was linked to state

databases and a national databank, allowing PHS to use existing information to help verify credentials. HHS also established a website (<https://volunteer.hhs.gov>) and toll-free number (1-866-KATMEDI) to help identify health care professionals and relief personnel to assist in Katrina relief efforts.⁴⁴

The Medical Reserve Corps has a medical volunteer database where medical volunteers are pre-credentialed

and can be activated within 24 hours. Carmona oversees this database as well as the response of the volunteers HHS calls upon. HHS was able to link its database to state databases in order to confirm volunteer credentials. Both HHS and Carmona stressed the importance of volunteers linking up with pre-existing rescue teams rather than acting independently. The Surgeon General's office likewise had generated a separate database for people who wanted to volunteer supplies or equipment.

Setting up a mechanism to allow individual medical personnel to volunteer was a useful tool initiated by HHS. The database was such a success that by September 3, an internal e-mail from HHS indicated "VOLUNTEERS SHOULD NO LONGER BE REFERRED TO KATRINARECOVERY@HHS.GOV, they should be directed to the <https://volunteer.ccrf.hhs.gov/> and instructed to complete a volunteer application."⁴⁵ These credentialed volunteers heavily supplemented medical services in the Gulf coast region and were an important part of the medical response.

Substance Abuse and Mental Health Services Administration

As part of the public health and medical response, the Substance Abuse and Mental Health Services Administration (SAMHSA) mobilized personnel to support state mental health program directors in their efforts to conduct needs assessments, provide services, support ongoing administrative operations, access financial assistance and prepare for long-term assistance.⁴⁶ SAMHSA deployed Disaster Technical Assistance Center teams to provide information and supplement state and local disaster response planning, review disaster plans, conduct literature reviews, and offer mental health support services.⁴⁷ On Wednesday, September 7, SAMHSA created a "Crisis Hotline" to provide victims with 24 hour access to counseling and mental health resources.⁴⁸ Additionally, on Tuesday, September 13, HHS Secretary Micheal O. Leavitt announced \$600,000 in emergency grants to Louisiana, Alabama, Texas, and Mississippi to ensure mental health assessment and crisis counseling are available in areas affected by Hurricane Katrina.⁴⁹ The states have used the money to support clinical assessments and provide psychiatric and nursing services, medications, brief interventions, crisis case management, and short-term residential support.

Finding: Poor planning and pre-positioning of medical supplies and equipment led to delays and shortages

Equipment and supplies were in heavy demand immediately following the hurricane and could not be quickly replenished by state, local, and federal resources. As detailed in other sections of this report, most shelters, hospitals, and flooded areas were without electricity and adequate supplies of potable water and food for days after Katrina made landfall. With only nominal amounts of medical supplies pre-positioned by FEMA and HHS, a great deal of medical provisions had to be supplied after Katrina made landfall. In areas like New Orleans, it took days to respond to the catastrophe and deliver medical supplies to the Superdome and Convention Center.

The delays were a result of poor planning. Obviously, supplies should be protected during the storm and staged in safe and secure locations for easy access post-landfall. Despite being unable to predict the magnitude of devastation from the storm, more supplies and equipment should have been pre-positioned and accessible to state and local officials immediately following landfall. Below is a detailed assessment of the different medical supplies and equipment that were provided to the Gulf coast in response to Hurricane Katrina.

States were heavily dependent on CDC/SNS for medical supplies

SNS 12-Hour Push Packages

As previously stated, the SNS is a national repository of antibiotics, chemical antidotes, antitoxins, life-support medications, IV administration, airway maintenance supplies, and medical/surgical items.⁵⁰ The SNS has 12-hour Push Packages (Push Packs), caches of pharmaceuticals, antidotes, and medical supplies designed to provide response to a public health emergency within 12 hours. CDC estimates that each Push Pack costs \$6 million, weighs almost 50 tons, and includes over 100 different kinds of supplies.⁵¹ Push Packs are configured to be immediately loaded onto either trucks or commercial aircraft for the most rapid transportation. A Boeing 747 aircraft or seven tractor trailers are needed to move a

single Push Pack. A TARU accompanies the Push Pack to coordinate with state and local officials and ensure SNS assets are efficiently received and distributed upon arrival at the site.⁵² TARU is simply a team of technical advisors to supervise the transfer of Push Pack contents to the receiving state.



Push Packs can be deployed at the request of a governor and independently of the NRP. Mississippi was the only state to request a Push Pack from CDC. The Push Pack arrived in Mississippi on Friday, September 2, four days after Katrina passed through the state.⁵³ As Amy testified, “within 12 hours of a call and my official request, eight tractor-trailers rolled into Mississippi loaded with medical supplies for affected Mississippi hospitals.”⁵⁴ Push Packs were originally designed to respond to a bioterrorist attack, so they included items that were not relevant to treating the medical needs of Katrina evacuees. As a result, some of the Push Pack materials went unused. For this reason, CDC informed state and local officials they could request supplies and materials from SNS without requesting a full Push Pack.⁵⁵ Although Mississippi was the only state to request a Push Pack, other states still tapped resources and supplies from SNS. CDC figured out a way early on to prevent the waste of resources and ensure the most appropriate medical supplies were being allocated and delivered.

Also, CDC began to move towards more focused deliveries from existing inventories outside of SNS and acquired materials from private partners, as thousands of critical supplies were needed.⁵⁶ The Director for the Coordinating Office for Terrorism Preparedness and Emergency Response at CDC, Dr. Richard Besser, suggested creating Push Packs for major public health disruptions other than bioterrorism. This could ensure the

most appropriate medical supplies and equipment arrive to the affected area first and would also prevent the waste of supplies that are not relevant to certain public health emergencies.⁵⁷

Temporary medical operations staging areas were assembled and utilized

Federal Medical Shelters

Federal Medical Shelters (FMS) were a new component to the HHS hurricane response introduced following Katrina's landfall. These are rapidly deployed, minimal care medical kits capable of housing, triaging, and holding displaced patients. Each FMS is a 250-bed emergency shelter with a pharmaceutical suite, designed to provide care to patients for three days before the need to re-supply and re-stock materials.⁵⁸ An FMS is usually set up in a large space like an airport hanger or gymnasium with some provisions supplied by the SNS. FMS facilities are not designed for comprehensive community care needs; they are designed to offer last-resort care and support during situations in which normal, day-to-day operations are disrupted. FMS were developed to both augment hospitals and serve as quarantine stations.



Under the orders of Simonson, FMS began readying supplies and personnel on August 27, and one FMS was sent to Camp Beauregard, Louisiana on August 28.⁵⁹

From there, the FMS continued on to Louisiana State University (LSU) in Baton Rouge, and on the evening of Tuesday, August 30, the FMS at LSU began operations staffed by PHS commissioned Corps officers. FMS were also staged at Fort Polk Army Base in central Louisiana, Eglin Air Force Base near Pensacola, Florida, the Naval Air Station in Meridian, Mississippi, and the Mississippi Air National Guard Station in Jackson, Mississippi.⁶⁰ Additionally, the New Orleans Airport was the site of an FMS and helped provide acute medical care to evacuated patients from surrounding hospitals and the Superdome. The National Institutes of Health in Bethesda, Maryland set up a critical care facility for the sickest patients evacuated from the Gulf coast region.⁶¹

Essentially, these shelters were used to augment hospitals in the Gulf coast and help with the surge capacity of Katrina evacuees. Although Simonson thought the shelters were under-utilized in response to Katrina, he believed the exercise proved FMS are a valuable asset to be used in future public health emergencies. Despite this, only one was pre-positioned while most were readied and deployed in the days following landfall. Precious time was wasted because public health officials lacked initiative.

Prior to Katrina, FMS was only an idea on paper and had never been put into practice. The temporary medical shelters had never been tested in simulated drills or exercises, so it was initially unclear how FMS would perform and if their use would be effective.⁶² Simonson said he believed HHS held two exercises to test FMS last year. He did not believe them to have been extensive or to have simulated disaster-like conditions.⁶³ The tests were held simply to time setup of facilities and processes. Despite the opportunity to truly test FMS at two federally mandated exercises, one in April 2005 and the other held in 2003, HHS did not seize the opportunity to assess and evaluate them.⁶⁴

Expeditionary Medical Support Systems

The Air National Guard also supplied medical personnel and equipment to the Gulf coast region in response to Hurricane Katrina. Similar to FMS, Expeditionary Medical Support System's (EMEDS) mission is to provide front line, field hospital care in the event of a catastrophe or terrorist attack where local facilities are too overwhelmed to adequately treat patients.⁶⁵ EMEDS operate and function like brick and mortar hospitals and have operating rooms, dental, pharmacy and lab services, intensive care units, and other facilities and equipment. These mobile hospitals have a 25-bed capacity and can be set up and ready to receive patients within 24 hours.⁶⁶ Traditionally, EMEDS are primarily for military personnel but, in response to Katrina, EMEDS were utilized to provide medical treatment to thousands of civilian victims.



On Thursday, September 1, the Air Force deployed an EMEDS to provide medical assistance at the New Orleans Airport. Upon arrival, the EMEDS team set up and began

assisting the DMATs who had already established a make-shift facility.⁶⁷ At the New Orleans Airport EMEDS teams helped other government agencies and civilian medical teams provide treatment and health care to those individuals transported to the airport. EMEDS teams also assisted with aeromedical evacuations. According to Colonel Richard Bachman, who directed the Air Force's medical assistance in the Gulf region, "the EMEDS is to set up rapidly, treat, stabilize, and then air evacuate people out. It's a 25-bed hospital, but we took care of 2,500 people in two days, so the number of beds is essentially irrelevant, because we weren't holding them and providing long-term treatment...We never practiced hospital care in an airport terminal without tents or [having] equipment being overwhelmed by thousands of patients in the dark without air conditioning."⁶⁸ Despite the unfavorable conditions, EMEDS and other medical personnel stationed at the airport completed an enormous patient movement operation in a very brief window of time.

The Air Guard set up an additional mobile military hospital at the Convention Center to take the place of Charity Hospital and provide medical services to military personnel while other facilities are out of commission.⁶⁹ The Mississippi Air National Guard established an EMEDS to augment services of the badly damaged Hancock County Medical Center.⁷⁰ The EMEDS was set up in the parking lot of that medical center and treated 47 patients before it was demobilized in late September.

State Mobile Hospital Units

As one of the few self-contained mobile hospitals in the U.S., the Carolina MED-1 mobile hospital was federalized and deployed to Waveland, Mississippi. Carolina MED-1 has complete emergency room and operating room capabilities with 100 hospital beds and functions exactly like a brick and mortar hospital.⁷¹ It was staffed by a team of volunteers from the Carolina Medical Center, PHS officers, and other medical volunteers. Waveland was completely decimated by Katrina and was in desperate need of medical facilities and personnel to treat residents. In total, Carolina MED-1 treated almost 5,000 patients and is considered one of the success stories of the medical response to Hurricane Katrina. Amy described Carolina MED-1 as an "invaluable asset to Mississippi's most hard hit area in Hancock County."⁷²



On Friday, September 2, Simonson wrote an e-mail asking the state of Nevada to transport its mobile medical facility (NV-1) to the New Orleans Airport.⁷³ He intended NV-1 to serve as a federalized hospital facility to provide medical care. Upon arrival at the airport, though, NV-1 was told its assets were no longer needed and was eventually directed to Gulfport, Mississippi where it was set up with support staff from the Nevada Hospital Association, PHS officers, and volunteer health professionals.⁷⁴ When asked why he waited until September 2 to order NV-1 to New Orleans, Simonson recalled there was some confusion as to whether Mississippi had already requested use of NV-1.⁷⁵ Simonson said ultimately NV-1 was used in Mississippi and that it was difficult to initially assess where assets were needed most.⁷⁶ In total, NV-1 saw almost 500 patients by the end of September. Both of these mobile hospitals were considered extremely valuable assets to the public health response after Hurricane Katrina.

Finding: New Orleans was unprepared to provide evacuations and medical care for its special needs population and dialysis patients and Louisiana officials lacked a common definition of "special needs"

Defining "Special Needs"

New Orleans has the largest special needs population in Louisiana. But the Louisiana Medical Director and State Health Officer, Dr. Jimmy Guidry, and the Director of the New Orleans Health Department, Dr. Kevin Stephens, never offered a clear or consistent definition of "special needs." According to Guidry, special needs people are



FEMA

defined as not requiring hospital care, but not appropriate for a general population shelter either.⁷⁷ Stephens, on the other hand, indicated the state has a list outlining what criteria constitute a special needs patient. Among the most important, Stephens said, a patient with special needs is someone who requires intermittent electricity to sustain life.⁷⁸

In fact, the list to which Stephens referred says the state of Louisiana has one

set of criteria for classifying special needs persons, while Jefferson Parish has another.⁷⁹ The state defines Category I special needs persons as “patients who are acutely ill and need to be admitted to a hospital as a patient during an emergency evacuation of the area.” Jefferson Parish classifies Category I special needs people as “patients who do not yet need to be admitted, but whose condition will probably deteriorate during an evacuation.” These patients are to be taken to a trauma hospital. Aside from Jefferson Parish having a definition of Category I special needs that differs from the state’s definition, confusion also arises in determining whether Jefferson Parish’s criteria for Category II special needs people also applies to Louisiana. Category II is for “patients with limited needs and assistance who require special needs sheltering during an emergency evacuation of the area. These will be sent to non-trauma hospitals.” Again, it is unclear whether this category is specific to Jefferson Parish or if it applies to the entire state.

