

SECTION VI: EMERGENCY PREPAREDNESS AND DISASTER PLANNING

A unified incident command; a time-sensitive response system integrated with homeland security; and sustained funding and planning mechanisms are required for health system emergency preparedness.

INTRODUCTION

On August 29th 2005, Hurricane Katrina made landfall near Buras in Louisiana. A large and powerful hurricane as well as a catastrophic flood, Hurricane Katrina was the most destructive natural disaster in United States history.¹ Nearly a month later, Hurricane Rita made landfall just east of Sabine Pass in Louisiana on September 24th 2005. Natural Hazards cannot be prevented. Their impact, however, can be contained and managed.

The hurricanes and the flooding of New Orleans exposed significant flaws in federal, state and local preparedness for catastrophic events and their capacity to respond to them. A number of after action reviews have concluded that all areas of disaster response were unprepared. By any measure, hurricanes Katrina and Rita were a catastrophe for Louisiana.

The notion that disasters cannot be planned for will no longer stand up to public scrutiny especially in states where natural hazards are an annual occurrence. A number of gaps identified in the preparedness and response of the Louisiana health system can be directly attributed to a lack of funding and inadequate resources.

During disasters, the health system is an integral part of the state's response efforts. Charged with preventing and reducing disease and injury, healthcare professionals act as first responders, investigators, strategists, and medical care providers.²

Implementing the recommendations in this section are estimated to cost approximately \$30 million, a fraction of the \$365 million³ in public health-related recovery costs Louisiana has accrued since Hurricane Katrina.

As Louisiana's disaster management capabilities evolve, building civilian and military medical interoperability will be critical. The U.S. military has a long history of managing healthcare needs in complex disaster environments. As Louisiana's health system recovers from the destruction of the 2005 hurricane season, it is likely to be overwhelmed over the next few years should it face hurricanes like Katrina and Rita. As a result, the Louisiana National Guard and the Office of Homeland Security and Emergency Preparedness will play an important role in providing emergency medical support. The Louisiana Emergency Response Network, in close coordination with these organizations, will provide Louisiana with a natural foundation on which to build its disaster medical response.

¹ White House. Federal Response to Hurricane Katrina