Additionally, the Office of Emergency Preparedness (OEP) Director for Plaquemines Parish, Jesse St. Amant, was adamant that nursing home patients are considered “special needs patients.”⁸⁰ Neither Guidry nor Stephens concurred, and nursing home patients are not listed within Louisiana or Jefferson Parish’s special needs categories.⁸¹

Stephens stated New Orleans does not keep a list to identify special needs persons in advance of an emergency.⁸² St. Amant, however, keeps a database of

Plaquemines Parish’s special needs patient population and interviews each patient about specific requirements for transportation, medications, and other special needs. He has pre-arranged contracts to address these needs and operates on an annual budget of approximately \$300,000.⁸³ Stephens said New Orleans uses statistics from the health care community (such as the number of patients on dialysis) to reach its estimate that New Orleans has 1,000 special needs persons. Interestingly, a September 6 EOC Report indicated the state estimated *dialysis patients alone* were greater than this figure, saying the “State projects approximately 1,200 dialysis patients.”⁸⁴ Additionally, the emergency coordinator in Jefferson Parish, which is an adjacent suburb of equivalent population to New Orleans, said they have a potential of 45,000 special needs patients—41,000 more patients than the estimate given by Stephens.⁸⁵

Sheltering and Evacuating Special Needs Patients

State officials from the Governor’s Office, the Department of Health and Hospitals (DHH), and the Department of Transportation and Development said all parishes, New Orleans included, were responsible for managing special needs evacuations.⁸⁶ New Orleans designated the Superdome as a special needs shelter, and Stephens said New Orleans’ plan focuses on transporting special needs people from their homes to the Superdome. Special needs patients were to be collected throughout neighborhoods, using Rapid Transit Administration buses, and taken to the Superdome — despite the fact New Orleans does not keep a list of such patients.⁸⁷



AP PHOTO/ERIC GAY

Guidry says the state bused 200 special needs people from the Superdome to LSU hospitals in Baton Rouge on Sunday before landfall.⁸⁸ According to state officials, the New Orleans plan never called for the use of school buses for evacuation, so in their opinion, criticisms about school buses lined up underwater and unused are unfair. Additionally, state officials say New Orleans never requested state assistance or buses to help with this effort (even though Guidry indicated the state did, in fact, assist in this manner).⁸⁹

At the federal level, FEMA Deputy Federal Coordinating Officer Scott Wells said he interpreted special needs to be anyone needing assistance, whether they were impoverished or medically disabled.⁹⁰ To his knowledge, the state and the parishes made no significant attempts to evacuate special needs persons, although he indicated there may have been efforts to shelter them. The need to shelter special needs people in the Superdome showed the state and city had not taken steps (to which they had agreed during the Hurricane Pam exercise) to coordinate the movement and sheltering of these people farther north, away from the Gulf, Wells said.⁹¹ The requirement for medical evacuations after the storm was an indication the pre-landfall evacuation was not successful.

Parish officials outside New Orleans also described their efforts to identify and evacuate special needs patients. According to the Plaquemines Parish sheriff, before the start of hurricane season, the parish solicits people to register if they have special needs for evacuation.⁹² For Katrina, school buses were used to pick up and move these special needs registrants to a shelter in Belle Chasse, Louisiana. According to the Jefferson Parish emergency management director, their emergency operations plan also includes provisions for special needs people. The parish conducts a triage by telephone to determine which people with special needs require shelter within a parish hospital. Those who qualify are given a password for admittance. For Hurricane Katrina, there were 12,000 such people identified and sheltered.⁹³

Dialysis Patients

Although dialysis patients were part of his definition of special needs persons, Stephens initially acknowledged the Superdome did not have the personnel, facilities, or supplies to provide dialysis.⁹⁴ Nor did it have food

appropriate for diabetics. He said although dialysis patients were discouraged from going to the Superdome for this reason, several went anyway. Stephens further stated dialysis patients were among the first patients evacuated by helicopter.

In a subsequent meeting, however, Stephens gave completely different information. He said New Orleans has an evacuation plan specifically designed for dialysis patients so they know the medical facility to which they are assigned during an emergency.⁹⁵ He contradicted his early statement (dialysis patients *were* present in the Superdome) when he told the Select Committee the city's evacuation planning worked virtually perfectly, and no dialysis patients went to the Superdome. To his knowledge, Stephens said all dialysis patients were evacuated to their pre-assigned medical facilities. Of interest, the definition of Category II special needs persons, mentioned above for Jefferson Parish and possibly the entire state, includes "kidney dialysis" patients.⁹⁶

The Superdome

Although Louisiana owns the Superdome, New Orleans runs it with assistance provided by the state, the Department of Health and Hospitals, and the Department of Social Services when needed.⁹⁷ The city is also responsible for drafting and implementing a plan for its use during an emergency.

Since 1998, New Orleans has used the Superdome to shelter citizens with special needs during hurricanes.⁹⁸ For Hurricane Isadore in 2002, supplies were pre-staged, and the facility was staffed for 400 patients. Despite these preparations, though, only 27 special needs patients were identified and treated. During Hurricane Ivan, in September 2004, the Superdome was again opened as a special needs shelter and received just 32 patients.⁹⁹ The small number of special needs patients at the Superdome during these two hurricanes gave New Orleans officials a false indication of how many patients to expect for Hurricane Katrina. As a result, the city was ill-prepared.



AP PHOTO/BILL HABER

The Superdome only contained enough personnel and supplies to care for approximately 1,000 people.

The city's plans call for the Superdome to house only special needs patients — not the general public.¹⁰⁰ For Hurricane Katrina, the special needs area was established in the southeast and southwest quadrant ballrooms, where some supplies were pre-positioned.¹⁰¹ According to Superdome and Sports Arena General Manager Glen Menard, the Superdome's only "pre-positioned" supplies were goods leftover from a July event which the city requested remain in place.¹⁰² Menard also said he placed two refrigerators and power generators in the southeast and southwest quadrants of the Superdome, which were designated as the medical care areas.

By the Sunday before landfall, over 400 special needs patients were evacuated to Baton Rouge using 10 para-transport vans and three city buses.¹⁰³ For the 8,000-10,000 people who remained in the Superdome, there were federal, state civilian, National Guard, and city medical personnel to provide care. But this contingent proved too small to provide care for the multitude of people who eventually sought refuge there. After the flooding, but before evacuation of the Superdome, it is estimated 23,000 people were sheltered there.¹⁰⁴

As the crowd grew, it became increasingly difficult for the facility to care for special needs patients — the Superdome only contained enough personnel and supplies to care for approximately 1,000 people.¹⁰⁵ Section 132, next to the Superdome's First Aid Station, was used for evacuees in need of general medical attention.¹⁰⁶ With severe overcrowding of evacuees and flooding from roof leaks, the rest of the crowd was moved to elevated bleachers. Menard said eventually the special needs patients were further evacuated from the Superdome to the Sports Arena.

DMAT OK-1 departed from LSU to the Superdome on the evening of August 29.¹⁰⁷ Upon arrival, the National Guard told DMAT OK-1 it wasn't needed inside, redirecting the team to the Sports Arena, which is attached to the Superdome by two open-air walkways. DMAT OK-1 finally set up operations at the Sports Arena late that night and began receiving patients the morning

of August 30. The establishment of this DMAT came 36 hours after FEMA reported serious medical problems in the Superdome, including 400 people with special needs, 45 to 50 patients in need of hospitalization, and the rapid depletion of supplies.¹⁰⁸

Evacuations finally began on August 31, and medical workers prepared records for their patients. In the end, though, those records were lost in the confusion. Evacuation of the Superdome concluded on September 3. Six people died in the Superdome—five for medical reasons and one from suicide.

Convention Center

Similar to the Superdome, the Ernest N. Morial Convention Center (Convention Center) is the property of the state of Louisiana. However, the Convention Center was never intended to serve as a shelter of any kind — special needs or otherwise — so there were no medical capabilities in place prior to the storm.¹⁰⁹ When asked by the media about conditions at the Convention Center, Brown said, "(W)e learned about that (Thursday), so I have directed that we have all available resources to get that convention center to make sure that they have food and water and medical care that they need."¹¹⁰ The

Convention Center General Manager Warren Reuther, however, does not recall the provision of any medical assistance for the evacuees at his facility.¹¹¹

Reuther is an appointee of Governor Kathleen Babineaux Blanco and says his

responsibilities are to oversee the Convention Center and protect its assets.¹¹² Despite the fact the Convention Center was not intended as a shelter, evacuees seeking dry land arrived there, and upon finding the glass entry doors locked, broke in. Reuther estimates between 18,000 and 25,000, perhaps even 30,000 people, eventually gathered at the center.



AP PHOTO/ERIC GAY

During the storm, Reuther and approximately half a dozen of his public safety staff remained in place, attempting in vain to maintain order as evacuees filled almost every area of the building.¹¹³ The Convention Center was quickly overwhelmed, running on reduced emergency power until all power was lost when fuel ran out on the night of August 30. Public bathrooms became overloaded, and problems were compounded by loss of water pressure. Hallways became the de-facto toilets. Walk-in refrigerators were emptied on the floor, and many evacuees began bringing their own food and alcohol into the building. Almost 32,000 chairs were broken or lost, 90,000 square yards of carpeting were destroyed, and the facility's infrastructure was damaged. Gunshots were reportedly heard, and Reuther and his staff were forced to hide from the crowds.

Evacuations at the Convention Center began Friday, September 2 and continued until Sunday, September 4. Despite Reuther's assertion medical assistance never



AP PHOTO/ERIC GAY

arrived, a DOD e-mail indicated medical teams were established and operating at the Convention Center on Saturday, September 3.¹¹⁴ Medical needs were unclear because of poor communication

and situational awareness. The number of evacuees continued to increase at the Convention Center as evacuations at the Superdome concluded. People left at the Superdome were directed to the Convention Center, where they would later be evacuated. Throughout the ordeal, Reuther saw no deliveries of food, water, or other supplies. At one point, he called Blanco but received no answer. He also never saw Nagin throughout the ordeal.¹¹⁵

A Doctor's First-hand Account

Dr. Gregory Henderson is a Tulane University and Vanderbilt University School of Medicine graduate. He lives in New Orleans and is the Associate Chairman of the Ochsner Clinic Foundation Department of Pathology and Laboratory Medicine. He was set to begin his new job at Ochsner on September 1.¹¹⁶

Henderson happened to be attending a physician leader retreat for Ochsner staff on Friday, August 26 and Saturday, August 27, at the Ritz-Carlton hotel on Canal Street when the meeting was cut short because of the impending landfall of Hurricane Katrina.¹¹⁷ He evacuated his family to Jackson, Mississippi and chose to stay at the hotel so he could remain close to their home.

By the morning of Tuesday, August 30, the Ritz-Carlton was surrounded by three to five feet of water and Canal Street was flooding.¹¹⁸ There was a hotel announcement that anyone who needed medical care should report to the hotel's French Quarter Bar. Fortunately there was another medical conference involving medical specialists (seven physicians, a physician's assistant, and pharmacists) taking place at the hotel. The impromptu medical team had already started to organize a list of medicines and supplies they might need. Looking outside and talking to the police, he realized looting was occurring outside the hotel, and it appeared the looters were armed. Henderson, along with a family practice physician, pharmacist, and two officers from the New Orleans Police Department (NOPD), waded across Canal Street through waist-high water to the Walgreens pharmacy across the street. They were able to break into the pharmacy and began stuffing insulin, drugs, and medical supplies into plastic garbage bags. There was a confrontation with the looters, who were held back at gunpoint by the officers. Henderson was able to carry three bags of supplies back to the hotel.

He set up a make-shift clinic at the hotel for the next 24 hours. The majority of the patients were seeking prescription refills, a lot of which he did not have.¹¹⁹ He subsequently opened another "clinic" when NOPD moved their operational headquarters and command and control center from the Ritz-Carlton to the Sheraton hotel across the street.

He was told by NOPD that Tulane, University, and Charity Hospitals were taking on water and basically inoperable and was asked by an NOPD captain if he could stay and take care of several hundred police officers who had set up camp at the Sheraton.¹²⁰ Henderson was dispatched with a team of armed officers and took additional supplies, including insulin, from a second Walgreens pharmacy. Many patients Henderson treated had "generalized anxiety disorders, not unexpected as most of the police had lost homes and some had lost family members and yet still were on the job." There

were also many cases of hypertension and diabetes. “I remember thinking it seems like the majority of the NOPD were hypertensive and type II diabetic. I took a lot of blood pressures, listened to a lot of hearts, and refilled a lot of beta-blocker, calcium channel blocker, and diuretic prescriptions. I cleaned and dressed a lot of superficial wounds. I gave a lot of insulin shots,” he said.

Henderson had forgotten to take rubbing alcohol and used Wild Turkey bourbon to sterilize the injection sites.¹²¹ He also distributed the antibiotic, Cipro, and treated several skin rashes which were so severe some police officers had to walk around in underwear. He believed the severe contact dermatitis may have resulted from exposure to toxins in the water. Katrina Rash, they began calling it.

In the meantime, police officers told him stories of rapes and murders at the Convention Center, but because of the lack of communications, they were essentially unable to do anything about it or even confirm the rumors.¹²² On September 1, under NOPD escort, Henderson went to his new office at the Ochsner Clinic to collect additional medical supplies.



AP PHOTO/ERIC GAY

On the way back to the Sheraton, he asked an NOPD captain to drive by the Convention Center.¹²³ There, he saw “thousands upon thousands of people collected on the boulevard in front of the convention center. There were the infants to the elderly in wheelchairs. There were many elderly lying on sheets and blankets on the median. There were screaming men, women, and children and dazed quiet and confused men, women, and children. Most were African-American, but many were white.” The NOPD captain was minimally armed and refused to let Henderson get out of the car, but promised to bring him back with armed escort.

Henderson, accompanied by Officer Mark Mornay, returned to the Convention Center where he treated dehydrated infants, mothers, and “hundreds” of elderly confined to wheelchairs.¹²⁴ One woman in a wheelchair had deep epidermal ulcerations and two gangrenous toes, and there was nothing he could do for her. He saw three children have seizures because they ran out of medication. He saw and treated a severe asthma attack by only coaching the child’s breathing. He saw diabetics who had been without insulin, oral hypo-glycemics, and dialysis for days. Mornay told Henderson he could not be responsible for his safety after dark, so they returned to the Sheraton.

Finding: Most hospital and VAMC emergency plans did not offer concrete guidance about if or when evacuations should take place

The South Central VA Health Care Network (VISN 16) outlines preparedness and response procedures in the event of a hurricane in its Emergency Management Program Standard Operating Procedure NO. 10N16-1.¹²⁵ This section provides the Network Director’s Office, as well as the Emergency Operating Centers, with much leeway regarding the assignment of specific responsibility to personnel. Facilities threatened by a hurricane are instructed to “contact their home healthcare patients, especially those that are oxygen or ventilator dependent, and PBHC to determine if they intend to evacuate of (sic) come to the facility.” Additionally, “Threaten (sic) HCSs/VAMCs will be required to evaluate all patients and determine patients that can be moved to other facilities along with special needs (oxygen/suction/ventilator/IV/ etc.) requirements by either ground or air transportation.”

A VAMC is instructed to have made final evacuation decisions within 36 to 48 hours prior to landfall.¹²⁶ The number of patients evacuated should depend on how much threat the hurricane poses to the facility. If the VAMC does decide to evacuate patients, the evacuations should be completed 24-hours prior to a hurricane’s landfall.

The VAMC Biloxi, Mississippi Emergency Plan addresses hurricane evacuation protocol more methodically but still gives confusing directions regarding if or when the facility should be evacuated in anticipation

of a hurricane's landfall. Also absent is specific information about evacuation transportation.

The plan begins by stating, "The basic planning tenet for hurricanes includes a total evacuation of the Gulfport Division."¹²⁷ The VA health care system is instructed to work in "close cooperation" with "Alabama and Mississippi to provide evacuation vehicles and facilities for use prior to storm strike."

When a hurricane enters the Gulf of Mexico and/or is 96 hours or less away from landfall, "the Gulfport Division will be evacuated entirely."¹²⁸ When a hurricane is within 72 hours of making landfall, the facility is instructed to prepare for evacuations on short notice. When a "storm/hurricane enters the Gulfport (sic) of Mexico and is 48 hours or less away from landfall at Biloxi/Gulfport," the plan indicates the VAMC Director and the VISN 16 Director are to determine when evacuations will begin. The plan notes, however, "Evacuation may not be required and is not automatic." If the directors do choose to evacuate, all patients must be moved when the storm is "24 hours or less away from landfall at Biloxi/Gulfport."

Chapter I of the VAMC New Orleans Emergency Management Plan outlines procedures for total evacuation of patients and staff.¹²⁹ The plan indicates the evacuation procedures in this section "will be used for any situation requiring internal transfer of patients or total evacuation of patients from the Medical Center," so while not clearly stated, it appears this plan should be used in the event of a hurricane.

VAMC patients and staff are directed to evacuate to the ground level. While this plan is more detailed than the VAMC Biloxi plan, it does not account for potential flooding whereby the street exit and the ground floor of the parking garage would be inaccessible.¹³⁰ In terms of exactly *how* to evacuate, the plan states, "Exact evacuation procedures to be followed will be dictated by the nature of the disaster and the extent of damage to the Medical Center buildings."

If a full-scale evacuation is necessary, the plan says patients "may be transferred to the VA Medical Center, Alexandria, LA."¹³¹ Transportation of patients to outside facilities will be accomplished by means of commercially owned buses, ambulance services, government lease vehicles or any other means available from outside sources (i.e., National Guard, City of New Orleans)." The plan does not include more detailed information

on which services to call upon first or what, if any, transportation agreements have already been made. Likewise, there is no indication of which hospitals should be used in such an emergency if the hospitals in the immediate surrounding area are not operational.

Chapter III states when a Hurricane Watch is established, the VAMC Chief of Staff should coordinate the "relocation of specialty care patients to other facilities if necessary."¹³² Beyond this call for initial coordination with "other facilities," there is no outline for when or specifically how to evacuate patients. Additionally, the plan calls for the evacuation plan from Chapter I be used in the event of flooding. Again, the five previously-described pages outlining evacuation procedures in Chapter I do not provide guidance on steps to take in the event of flooding.

The Emergency Management Manual for the Medical Center of Louisiana at New Orleans (MCLNO) covers both University and Charity Hospitals.¹³³ The manual says the Emergency Management Program Coordinator is responsible for developing, implementing, and monitoring all aspects of the emergency program. The manual provides summary information about evacuation procedures during an emergency, but like the VAMC plans, does not provide concrete information on whether facilities should evacuate in anticipation of a hurricane.

The MCLNO plan states if the CEO (or the designee) so decides, "patients shall be evacuated to an area of safety by whatever means are available. Formal agreements will be in place with ambulance services and neighboring facilities to transfer patients as necessary. All personnel will be trained in evacuation procedures."¹³⁴ The reader is then directed to reference the Emergency Management Evacuation Policy, Reference #1026, for LSU's ambulance contract, transfer, and vendor agreements. (The Select Committee was not provided with a copy of the Emergency Management Evacuation Policy.)

The plan devotes an entire section to evacuation procedures and provides step-by-step instructions to specific personnel.¹³⁵ For a total facility evacuation, it says, "Formal agreements will be made for the following..." and goes on to list ambulance contract agreements, transfer agreements, and vendor agreements for special needs. Decisions regarding the transfer of patients to other facilities may be made as early as 96 hours in advance of a potential hurricane. By 72 hours prior to potential landfall, the plan calls for decisions to be made regarding transfers.

People were trapped inside hospitals, with a banner hanging from Charity Hospital that read, “Stop the lying and get us the hell out of here.”

Methodist Hospital uses the Hurricane Preparedness Plan established by the New Orleans Office of Emergency Preparedness.¹³⁶ This plan suggests hospitals may begin evacuation preparations when there is a slow-moving Category 3, a Category 4, or a Category 5 hurricane within 72 hours of landfall (and is predicted to make landfall within 100 miles of New Orleans). The CEO or his designee has the authority to call for evacuation. Actual evacuations may begin up to 60 hours in advance. At 60 hours, the plan says, “Make arrangements for at least two flat-bottom type boats in the event of severe flooding conditions” and to fuel vehicles to capacity. The announcement of total or partial evacuation is called, if applicable, no later than 24 hours in advance. The Director of Facility Services, 12 hours prior to landfall, is to “ensure emergency vehicles and boats are in position and ready for immediate use.”

There is also a section of the overall Hurricane Preparedness Plan devoted entirely to evacuations (The Hurricane Evacuation Plan) which states, “...evacuation from the Hospital will be a ‘last resort’ measure and will be carried out only when a mandatory evacuation is directed by the appropriate authority, or when a situation arises which places patients and staff unquestionably in harm’s way. The threat of a direct strike by a major hurricane certainly creates such a situation, and evacuation may be necessary to protect the safety of patients and attending staff.”¹³⁷

If evacuation takes place prior to a hurricane, Methodist has written transfer agreements with two hospitals outside the major hurricane danger zone.¹³⁸ This section provides the contact information for Lifeguard Transportation Service, Inc. and Acadian Ambulance and Air Med Services — the two companies with whom the hospital has written transportation agreements. If these services are overwhelmed, the plan instructs the hospital to call the New Orleans Office of Emergency Preparedness.

As illustrated by these plans, hospitals and VAMCs lacked sufficient guidance for if and when they should evacuate their patients in anticipation of a hurricane. They also did not follow the limited guidance they did have.

Finding: New Orleans hospitals, VAMC, and medical first responders were not adequately prepared for a full evacuation of medical facilities

After New Orleans flooded, city medical centers needed to be evacuated. On September 2, *Good Morning America* showed the desperation of people trapped inside hospitals, reporting on a banner hanging from Charity Hospital that read, “Stop the lying and get us the hell out of here.”¹³⁹ Flood waters prevented hospitals from receiving supplies or personnel, and some private hospitals, such as Methodist, say medical supplies and fuel tanks being airlifted to them by their corporate headquarters were being intercepted by FEMA.¹⁴⁰ Many hospital emergency power generators were located at ground level or lower (often below sea level) and were subject to flooding. To make matters worse, fuel pumps were often placed at ground level, and fuel storage tanks (with limited fuel capacity) were frequently below ground level.¹⁴¹ Three acute care hospitals in the New Orleans area remained operational, four maintained some limited function, and 21 were not operational, closed, or evacuated. In hospitals that lost power like Methodist, pulmonary ventilator systems and other medical equipment requiring electricity became inoperable. Patients requiring ventilators were sustained by hand pumps.¹⁴²



AP PHOTO/BILL HABER

State and FEMA urban search and rescue teams were sent to help the hospitals evacuate, but they were intercepted by people trapped in the floodwaters and on rooftops.¹⁴³ While Guidry said hospital evacuations were a huge logistical success

— they evacuated 12,000 patients by Saturday, September 3 — they did not seem like a huge success to the many patients awaiting rescue.

Hospital and VAMC Evacuation: Their Stories and Timelines of Events

Evacuations from VAMCs for Hurricane Katrina have received mostly favorable attention, particularly in comparison to the evacuation difficulties encountered by other New Orleans hospitals and shelters. “We had people on ventilators, we had liver patients, ambulatory patients, and every patient that we evacuated from every one of our facilities made it through this evacuation,” VA Secretary R. James Nicholson said.¹⁴⁴

On Monday, August 29, the VAMC Biloxi domiciliary patients and nine members of the medical staff were evacuated to VAMC Tuscaloosa, leaving 904 patients, staff, and family members sheltered in VAMC Biloxi.¹⁴⁵



VAMC Gulfport patients were transferred to other facilities before the storm made landfall. VAMC New Orleans did not mass evacuate prior to the

storm, and during the two days that followed, August 30 and 31, its evacuation plans were activated. Five five-ton trucks were used in cooperation with DOD’s air transport staff and HHS to evacuate 98 patients to the New Orleans Airport on September 1. From there, the patients were flown to the Houston, Jackson, and Alexandria VAMCs. At this time, efforts were also underway to evacuate the remaining 94 patients and 367 staff and family members at VAMC New Orleans. By Friday, September 2, all patients, staff, and family members were evacuated from VAMC New Orleans.

Donald Smithburg, CEO of LSU Health Sciences Center/Health Care Services Division, and approximately 20 members of his staff provided a detailed account of the evacuation of their facilities, Charity Hospital (Charity) and University Hospital (University).¹⁴⁶ Smithburg went to Baton Rouge to staff the state EOC on the Saturday before the storm, and on Sunday at 7:00 a.m., he activated

Code Grey but decided against calling for evacuation.

At 5:30 a.m. on Monday morning, University lost electrical power. Charity followed, losing power at 8:00 a.m.¹⁴⁷ Both hospitals began using their emergency generators just two to three minutes after the power failures. Charity’s generators and electrical equipment were located in the basement, and LSU officials said they knew Charity would probably lose emergency power if severe flooding occurred. The waters continued rising over the course of Monday, and late that night, Charity lost its emergency generators. Unlike Charity, University’s emergency generator and electrical equipment were housed on the second floor, considered high enough to avoid flooding and low enough to avoid wind damage. University lost emergency power anyway, and both hospitals were left in darkness and without the means to care for their patients.

On Tuesday, August 30, Louisiana Wildlife and Fisheries evacuated nine of the 17 Intensive Care Unit (ICU) patients at University and four from the Charity campus.¹⁴⁸ Evacuation efforts were suspended, however, due to reports of gunfire and impending nightfall. On Wednesday, August 31, at 3:00 a.m., LSU received a request from the state OEP to prepare a patient roster. Officials were told patients should be triaged to red, yellow, and green status (red, critical; green, stable), and LSU staff gathered the necessary information manually. Later that morning, the state OEP notified them via the HEAR system to prepare for evacuation, but evacuation aid never arrived. At 11:00 a.m., Charity was notified its evacuation was to begin in 30 minutes, but by 4:00 p.m., they were still awaiting word from the National Guard regarding potential evacuation. That evening, the hospitals were notified the water level was too high for evacuation via the National Guard’s five-ton trucks.

Further complications arose on Thursday, August 31 when LSU was told evacuation orders were on hold due to rumors of violence and potential harm to rescue workers.¹⁴⁹ An e-mail between HHS employees that morning confirms this: “Patient evacuation has been hampered by security issues on patient movement. It is unsafe for patient movement to continue without security provided.”¹⁵⁰ LSU was told evacuations would resume after the arrival of federal troops. Smithburg said the Coast Guard and National Guard were evacuating people in the most immediate danger, so LSU was not a top priority.



Evacuations for University and Charity patients and staff began on Friday, September 1 at 8:00 a.m. and noon,

respectively. The U.S. Coast Guard arrived by helicopter. Patient evacuations were facilitated by the Coast Guard, Louisiana and Florida Wildlife and Fisheries, NOPD, and state police. HHS e-mails that morning also indicate, “today’s priorities are Charity and University Hospitals.”

A total of 167 patients were evacuated from University and approximately 200 from Charity.¹⁵¹ LSU indicated that all of these patients were sent with paper records and three patients died due to the storm; two were ventilator patients who died on the roof of the hospital during evacuations.

Larry Graham, CEO for Pendleton Memorial Methodist Hospital (Methodist), monitored the storm on his own and stated he received no calls from the city or state government.¹⁵² On Friday at 5:00 p.m., he believed the storm would miss New Orleans, but on Saturday, he realized there was going to be a problem. He began contacting all hospitals with which Methodist had transfer agreements, but none would admit patients due to concerns about how the storm might affect them. All of Methodist’s agreements are with hospitals in Louisiana or Mississippi because all patient transport is handled via ground ambulance. He likewise indicated Methodist is a “for-profit” hospital, meaning it does not receive FEMA funding and is responsible for the costs of airlifting patients. Even with such funding, however, Graham is not sure evacuation measures are practical. In anticipation of Hurricane Ivan, Methodist evacuated over 30 ICU patients over a total of 45 hours. However by Saturday, August 27, Methodist did not have time for an evacuation of this scale.

Methodist housed a total of 750 people during Hurricane Katrina, including 130 patients.¹⁵³ Twenty-eight were ICU patients with 12 patients on ventilators, and 16 were dialysis patients. Chalmette Medical Center (Chalmette), Methodist’s sister hospital located 12 miles away, evacuated its six ICU patients to Methodist. The remaining people at Methodist were staff, family, and people who had sought shelter in the hospital from the storm.

Like University and Charity, Methodist’s emergency generators failed after the storm.¹⁵⁴ The generators were located on the roof, but the fuel pumps had flooded. Graham cut power in all areas that were deemed “not critical,” and they hand-ventilated patients requiring oxygen. The next day, they began hand-carrying fuel to the generators. Chalmette’s generators were located on ground level. At the time, however, Tim Coffey, the then CEO of Chalmette, believed the facility was sound.

On Sunday, August 28, ambulances were supposed to be en route to the hospital, but Graham said they were commandeered by government officials.¹⁵⁵ Methodist’s parent company, Universal Health Services, Inc. (UHS), located in King of Prussia, Pennsylvania, was sending the hospital supplies, including fuel and water, via helicopter. The supplies never arrived because, as Methodist and UHS believe, FEMA intercepted the cargo. Army officers and FEMA officials arrived on Tuesday, and Graham informed them he needed assistance with evacuations. The officials assured him they would return but never did. Throughout the ordeal, Methodist had the assistance of 12 National Guardsmen as well as police forces that stayed for security reasons. Post-Katrina evacuations started taking place on Wednesday, August 31 because Methodist’s corporate office contracted with private companies. The difficulties the hospital encountered were still enormous, though, as a September 2 e-mail from a Methodist doctor to HHS staff indicates:

“Contrary to what has been reported on the news, Methodist Hospital, including Albert and Maxine Barrocas have not been evacuated, and the details are grisly. FEMA has been intercepting supplies sent to the hospital, and patient and staff evacuations have essentially ceased.

If anyone can help bring attention to this problem, please help us. Below are some facts related to us by the staff at the hospital during one of the few occasions we have been able to talk to them.

- 600 People in hospital
- 13 patients on gurneys
- Staff is dehydrating
- FEMA is DIVERTING support being sent in by UHS (owners of hospital) away from the hospital

- Temperature is 110 degrees with humidity
- NO fuel left to operate the hospital tower (sic)
- NO communication with National Guard to coordinate evacuation of patients
- Having to feed 500+ non-patient refugees — they are very close to rioting for the balance of food water and supplies
- NO power, NO communication
- Everything is manual — no xray — running out of supplies
- Patients are on the 2nd floor and 3rd floor — having to carry patients up the stairs and helicopters didn't come back
- Without power, the ventilator dependant patients are being manually bagged in 1 hour shifts by staff
- Refusing to take gurney patients
- FEMA is commandeering all supplies and all private efforts to get supplies including fuel, food, water
- Governor is misrepresenting what is going on
- Snakes in hospital
- Rashes on staff from water
- Losing nurses as result of dehydration
- Need FEMA to land on roof and prove what they are saying is correct
- No security—uprising for food, water and supplies (sic)
- Governor did not allow for the evacuation of hospitals and now won't help
- Uprising of refugees¹⁵⁶

Graham said the evacuations at Methodist were completed late on Friday, September 2.¹⁵⁷ He also stressed that mid-way through the evacuation, he learned patients who were triaged to the New Orleans Airport were not receiving adequate care. He began withholding patients who were supposed to be taken to the airport because Methodist was in a position to provide them with better care. He cited this as a primary “critical issue” — the evacuation of patients to locations unable to provide medical care. Coffey added that Chalmette doctors who went to the New Orleans Airport to offer their services were turned away by DMATs who said they were not credentialed in the NDMS physician database.

On September 20, an official from Tenet Healthcare (Tenet), Memorial Hospital's (Memorial) parent

company, told CNN the National Guard evacuated some patients from Memorial before the flooding began on Tuesday, August 30.¹⁵⁸ The next morning, Wednesday, Tenet reported to CNN that it asked New Orleans local authorities for assistance in evacuating critically ill patients but was told it would have to hire private companies. Later that day, Tenet says local authorities and good samaritans provided limited assistance with evacuations by boat. On Thursday, helicopters hired by Tenet airlifted approximately 400 patients, employees, and evacuees from Memorial to another Tenet-owned hospital in Slidell, Louisiana. Tenet indicated flights were suspended overnight after reports of sniper fire, but evacuations resumed, and were completed, by the end of the day on Friday, September 2.

Louis Armstrong International Airport

The medical operation at the New Orleans Airport was chaotic due to lack of planning, preparedness, and resources

After patients were evacuated from medical facilities, most were taken to the New Orleans Airport, which served as a hospital for the sick, a refuge for thousands, and the hub of medical evacuations and airlifts.¹⁵⁹ There were two separate missions at the airport. The first was attending to the medical needs of evacuees and the second was processing evacuees not needing medical attention. According to OR-2 DMAT, evacuees who needed medical treatment were triaged, treated, and prepared for transports. People not requiring medical



AP PHOTO/RON HAVIV/WI

care were processed and prepared for transport to shelters in other states by commercial aircraft. In total, over 21,000 displaced persons not requiring medical care were evacuated.

“Overnight, we turned New Orleans’ airport into the busiest helicopter base in the entire world. At any given time, there were at least eight to 10 helos off-loading on the tarmac, each filled with 10 to 40 survivors at a time, with 10 circling to land . . . It was a non-stop, never-ending, 24-hour-a-day operation,” said Dr. Hemant Vankawala, a member of the Dallas DMAT deployed to the New Orleans Airport.¹⁶⁰



Medical patients arrived by truck, bus, ambulance, and helicopter with little or no information or records about their conditions. The medical personnel at the New Orleans Airport were challenged by the sheer number

of patients and the lack of information about patient medical histories. By August 31, three DMATs had arrived at the airport.¹⁶¹ Eventually, eight DMATs would be stationed at the New Orleans Airport to help provide care during patient movement operations in New Orleans.¹⁶² The Air Force also deployed an EMEDS team, on Thursday, September 1, to augment the medical assistance operation in place at the airport.¹⁶³ These EMEDS teams also assisted with aeromedical evacuations.

An OR-2 DMAT after-action report described medical facilities established in the upper and lower levels of the west terminal of the airport.¹⁶⁴ These facilities were supplied and staffed by DMATs and PHS officers. The flow of patients was constant, and it is estimated the entire medical operation at the New Orleans Airport treated approximately 3,000 patients who were eventually evacuated by military aircraft to other facilities. Some DMATs believe the number was much greater — as high as 6,000 to 8,000 patients.¹⁶⁵

Despite the treatment and evacuation of thousands, the medical operation at the New Orleans Airport was chaotic due to lack of planning, preparedness, and resources.

FEMA officials did not conduct an adequate assessment of the situation before deploying DMATs. Upon arrival, many teams were confused about where to place assets and how to integrate into the existing operation. Many DMATs arrived before their cache of supplies, limiting their ability to do their work. According to Vankawala, medical personnel were operating with a limited amount of supplies and a generator with only partial power. “All we could do was provide the barest amount of comfort care. We watched many, many people die. We practiced medical triage at its most basic — black tagging the sickest people and culling them from the masses so that they could die in a separate area,” Vankawala said.¹⁶⁶



“We practiced medical triage at its most basic — black tagging the sickest people and culling them from the masses so that they could die in a separate area,” Vankawala said.

TX-1 and TX-4 DMATs, which were among the first to arrive, had equipment that was not updated and could not link together other critical equipment, such as ventilators.¹⁶⁷ Similarly, one team member from OR-2 DMAT observed “five different models/brands of glucose monitors, all using their own proprietary test strips that weren’t interchangeable. The CA-4 cache, which was current, arrived later and supplemented these caches.”¹⁶⁸

OR-2 DMAT reached the conclusion that, “there didn’t appear to be a clear plan for dealing with the approximately 25,000 evacuees who arrived at the airport.

There was insufficient food, water, and sanitation.”¹⁶⁹ One team member said evacuees were being taken from a dehumanizing experience (flooding and rescue) and placed into an equally dehumanizing environment at the New Orleans Airport.

Finding: The government did not effectively coordinate private air transport capabilities for the evacuation of medical patients

The Association of Air Medical Services (AAMS), comprised of 300 mostly private air transportation providers, represents 85 percent of all hospital transport capabilities.¹⁷⁰ In coordination with the Center for Transportation Injury Research, AAMS has a database called the Atlas and Database of Air Medical Services (ADAMS)— a web-based, interactive database listing these air medical services (rotary and fixed wing aircraft) and receiving hospitals. The database is updated annually, funded by the Federal Highway Administration, and receives technical support from the National Highway Traffic Safety Administration. In response to Hurricane Katrina, there was only one governmental request for access to ADAMS.¹⁷¹

Nevertheless, AAMS companies provided support for medical evacuations of both hospitals and nursing homes in Hurricane Katrina’s aftermath. They were not used for pre-landfall evacuations and provided most of their resources without official contracts with hospitals.¹⁷² Authorities were slow to establish a system for filtering evacuation requests. Confusion and indecision about evacuations led to delays.

AAMS said FEMA did not help their efforts.¹⁷³ On the morning of August 30, FEMA tasked Carla Brawley, a Department of Transportation contractor, to find and secure air medical resources.¹⁷⁴ Brawley contacted Acadian Air Ambulance (Acadian) flight coordinator, Mike Sonnier, to request resources. Acadian is the largest air ambulance provider in Louisiana. An AAMS after-action report stated,

“According to Mr. Sonnier, sometime later that morning the National Guard Air Boss (name unknown) contacted Mr. Sonnier at Acadian and

AP PHOTO/UNIVERSITY OF ALABAMA AT BIRMINGHAM, STEVE WOOD



tasked him to serve as his civilian equivalent. Mr. Sonnier and Acadian air ambulance was then tasked with coordinating missions into and out of New Orleans airspace, coordinating requests for air evacuations from many of the New Orleans area hospitals, and also serving as the main contact between civilian providers and the lone FAA contracting officer that was tasked for this job by the Department of Transportation for FEMA.”

By the end of the day, approximately 50 medical helicopters and 13 fixed-wing aircraft were in New Orleans.¹⁷⁵ While the first air evacuation took five hours, coordinators were in place to expedite the process on Wednesday. Over the next 96 hours, approximately 2,000 air medical evacuations were coordinated through AAMS members.¹⁷⁶ Acadian estimates it was responsible for 800 of these evacuations.¹⁷⁷ AAMS members accomplished these evacuations despite difficulties in communication and coordination. Poor use of assets and lack of coordination prevented additional evacuations. AAMS estimates it could have been able to move up to 7,000 patients if a better system had been in place.¹⁷⁸ “The first 72 hours was chaos,” said one AAMS member.¹⁷⁹

The majority of requests came directly from hospitals, such as Tulane University Hospital and Charity Hospital, because they were not receiving help through the Emergency Management Assistance Compact (EMAC).¹⁸⁰ On August 29, Hospital Corporation of America Division President Dave Smith requested AirHeart Air Ambulance of Sacred Heart Health System help with evacuations of Tulane. Smith said fuel for the generators was running low and floodwaters were approaching the facility.¹⁸¹

The following morning, Tuesday, Tulane University Hospital requested assistance with transporting “two specialty pediatric patients” from New Orleans to Little

Rock, Arkansas.¹⁸² The Arkansas Children's Hospital and its affiliate, Angel One Transport, responded along with other children's hospitals.¹⁸³ Fixed wing aircraft were provided by two hospitals in Texas: Texas Children's Hospital in Houston and Cook Children's Hospital in Fort Worth, and Mercy Children's Hospital in Kansas City, Missouri. Additionally, Miami Children's Hospital provided a helicopter to assist with the evacuation of "13 critically ill PICU (Pediatric Intensive Care Unit) patients and family members." Tulane also directly contacted Florida-based Air Methods Lifenet Division that same day for evacuation assistance. In addition to these requests, personal networking also proved valuable in the absence of formal agreements. On August 31, a doctor who lived in Hawaii and had attended Tulane University, contacted a colleague at Tulane University Hospital. Together, these two doctors coordinated the assistance of Hawaii Air Ambulance. AAMS donated helipad coordinators to aid in efficiency and were able to evacuate 200 patients by noon on Friday, September 2.¹⁸⁴

Compared to New Orleans, AAMS involvement in Mississippi was markedly different. Air Methods Lifenet Division summarized their experience in Mississippi by saying, "During the entire Katrina experience in Mississippi, there was no federal command and control or coordination of resources across the whole area. Attempts to coordinate with FEMA rescue operation center in Jackson, Mississippi were rebuffed by federal officials there who stated clearly that all air evacuations in Mississippi, medical and USAR, had been federalized. And that no civilian medical aircraft were needed."¹⁸⁵

John Dickerson, the FEMA EOC representative in Mississippi, declined offers from one AAMS agency to provide 25 helicopters to Mississippi. The Mississippi EOC had requested support, through EMAC, from Florida air transport agencies.¹⁸⁶ Johnny Delgado, program manager of Baptist Health South Florida, Baptist Health Air Transport, and a Board Member of AAMS, had a crew and was ready to fulfill the request. They were en route to Gulfport, the meeting point for air medical evacuation support agencies, but were turned back. Dickerson told them because the response was now federal, private agencies are not allowed to assist. However, a different AAMS company dealt with the Mississippi EOC directly and was able to provide support to the state.¹⁸⁷

Finding: Hospital and VAMC emergency plans did not adequately prepare for communication needs

The Biloxi, Mississippi VAMC Emergency Plan states when a hurricane is in the Gulf of Mexico and is 24 hours or less away from landfall, the Facilities Management Services (FMS) "will distribute emergency communications equipment. The facility's HF/VHF radios will be ready to be set up in the Director's Conference Room."¹⁸⁸ This part of the emergency plan does not, however, indicate which FMS team member is responsible for the distribution, including what specific equipment is to be distributed and to whom. Instead, the plan says FMS should develop its own Service Supplemental Hurricane Plan (SSHP) to address these issues.

The SSHP lists communication preparations and available equipment.¹⁸⁹ In addition to providing emergency communications equipment, the FMS is responsible for ensuring there are adequate linens, the Recreation Hall is set up as an employee shelter, and evacuation services are in place. VAMC Biloxi says its FMS team typically includes four to six people (two or three craftsman and two or three housekeepers) to handle this wide range of operations.¹⁹⁰

The plan also lists the VAMC's communications capabilities but does not mention satellite phones discussed previously in the SSHP. It relies "primarily upon the use of telephones" and focuses on a telephone system designed exclusively for internal communications.¹⁹¹ Two-way radios are designated for specific personnel, but the plan recognizes limits to radio capabilities, stating, "The limited number of radios and single voice transmission, however, combine to impose several restrictions." The radios are intended as back-up to the inter-office telephone system. The VAMC plan relies on landline telephones and the Hospital Emergency Area Radio (HEAR) Network System to communicate with the Emergency Medical Services (EMS) and outside world.

The VAMC New Orleans Emergency Management Plan also depends on the HEAR Network System for communication with area hospitals and ambulances.¹⁹² The Chief of Police Services is to maintain a "pool" of Motorola radios, the exact number of which is not specified but will be used upon activation of the

emergency plan. Radios should be distributed to 11 staff members, all of whom are designated in the plan. The plan also indicates radios will operate for about eight hours before needing to be charged and provides the frequency at which these radios operate. The failure response section does not mention potential power failures, and in turn, the inability to recharge the radios. Additionally, no section of the plan addresses when the two-way radios should be distributed in preparation for the storm. In fact, the Hurricane section of the plan fails to mention radios or refer the reader to the communications chapter.

The Veterans Health Information Systems and Technology Architecture (VISTA) Contingency Plan cites hurricanes as a “high probability” threat.¹⁹³ A telecommunications contingency plan included within the VISTA plan lists responsibilities and procedures for personnel in charge of communications during a telephone system failure. This plan indicates hand-held radios and/or cell phones will be used if landlines do not work and details who distributes the radios as well as who or what areas receives them. A total of 26 areas within VMAC New Orleans are to be provided with two-way radios (one radio per area), but there is no indication of how these radios should stay charged in the event power is lost. Additionally, “a cache of cellular phones are maintained by CIM Service Line Director” The exact number is not specified, but the plan states eight areas are “designated as first priority to receive cellular telephones.” As with the two-way radios, there is no planning for how to keep these cellular phones charged in the event that power is lost.

Charity and University use the Emergency Management Manual for the Medical Center of Louisiana at New Orleans.¹⁹⁴ The hospitals depend on two-way radios, cell phones, HEAR Radio, HRSO Radio, 800MZ Radio, and HAM Radio links for internal and external communications backup.

Methodist’s Disaster and Emergency Preparedness Plan charges the Hurricane Preparedness Control Center with establishing and maintaining emergency communications.¹⁹⁵ The control center is assigned special telephone extensions as well as backup telephone numbers in case landlines fail. HEAR radio equipment, including the backup system, should be tested when a storm is more than 72 hours away. At 72 hours, the director of Facility Services is to designate the radio

operator’s availability and “ensure operator adequately (sic) trained.” At 60 hours before landfall, battery supplies are checked. When the storm is 24 hours from landfall, the director of Facility Services provides the maintenance supervisor with a two-way radio unit. When the storm is 12 hours away, the director of Facility Services should “position emergency equipment supplies and prepare for immediate operations” and conduct a “final check of the emergency power system.” He or she is also supposed to ensure the radio operator is on duty and has contact on the HEAR system.

Methodist’s plan takes into account the potential for flooding as a result of a Category 3, Category 4, or Category 5 hurricane stating, “Flooding conditions to some extent can almost certainly be expected to accompany a hurricane.¹⁹⁶ Several recent studies and surveys by hurricane forecasting experts indicate that the entire New Orleans area is extremely vulnerable to “catastrophic flooding” as a result of a major storm.” If flooding is predicted or reported, the CEO is instructed to shut down telephone communications equipment and reassign communications attendants to the Control Center.¹⁹⁷ As such, all communications would obviously be lost.

These hospital and VAMC emergency plans lack a clear communications section, often leaving unanswered questions about what communications capabilities are in place, who is responsible for the equipment, and how to respond if power is lost. As a result, Gulf coast medical facilities were left without appropriate equipment or a proper understanding of how to implement an effective emergency communications plan.

Finding: Following Hurricane Katrina, the inability of VAMC New Orleans and hospitals to communicate impeded their ability to ask for help

Hospital executives said in Katrina’s aftermath, hospital emergency area radio HEAR systems simply did not work.¹⁹⁸ Cell phones worked occasionally and allowed them to get in touch with the Louisiana Hospital Association, which in turn contacted the OEP on their behalf. The primary source of information was

Hospital executives said in Katrina's aftermath, hospital emergency area radio system (HEAR) simply did not work.

television.¹⁹⁹ In an interview with CNN on September 30, Dr. Albert Barrocas, a physician at Methodist, said, "We were trapped, communications was a big issue. The fact that we could not bring family and patients together, a lot of them were separated. The majority were separated. We did not even know where these people were going to."²⁰⁰

The Director of VA Veterans Integrated Service Network 16 (VISN 16), Robert Lynch, tells a similar story. "There was no plan in Biloxi and New Orleans. Hard-working people did a lot of workarounds with a lot of creativity. We're going to learn from that," he said.²⁰¹ VISN 16 lost communications through its telephone landlines, operated by Sprint, during the storm. Lynch indicated that satellite phones worked sporadically and only when outside. In Biloxi, reports indicate only one cellular tower remained, and cell phone users could only make calls — not receive them. The VA worked around the communication failures by establishing a schedule for employees to be outside with satellite phones.²⁰²

Smithburg said that on Sunday at 7:00 a.m., the hospital set up an incident command center in its board room for communications.²⁰³ The following day, the hospital went to Code Grey, and HAM operators arrived at the hospital. LSU had a point of contact at the OEP, but after the storm, LSU couldn't receive information from the OEP or FEMA. On Monday, August 29, Smithburg reported that Nextel and cell phone service were temporarily lost on the University campus, and text messaging was "intermittent."

Smithburg cited inadequate Health Resources and Services Administration grant funding as the primary reason for communication failure and said the LHA receives the federal grant money and allots it to Louisiana hospitals.²⁰⁴ While the grants were helpful for supplying Motorola phones and a HAM network, he believes the funding for LSU was disproportionately small in comparison to its needs and patient load.

In the days following Hurricane Katrina, Gulf coast hospitals and VAMCs were responsible for hundreds

of patients, some of whom were in critical condition. Without necessary communications capabilities, these facilities were almost completely isolated from first responders and the outside world. Incapacitated and without supplies, many struggled to provide care and keep patients alive until help arrived.

Finding: Medical responders did not have adequate communications equipment or operability

Inadequate communications and situational awareness among and within federal agencies contributed to a diminished understanding of the health needs of affected populations

On October 20, Stephens told the *Associated Press*, "Anything that could go wrong in communications went wrong."²⁰⁵ Interviews with health officials and countless e-mails from ESF-8 agency personnel support his statement. Immediately following Hurricane Katrina, cell phones and landlines were not working, blackberries were not dependable (and in some cases, unavailable), and satellite telephone capabilities were not sufficient.

In preparation for Hurricane Katrina, Stephens oversaw the placement of an incident command trailer inside the Superdome.²⁰⁶ Immediately following the storm, he said landlines, the only mode of communication for his team, worked just five to 10 percent of the time. By Wednesday, cell phones began working intermittently but not enough to meet their communication needs, and despite his initial preparations, Stephens said these communication failures "weren't anticipated at all."

Colonel Kenneth K. Knight, Chief of the Air Force Medical Operations Center presented a timeline that showed similar difficulties — its communication systems were inoperable until September 1.²⁰⁷ On this date, the Air Force medical response timeline says there were, "Few working landlines and cell phone success [was] spotty." It was not until four days after the storm, on September 2, the "cell phone network [was] improving."

Likewise, Colonel Falk, an Air National Guard Surgeon, cited communications as the number one area needing

improvement.²⁰⁸ Both the Air National Guard and Army National Guard experienced almost a total failure in communications. The Army satellite system was not working, and personal cell phones (service provided by Verizon) were the only means of contact. Likewise, the National Guard Bureau's "After Action Review" indicates communication failures adversely affected situational awareness. It states, "Lack of situational awareness was caused largely by the loss of communications. The lack of communications and difficulties with interoperability of equipment between forces as well as between the military and civilian leadership also hampered the rapid generation of EMAC requests. Poor communications also resulted in a lack of visibility of available assets in nearby states."²⁰⁹

National Guard Bureau Chief Lieutenant General Steven Blum indicated many guardsmen were equipped with outdated radios, and it was impossible for them to communicate with the Army's 82nd Airborne Division and 1st Cavalry Division. "You don't want two units operating in the same area, doing the same function, that can't coordinate their efforts because they don't have the communications equipment," Blum said.²¹⁰

The Deputy Assistant Secretary of HHS, Office of Public Health Emergency Preparedness, Dr. Robert Blitzer, said communications were initially a big problem.²¹¹ The command center used land lines and cell phones, and Blitzer also ordered a mobile communications center, which was deployed from Washington, D.C. to Atlanta and then to Baton Rouge. Blitzer had not needed to deploy the mobile communications center for the previous four hurricanes that hit Florida. HHS Principal Deputy Assistant Secretary for Public Health and Emergency Preparedness, Dr. Gerald Parker, knew of just one satellite phone, located on the command bus, and said all SERT leaders "probably" had one.²¹² Simonson said he thought there were two satellite phones per SERT, but for every satellite phone call that was successful, there were probably six failed attempts.²¹³

Communication failures also affected NDMS. NDMS Chief Jack Beall said not only did his staff not have enough equipment, the operability of the equipment they had was "in and out."²¹⁴ Satellite phones worked only when trucks containing the satellite equipment were pointing in the right direction. But as Beall said, "When you have people dying, there's no time to mess with satellite phones." Overall, his Nextel cell phone was his

best option for communicating, but when he or his staff worked in the Superdome, it was "total blackout." Efforts to remedy this problem began on September 3, with NDMS working to reach agreements with private cellular companies for the provision of "communications on wheels."²¹⁵

OR-2 DMAT also cited communications as a key obstacle — particularly the operability of cell phones and interoperability of radios inside the New Orleans Airport.²¹⁶ "There is an over reliance on cellular phones for communications. The cellular infrastructure was severely damaged during Katrina and cell phone service was initially unavailable . . . ," OR-2 DMAT reported. Radios also proved insufficient — the JT-1000 radios provided for the team could not contact radios in distant areas of the airport. Similarly, the team had no communication with security personnel via radio until the Forest Service provided Bendex King radios.

The breakdowns in communication experienced by government officials are illustrated in ESF-8 agency personnel e-mails. These e-mails show correspondence was almost non-existent until August 31, and difficulties sending and receiving messages persisted well into the first week of September. On August 31, a SERT member e-mailed the EOC and said, "My BB doesn't work at all, any communications with me will have to be through cell."²¹⁷ In Mississippi, a September 3 e-mail from the Gulfport Field Command Center indicates, "No phones or power as of now. Cells sometimes, Nextel service best. T-mobile not good for BBs at this area but do work other locations."²¹⁸ On September 5, a week after the storm, e-mails indicate that communications had not significantly improved. A CDC employee wrote the EOC saying, "Our folks in the field only have access to blackberry now. (The phone lines are going in and out and faxes are very difficult to send)."²¹⁹

Much attention has been paid to lack of operability and the inability of first responders to connect with each other through the equipment they had. Some responders, however, were having difficulties just getting the equipment itself. A SERT team member on her way to Baton Rouge e-mailed HHS officials on September 5 saying she needed a cell phone and blackberry. A response from an HHS official states, "We do not issue Blackberry's to individuals for deployments (and we don't have any anyway), we have also exhausted our total cache of phones, so we have absolutely nothing to issue. If things

change, I will advise you.”²²⁰ Likewise, the OR-2 DMAT report says there were an insufficient number of Motorola JF-1000 radios for their convoy, and other teams who did not have access to radios at all “encountered safety-related issues due to a lack of communications.” The radios and satellite phones inside the FEMA trucks were also of no use to DMAT teams, as they had not been programmed.²²¹

From lack of equipment, to inoperability, to failure to program satellite phones, communications proved to be one of the greatest obstacles to the Hurricane Katrina medical response. Critical time was wasted. And energy that should have been spent treating patients was instead spent on repeated, and often times unsuccessful, attempts to communicate.

Finding: Evacuation decisions for New Orleans nursing homes were subjective and, in one case, led to preventable deaths

“We see where there are gaping holes in our system. It has become clear that no one was evaluating these plans in any real sense. The system provides no check and balance.”

—Louisiana State Representative Nita Hutter²²²

Like its hospitals, Louisiana’s nursing homes (all privately owned, with the exception of two) are responsible for having their own evacuation plans.²²³ These plans are required to be updated annually, and before the start of hurricane season each year, DHH sends a reminder letter. DHH also checks to ensure every Louisiana nursing home submits a plan; however, media reports indicate DHH cited only one nursing home in the past year for submitting an inadequate plan.²²⁴

Most plans encourage patients’ families to help with evacuations, and several southeast Louisiana nursing homes have agreements with nursing homes in northern Louisiana for the transfer of residents after evacuations.²²⁵ The statewide occupancy of Louisiana nursing homes is roughly 70 percent, which allows evacuated nursing homes to find bed space elsewhere. Before Hurricane Katrina’s landfall, 19 nursing homes evacuated their residents. After the flooding in New Orleans, an additional



32 nursing homes evacuated. One nursing home, Saint Rita’s, did not evacuate at all, and 35 residents died. Overall, it is estimated that 215 people died in New Orleans nursing homes and hospitals as a result of Katrina and failed evacuations.²²⁶

Three Louisiana Nursing Homes

Michael Ford is CEO and owner of three nursing homes in the New Orleans area — Riverbend Nursing and Rehabilitation Center (Riverbend), located in Plaquemines Parish, Metairie Health Care Center (Metairie), located in Jefferson Parish, and Waldon Health Care Center (Waldon), also located in Jefferson Parish.²²⁷ Combined, these nursing homes house close to 360 patients. Ford is also the Vice President of the New Orleans region of the Louisiana Nursing Home Association (LNHA) and is a member of the Plaquemines OEP. According to Ford, all nursing homes’ emergency plans must be approved by the state. Riverbend’s emergency plan calls for the establishment of a pre-determined evacuation site, usually in a church gym in Kentwood, Louisiana, for both staff and patients. Ford has evacuated his nursing home patients once before, in anticipation of Hurricane Ivan, using an 18-wheel flat bed trailer equipped with air conditioning and a generator. The experience was trying, with the patients sitting “on a bus for eight hours to go one hundred miles,” but he also says it gave him and his staff experience for Hurricane Katrina.

Ford received notice of the mandatory evacuation for Plaquemines Parish on the Saturday before Katrina made landfall. Jesse St. Amant, the OEP Director for Plaquemines Parish, declared the evacuation at 9:00 a.m. on August 27 and said, “If they don’t leave, I tell ‘em they’re going to die in place.”²²⁸ Despite the difficulties moving patients for Hurricane Ivan, Ford listened to St. Amant and evacuated his nursing home in Plaquemines. Evacuation of Riverbend to the church in Kentwood was assisted by approximately 25 church volunteers, who

“If they don’t leave, I tell ‘em they’re going to die in place.”

moved patients by carrying them on mattresses. Ford eventually relocated all but 50 of his patients to a wing he rented at Kentwood Manor Nursing Home. The rest were taken to one of Ford’s other two nursing homes in Jefferson Parish. It took almost six weeks to find accommodations and move everyone.²²⁹

Ford decided against evacuating Metairie, thinking it would withstand the storm. Subsequent flooding, however, forced him to evacuate 115 patients.²³⁰ Using Wildlife and Fishery department boats and a Louisiana Army National Guard two and a half ton truck, patients were taken to higher ground on the interstate. Buses from the New Orleans’ EOC collected some patients on the evening of August 29 and took them to a staging area in Baton Rouge, Louisiana. Ford had some pre-existing contracts for housing his patients elsewhere, but he moved them to the first available locations — all of which were in Louisiana. By mid November, patients from Metairie were moved to the Waldon facility (which was not evacuated for Katrina), where they remain today.

St. Rita’s Nursing Home

The night before landfall, Ford had a phone conversation with Mabel Mangano, who co-owns St. Rita’s Nursing Home with her husband. “I’m staying,” she told him.²³¹ Media reports indicate the Manganos were so confident about the safety of St. Rita’s, they invited staff, friends, and relatives to use it as a shelter.²³²

The Manganos and their 78 patients remained in the nursing home throughout the storm, and like many in

New Orleans, thought they were safe after the hurricane passed.²³³ But the floodwaters began to rise — eight to nine feet in 30 minutes — and the Mangano’s grandson swam out and brought back a boat. They began putting patients on mattresses floating like rafts.

On September 13, the Manganos were charged with 34 counts of negligent homicide.²³⁴ Attorney General Charles Foti’s September 14 press release stated the “charges stem from Mable Mangano and Salvador Mangano, Sr.’s alleged failure to evacuate St. Rita’s Nursing Home, contrary to the facility’s own evacuation plan and in violation of the St. Bernard Parish’s mandatory evacuation. Additionally, subsequent to the mandatory evacuation order, authorities offered to send two buses and drivers to evacuate residents from the facility and the Manganos allegedly declined this offer.”²³⁵

The News-Star, a Monroe, Louisiana newspaper, says despite these charges, “the Manganos did not abandon St. Rita’s during the flooding. Nor did they seal the fate of their elderly residents by strapping them to their beds before leaving, as was widely reported. They worked alongside their staff and a few Good Samaritans during the frantic rescue effort”²³⁶ Parish residents may soon be the judge.

Finding: Lack of electronic patient medical records contributed to difficulties and delays in medical treatment of evacuees

Although HHS partnered with the AMA to establish a website allowing physicians and pharmacists to electronically access the prescription records of patients affected by Katrina, few patients or health care providers had access to medical records or a common medical record system

As Hurricane Katrina tore through the Gulf coast region, it destroyed millions of pages of paper files and patient medical records in doctor offices, clinics and hospitals. Thousands of patients displaced from the region by the storm lacked medical records and were forced to depend on memory and knowledge of their medical history, allergies, and other important information.



AP PHOTO/ROBERT F. BUKATY



Kindred Hospital in New Orleans was one of the few facilities in the Gulf coast with electronic patient medical records. When Kindred evacuated 54 patients following Katrina, the hospital was able to send patients' medical records electronically to other Kindred operated facilities in Baton Rouge and Houston where the patients had been transferred.²³⁷ Additionally, Kindred was able to print and mail hard copies of a patient's electronic medical history for those who were evacuated to non-Kindred facilities.²³⁸

Eighty pediatric cancer patients from the Gulf coast were evacuated to St. Jude Children's Research Hospital (St. Jude) in Memphis, Tennessee.²³⁹ The hospital was tasked with tracking down oncologists who fled flooded New Orleans with treatment records to ensure appropriate treatment for the pediatric patients. Additionally, doctors at St. Jude were forced to rely heavily on parents' recollection and notes of their children's treatments. "I honestly feel quite comfortable that the worst-case scenario is we delayed treatment" for some children, Dr. Joseph Mirro said. But there was "a lot of flying by the seat of your pants to get it right."²⁴⁰

According to Stephens, all medical files and documentation made regarding the treatment and medical attention provided to evacuees in the Superdome were lost.²⁴¹ This contrasts sharply with how patients' medical information was handled at the Astrodome in

Houston. Thousands of the evacuees at the Superdome and Convention Center were transferred to the Astrodome without any paper or medical files. Volunteers in Houston were tasked with documenting patient information and registering evacuees to create new electronic medical records. The Harris County Hospital District created a large clinic in the Astrodome, which included 80 computer terminals to aid in registering patients and recording their medical history and information.²⁴² By September 9, records had been created for approximately 8,000 Katrina evacuees.²⁴³

Additionally, the American Medical Association (AMA), National Community Pharmacists Association (NCPA), and several other organizations collaborated to launch the KatrinaHealth.org prescription medication network in September. The network is a secure online service to help physicians and authorized healthcare providers access medication and dosage information for Katrina evacuees.²⁴⁴ The network allows and authorizes physicians and pharmacies to provide prescription refills, or prescribe new medications.²⁴⁵ It facilitates coordinated care and helps to avoid potential medical errors by providing access to patient information. The AMA provides physician credentialing while NCPA provides authentication of pharmacists and pharmacies.²⁴⁶

Because the VA has developed an electronic patient record system for its facilities, electronic records for over 50,000 New Orleans VAMC patients were downloaded to tapes and transferred to the VAMC in Houston.²⁴⁷ The Houston VAMC was able to reconfigure and restore them after the New Orleans VAMC evacuation. The records chief for the South-Central VA Healthcare Network said, "Every single thing on that computer was saved."²⁴⁸

Hurricane Katrina showed that physicians are often our "second" responders. They, too, need the support of sophisticated IT systems, enabling them to respond to a crisis quickly and retrieve and share critical records and

"I honestly feel quite comfortable that the worst-case scenario is we delayed treatment" for some children, Mirro said. But there was "a lot of flying by the seat of your pants to get it right."

information. The emerging public health threats of the 21st Century require the seamless flow of information at all levels of government. The need for better integration of IT into the healthcare industry was highlighted by thousands of Katrina evacuees with no medical patient records.

HHS has made recent efforts to support digital health recovery for the Gulf coast. In November, HHS announced partnerships with the Southern Governors' Association and DHH to accelerate electronic health records in Gulf states to create accessible, accurate medical records and medical information.²⁴⁹ These partnerships will help physicians, medical practices, and hospitals rebuild medical records for their patients as they return to the region. However, National Coordinator for Health Information Technology, Dr. David Brailer, said, "Making patient data accessible to authorized physicians, whether it is following a hurricane or as part of routine care, remains a challenge that must be addressed."²⁵⁰

Finding: Top officials at HHS and NDMS do not share a common understanding of who controls NDMS under ESF-8

On a larger scale, the command structure between HHS and the NDMS was problematic. ESF-8 is implemented by the Assistant Secretary for Public Health Emergency Preparedness at HHS; however, NDMS is housed and operates under FEMA (DHS) authority. For Hurricane Katrina, NDMS was activated by FEMA on August 25.²⁵¹ According to the FEMA Office of General Counsel, activation of NDMS would certainly have "stood up" ESF-8.²⁵² However, there is no evidence of action under ESF-8 until August 27, when HHS first convened conference calls.²⁵³ During a natural disaster or public health emergency, HHS and NDMS communication and coordination is essential for an effective response.

According to Simonson, coordinating the public health response under ESF-8 was "a strain without operational control and logistical support."²⁵⁴ He says the relocation of NDMS left HHS with few operational assets. Despite HHS responsibility for coordinating the federal response to public health emergencies, HHS only

has PHS Commissioned Corps, SNS, and other smaller functions under its command. Unlike NDMS, none of HHS remaining assets are configured for a quick response. Instead, HHS assets are meant to sustain existing medical services and infrastructures. Simonson also indicated that without direct control over NDMS assets, the efficiency and effectiveness of ESF-8 is crippled. With modest operational assets, Simonson noted HHS lacked situational awareness, saying, "HHS lost its field network to FEMA when NDMS was moved to DHS."²⁵⁵

As executor of ESF-8, Simonson attempted to coordinate the pre-positioning of medical assets prior to Katrina's landfall.²⁵⁶ He spoke directly to Stephens on Saturday, August 27 and Sunday, August 28 to ask what supplies the Superdome needed. As a result of those conversations, Simonson called then Acting Director of the Response Division Edward G. Buikema at FEMA to "aggressively advocate" DMATs, water, ice, and MREs be positioned in the Superdome prior to landfall. Simonson believed it would have been much easier to task NDMS if those assets had been under his direct control. When asked about attempts at coordination between the two agencies, Simonson said NDMS participated in ESF-8 conference calls, but despite its participation, acted as an asset of FEMA without coordinating mission assignments with him.

An e-mail from a U.S. Army Corps of Engineers Liaison at DOD, Mark Roupas, to Assistant Secretary for Defense for Homeland Defense Paul McHale on August 29, however, suggests Simonson did have a say in NDMS' activation. Roupas says: ". . . DHHS is trying to decide which health care approach is better: 1) activate NDMS and move the patients out of the state or 2) move medical beds and personnel into the affected area and treat there. DHHS medical planners are meeting with Mr. Simonson at 6pm to discuss and decide which course of action to accept. If the decision is to move the patients via NDMS, then DHHS will activate the NDMS system. If the decision is to treat intrastate, then we should expect a formal RFA for -500 beds and personnel support."²⁵⁷ This e-mail begs the question: how was the primary coordinator of medical response unaware that FEMA had activated NDMS on August 25?

Simonson believes ESF-8 should be more "clearly articulated."²⁵⁸ He also believes the relocation of NDMS to DHS in 2003 undermined NDMS effectiveness.

Since its transfer, funding for NDMS has been stagnant, with millions of dollars being siphoned off to support “unidentified services.”²⁵⁹ NDMS has lost two-thirds of its staff since 2003. “There is room for substantial improvement in coordination between NDMS and the rest of ESF-8. Either ESF-8 should be directly responsible for NDMS or ESF-8 should be moved to where NDMS is located,” Simonson said.²⁶⁰

Beall disagreed and told a much different story about the coordination between NDMS and HHS.²⁶¹ He said HHS has the authority to move NDMS and its assets under ESF-8 and that, to his knowledge, NDMS did not deploy any assets, with the exception of pre-positioning, without a direct order from HHS. He said HHS and NDMS were in close coordination throughout the operation, and that any coordination issues were more likely a result of internal difficulties within HHS — not between HHS and NDMS. He believes NDMS relocation to FEMA allows the system to “lean forward” more than it could under HHS.

How these two senior officials view the coordination and authorities for HHS and NDMS speaks for itself. Without a clear understanding of who has functional jurisdiction over NDMS, coordination of the system and all of its assets was certain to result in failures.

The OR-2 DMAT report illustrates command structure confusion, and general coordination problems, between NDMS and the DMAT teams it managed at the New Orleans Airport. OR-2 DMAT members reported a number of command-related issues, including:

- ICS/NIMIS (or any form of an organized internal command and control structure) was not implemented by FEMA/NDMS at the airport. (Some attempts to use ICS were made by FEMA/NDMS following the arrival of a Forest Service overhead team, but were generally not that effective.)
- There was no formalized unified command established between the many participating agencies until late in the response.
- No safety officer was initially appointed at the command level (in a very unsafe environment).
- Roles, responsibilities, and reporting structure of the two MSTs (Baton Rouge and Airport) were never clearly articulated. It was unclear what role the PHS representative at the airport had.

- Liaisons with military and civilian entities participating in relief efforts at the airport were never established.
- There did not appear to be any initial interfacing at a management level with knowledgeable local medical providers, public health officials, and local emergency providers.
- There appeared to be a lack of communications between the Airport MST and Baton Rouge MST as well as NDMS headquarters.
- Information was not being effectively communicated to the DMATs from either of the MSTs.
- There was considerable friction between DMATs and the MSTs. An ‘us and them’ attitude was prevalent.
- Only one fulltime FEMA/NDMS employee was present at the airport MST (arriving after operations had started). All other Airport MST staff were taken from onsite DMATs, reducing the number of team personnel for patient treatment and operations support.
- Inexperienced leaders were placed in an overwhelming and chaotic environment that caused their effectiveness to rapidly deteriorate.
- Management decisions that were being made were not based on the best interests of the patients.
- There was inadequate equipment available to produce the copies and paperwork FEMA was requiring.²⁶²

The OR-2 DMAT report further states, “FEMA/NDMS operations at the airport were extremely disorganized compared to parallel military and Forest Service operations.” Tensions between FEMA/NDMS and DMATs is an ongoing problem and “continues to compromise the efficiency of operations due to a lack of trust between both parties.”²⁶³

Beall agreed there was tension and speculated DMAT members are accustomed to being in control of their environments and are not used to taking orders from federal officials.²⁶⁴ He also said most of the FEMA NDMS officials deployed during Katrina and giving orders to DMATs were unseasoned and their inexperience contributed to the friction.

Historically, the mission of DMATs was to rapidly deploy and set up self-supporting field hospitals and provide medical care within the first 72 hours after a disaster before the arrival of other federal assets.²⁶⁵ Alternatively, FEMA has historically operated under the assumption that state and local officials are the first line of defense during the initial 72 hours following a disaster until a federal response can

be coordinated. The NDMS response to Katrina suggests that FEMA was unable to support the historical rapid-deployment capability of NDMS.²⁶⁶

Finding: Lack of coordination led to delays in recovering dead bodies

The lack of coordination among agencies also contributed to delayed recovery of dead bodies in the Gulf coast region. According to ESF-8, HHS is responsible for victim identification and mortuary services. HHS has authority to ask DHS and DOD to assist in providing victim identification and mortuary services; establishing temporary morgue facilities; performing victim identification by fingerprint, forensic dental, and/or forensic pathology and anthropology methods; and processing, preparation, and disposition of remains.²⁶⁷ The most experienced personnel in this area are a part of NDMS under the authority of FEMA and DHS. DOD also has significant expertise in mortuary affairs and mass fatality management.

Despite having this authority, HHS was slow to respond and coordinate efforts with DOD and DHS. On Sunday, September 4, DOD sent an e-mail to DHS recognizing the need to assist overwhelmed state and local authorities in victim identification. The e-mail provided a brief analysis of the situation in the Gulf coast region and said, "If this analysis is correct, it's not if, but when and how DOD will be asked to assist in the mortuary affairs response."²⁶⁸ The e-mail further says DOD has developed "potential plans on what kind of requirements will be needed and how DOD can provide response support. Currently we have identified the potential missions of search and recovery, remains transport to establish human remains collection points, and assistance with DNA capture analysis."²⁶⁹ The e-mail recommends a meeting between DHS, HHS, FEMA, and DMORT to discuss coordination among agencies and the commercial sector. It is unclear if and when this meeting took place. What is clear, however, is DOD essentially took the lead in coordinating an operational mortuary affairs plan, which was originally the responsibility of HHS.

Following the e-mail from DOD, HHS personnel recognized the need for an "integrated ESF-8 response" and devising a "coordinated way to collect and share information."²⁷⁰ When asked why it took an e-mail from DOD six days after Katrina's landfall, Simonson

responded, "HHS was not involved in discussions with actual body recovery. FEMA, DOD, and Kenyon International Emergency Services (Kenyon), a mortuary services contractor, were in discussions for recovery services and it was unclear who was in charge of the recovery effort."²⁷¹ ESF-8 is not responsible for recovering bodies but is responsible for mortuary services. As a result, HHS "had to wait for certain discussions to be made before going ahead with specific decisions. Everyone was frustrated with how slow the initial discussions were going."²⁷² Before HHS can coordinate victim identification and other mortuary services, FEMA, DOD, and state officials must have a recovery plan in place.

Body recovery was no less confused. For days, bodies went uncollected as state and federal officials remained indecisive on a body recovery plan. With state and local officials utterly overwhelmed by the disaster, they were initially more focused on rescuing Katrina's survivors than recovering dead bodies. By September 5, inaction was causing frustration. "Number 1 issue is body collection," Army Colonel John J. Jordan, military assistant to Brown at FEMA, wrote in an e-mail that day.²⁷³ Jordan continued, "This issue must be addressed, and frankly, there is operations paralysis at this point. FEMA is pushing State to see what they want to do, and indications are that Governor is involved in some of the decisions, especially regarding interment." A week later, Blanco publicly blamed FEMA for the delay and its inability to sign a contract with Kenyon for body collection services.²⁷⁴ Kenyon later signed a contract with the state.²⁷⁵

One week after landfall, on September 5, Simonson requested "ample mobile mortuary services throughout the affected region."²⁷⁶ An order for 200 mobile mortuary trucks was issued with 130 designated to Louisiana and 70 to be delivered to Mississippi.²⁷⁷ By the next day mortuary services were being established in St. Gabriel, Louisiana with 96 personnel.²⁷⁸ FEMA and Louisiana collaborated on drafting a body recovery plan which required the approval of Brown, and the Louisiana "newly appointed" state medical examiner.²⁷⁹ In Mississippi, mortuary services were established at the Naval Air Station in Gulfport. By September 6, one DMORT had set up facilities at the Naval Air Station. Body recovery was an enormous task that took several months to complete. Each home in the affected area was inspected twice for bodies. Mortuary services continue in the region as remains are identified and returned to families.

Finding: Deployment confusion, uncertainty about mission assignments, and government red tape delayed medical care

“Coordinating all of those agencies isn’t a simple thing and [is] very difficult to practice. We sit down and do tabletop exercises where we go over who’s going to do what, but a disaster of this magnitude is something that is very difficult to simulate or really practice. So, we rely on really well-trained, capable people that can adapt and adjust to whatever the situation is to get the job done.”

— Colonel Richard Bachmann, U.S. Air Force²⁸⁰

In the wake of Katrina, first responders worked tirelessly — days and nights in miserable conditions — to provide medical care to thousands of hurricane victims. The coordination of these medical personnel, supplies, and equipment proved to be a daunting task. At one point, a frustrated member of the CDC Division of Emergency Operations wrote: “The approval process for a bottle of aspirin seems to be the same as for a 500 bed hospital.”²⁸¹ From confusion about mission assignments and deployments, to broader misunderstandings about command structure, coordination was undoubtedly an obstacle to the Gulf coast medical response. Coordination efforts were impeded, and in turn, these impediments adversely affected the overall medical response.

Deployment Assignments

Hundreds of e-mails were sent from medical first responders to government officials expressing confusion and frustration over their deployment orders. On Friday, September 2, a PHS officer in Oregon sent an e-mail saying, “I’ve got supervisory approval and have had my bags packed and ready in the trunk of my car to leave at a moment’s notice since Tuesday. Is there anything further you can tell me?”²⁸² On September 5, a Food and Drug Administration employee e-mailed the PHS coordinating officer saying,

“I’m deploying tomorrow. I don’t have any information about the mission and whether my role has changed from the original (FMCS MST 4

– there has been some issues with travel and just got my itinerary tonight so not sure if those issues were due to a change in assignment). I’ve gotten a phone call from a member of my team looking for direction and I don’t know what to tell him. Please provide any information you can.”²⁸³

Another PHS officer wrote, “Once again, sorry to bother you. However, what is the status of this mission? From the email I received earlier this week things were supposed to happen in 24-72hrs. At your earliest convenience, could I please get an update on this?”²⁸⁴

There was also confusion within government ranks regarding who had the authority to deploy officers and what officers had already been approved for deployment.²⁸⁵ An internal PHS e-mail sent September 1 stated,

“We are receiving reports from one Warden indicating that many of his staff are deployed. The problem is they are not on our Master list that we have been providing to OFRD. Can you provide me your latest deployed roster identifying the BOP officer/assets. I am thinking maybe these officers are on August or September rosters???”²⁸⁶

An August 30 e-mail from the chief of the Coast Guard medical division said,

“I apologize for the confusion of the rosters with CG officers that were released earlier. It appears that all PHS officers were required to go to a website and register yesterday AM per the attached email. Many officers did this without knowing that registering automatically noted agency approval for a CCRF mission. I attempted to register without the agency approval box clicked in order to provide CG comments. The website only allowed submission with this box clicked positive . . . kind of a Catch-22.”²⁸⁷ A member of OFRD wrote FEMA saying, “This officer is stationed in AR and is not on our list of officers deployed. Who deployed him?”²⁸⁸

There was also limited visibility between agencies. An e-mail from a CDC employee to HHS/OS staff and CDC staff on September 9 stated, “Since OSHA is Labor Dept we have no visibility on their deployments at this time...could be they will link up with NIOSH team when

they all arrive, but we may well not know anything."²⁸⁹ This correspondence reflects the absence of updated and accurate lists of who was available for deployment, who was not available, and who had already been deployed.

Mission Assignments

As late as September 22, evidence of confusion remained about who was in charge of what aspects of the response. An HHS incident manager wrote, ". . . it appears that the POC for the 250 ambulances is no longer the State EMS Director Terry Bavousett, but has changed to the three names below. Please get your representative at the JFO to address this ASAP or the ambulances will end up at Reliant Park instead of the locations that Terry Bavousett has requested."²⁹⁰ The FEMA liaison to CDC wrote, "I might be the only one — I doubt it — but I'm really confused with the structure within CDC/DEOC for this operation. Can you send out a team structure list of team leads as well as their DEOC schedule?"²⁹¹

Clarity about missions was also lacking in the medical response to Hurricane Katrina—as evidenced by the lack of planning for the United States Navy Ship (USNS) Comfort. The USNS Comfort is a medical treatment facility with a primary mission of supporting medical needs for the military and serve as hospital facilities as part of a humanitarian effort.²⁹² It has a 1,000 bed capacity with 80 beds designated for an intensive care unit and 12 operating rooms. The Select Committee received varying cost estimates for operating costs for the USNS Comfort. According to the U.S. Northern Command, operating costs for the USNS Comfort are roughly \$82,910 per day underway and \$29,155 a day pier side.²⁹³ However, a *Philadelphia Inquirer* article states, "When on full operational status, the daily costs exceeds \$700,000 a day, according to the Navy."²⁹⁴

Originally destined for New Orleans to provide medical care to storm victims, the Comfort was redirected on September 9. "The Comfort is now headed for Pascagoula, Miss due to the lack of a medical mission in NO. Do not have anticipated arrival at that site, but SOC will advise when they get the information. Decision has been made that two cruise ships will now be used to house state workers."²⁹⁵ That same night, clarification about a mission assignment was never received. An e-mail exchange between HHS employees states, "USNS comfort



docked today in Pascagoula. I listened in to most of the conference call and nobody could seem to think of a mission for them. State Health Dpt was clear that they had nothing at this time."²⁹⁶

Additionally, the redirection of 250 ambulances required a significant number of approvals. An HHS incident manager wrote, "I have just been informed by FEMA HQ that Jack Colley or Dr. Sanchez the originators of the request will need to approve the change in the location of the delivery of the ambulances. Would you please contact your representatives at the JFO and ask that they confirm the location change with Reliant Stadium to the two staging areas noted in your e-mail with either the ESF# 7&8 representatives. GSA will then confirm back to you the delivery locations and times."²⁹⁷

Government Red Tape

Bureaucratic red tape also stood in the way of the medical response. The OR-2 DMAT report states, "The team was activated on the afternoon of Tuesday, August 30, and given instructions to be in Houston the next day, August 31. Because of the policy of making individual travel arrangements (see below), the last team member arrived in Houston shortly after midnight on September 1. The team departed for Baton Rouge in rental SUVs and vans at 5:00 a.m. on September 1. During the drive, team commanders had several phone conversations with other teams at the New Orleans Airport who stated the team was urgently needed due to the large number of patients. Instead of heading directly to the airport, the team was requested to first stage at LSU. After staging for nearly two hours, the team received an escort to the New Orleans Airport, arriving at approximately 3:30 p.m. Roughly 48 hours had elapsed since the activation order and the team arriving at the incident."²⁹⁸ The report further says that because team members were deployed individually, their medical response was delayed.

On September 2, the Special Assistant to the Assistant Secretary of Defense for International Security Affairs, Jon G. Ferko, wrote McHale saying Blanco was withholding medical supplies until she received President Bush's word Louisiana would be reimbursed. The e-mail to McHale says:

Sir,
Some information that I thought you should know:

My brother is on the ground at the health and human services command center in Baton Rouge. He says the situation is 'grave' — he and his team are working desparately to save lives without medical supplies — he said he doesn't even have a bandaid.

His team spoke with the Governor of LA and she refuses to release ANY amount of funds for supplies until POTUS assures her of reimbursement. The team down there does not know who to work through to release funds — and this is the federal command team.

I felt that you should have this info — my brother actually called home in tears because they can't do anything to stop the loss of life....²⁹⁹

Conclusion

The numbers do not lie. Thousands of lives were saved, a tribute to the medical professionals and volunteers who worked around the clock under enormously grueling conditions. Yet, there is another, more sobering realization that can't be ignored either. Those numbers could — should — have been even greater. It wasn't a lack of effort that hindered their success. It was a lack of planning, lack of initiative, and lack of response.

There were not, for example, nearly enough medical personnel teams in position prior to landfall, which led to unnecessary delays in getting the right equipment and supplies to the right people. FEMA and HHS needed to plan for the worst. Instead, they scrambled for supplies in an effort that was often times uncoordinated. In too many cases, it was too late. Clearly New Orleans residents with "special needs" paid a disproportionate price. Neither the Louisiana Medical Director and State Health Officer, nor the Director of the New Orleans Health Department,



could clearly define the "special needs" population, much less adequately provide for it.

From the storm's impending landfall through the flooding of New Orleans, confusion grew over if, and when, hospital, VAMC, and nursing home evacuations should occur. Time was rushing by, lives were in jeopardy, and even when evacuations were finally deemed necessary, these institutions were not prepared to do it efficiently. One possible solution would have been better utilization of private firms to aid in evacuations. It was the answer in a few instances, but it could have been the answer in so many more. In all, an estimated 215 people died in New Orleans nursing homes and hospitals as a result of Katrina and failed evacuations.

Compounding problems for medical responders was poor communication and coordination. So poor, in fact, that at times, the only way to receive information was through television. And the lack of access to medical records, or a common, electronic medical record system, led to delays in treating evacuees. Suffering was also prolonged as attempts at coordination, within and between government agencies, proved frustrating and inadequate. Confusion arose over mission assignments and command structure. Medical officers and volunteers had little information about their deployment orders, many waiting for days with their bags packed and ready. And while some medical teams waited, without equipment or supplies to care for patients, state and federal officials squabbled over reimbursement.

Thousands of American men and women selflessly gave their time, money, and expertise to save lives. Unfortunately, lack of preparation, reticence to act, and confusion over coordination are all part of the story as well. Though there was the will, the medical response to Hurricane Katrina showed there wasn't always a way. The initiative of men like Mike Ford and Jesse St. Amant was the exception to the rule. ■

- ¹ Adam Nossiter, *It's Like Being in a Third World Country: Hospitals in flood zone struggle to save lives*, ASSOC. PRESS (New Orleans, LA) Aug. 31, 2005.
- ² Interview by Select Comm. Staff with LA Hosp. Ass'n, in Baton Rouge, LA (Nov. 10, 2005) [hereinafter Nov. 10 Interview with LA Hosp. Ass'n].
- ³ Interview by Select Comm. Staff with LA State Univ. [hereinafter LSU] Health Care Services Div., in New Orleans, LA (Jan. 19, 2006). "Code Grey" refers to the section of the hospital's emergency management plan that prepares the hospital for extremely severe weather. (*Id.*).
- ⁴ Nov. 10 Interview with LA Hosp. Ass'n.
- ⁵ HHS: What We Do at <http://www.hhs.gov/about/whatwedo.html/> (last visited Jan. 27, 2006).
- ⁶ U.S. Dep't of Homeland Sec., *National Response Plan*, (Dec. 2004) at ESF #8 – Public Health and Med. Services Annex [hereinafter *NRP*].
- ⁷ *Id.*
- ⁸ *Id.* at ESF-iii.
- ⁹ Welcome to NDMS at <http://ndms.dhhs.gov/> (last visited Jan. 27, 2006).
- ¹⁰ Press Release, Fed. Emergency Mgmt. Agency [hereinafter FEMA], NDMS Serves The Needs Of Hurricane Victims (Dec. 8, 2005) [hereinafter Dec. 8 FEMA Press Release].
- ¹¹ Interview by Select Comm. Staff with FEMA and Nat'l Disaster Med. Sys. [hereinafter NDMS] (Nov. 30, 2005) [hereinafter Interview with FEMA and NDMS].
- ¹² Disaster Medical Assistance Team (DMAT) Basic at http://www.fema.gov/preparedness/resources/health_med/dmat_basic.htm (last visited Jan. 5, 2006).
- ¹³ Interview with FEMA and NDMS.
- ¹⁴ *Id.*
- ¹⁵ *Id.*
- ¹⁶ After Action Report from OR-2 Disaster Med. Assistance Team [hereinafter DMAT] (Sept. 25, 2005) available at, <http://www.democrats.reform.house.gov/story.asp?ID=984> (last visited Jan. 28, 2006) [hereinafter Sept. 25, OR-2 DMAT After Action Report].
- ¹⁷ Interview with FEMA and NDMS.
- ¹⁸ Press Release, FEMA, NDMS Demobilizes After Serving The Needs Of Hurricane Victims (Dec. 30, 2005).
- ¹⁹ U.S. Dep't of Health and Human Services [hereinafter HHS] and Miss. Dep't of Health [hereinafter MDH], *Hurricane Katrina Medical Support/Demobilization/Transition Plan for the State of Mississippi*, (Jan. 2006) at 3.
- ²⁰ *Hearing on Hurricane Katrina: Preparedness and Response by the State of Mississippi Before Select Comm.*, 109th Cong. (Dec. 7, 2005) at 2 (written statement of Dr. Brian W. Amy, Miss. State Health Officer) [hereinafter Dr. Brian Amy written statement].
- ²¹ "Disaster Mortuary Operational Response Team (DMORT)," at http://www.fema.gov/preparedness/resources/health_med/dmort.htm (last visited Jan. 5, 2006).
- ²² Interview by Select Comm. Staff with Vice Admiral Richard H. Carmona, U.S. Surgeon Gen., in Wash., DC (Nov. 22, 2005) [hereinafter Interview with Surgeon Gen. Carmona].
- ²³ E-mail correspondence from Cliff Oldfield, Commander of DMORT Region II, to Barbara Butcher, Officer of Chief Medical Examiner, NYC et al. (Sept. 1, 2005) (2:27 p.m.).
- ²⁴ E-mail correspondence from Keith Holtermann, Incident Manager ESF#8 7P-7A Watch, HHS, to EST-ESF08-A, et al. (Sept. 5, 2005) (9:46 p.m.).
- ²⁵ *Id.*
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95 Dec. 19 Interview with Dr. Stephens.
96 City of New Orleans Office of Emergency Preparedness.
97 Dec. 19 Interview with Dr. Guidry.
98 Interview by Select Comm. Staff with Glen Menard, Gen. Manager, New Orleans Superdome and Sports Arena, in New Orleans, LA, (Dec. 19, 2005) [hereinafter Dec. 19 Interview with Glen Menard].
99 Dec. 19 Interview with Dr. Stephens.
100 Dec. 19 Interview with Dr. Guidry.
101 Dec. 19 Interview with Glen Menard; Dec. 19 Interview with Dr. Stephens.
102 Dec. 19 Interview with Glen Menard.
103 Dec. 19 Interview with Dr. Stephens.
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"We were then lured to the so-called evacuation points. This was several days after the hurricane had struck. The city was flooded ... They loaded us onto military trucks after they told us they would take us to shelters where our basic needs would be met."

"We were in a wide open space along the interstate and under the Highway 10 causeway. The overpass provided little shade, however ... It was early September and still extremely hot. Our skin blistered. My mother's skin is still not fully healed."

Leah Hodges

New Orleans Citizen and Evacuee

Select Committee Hearing, December 6, 2005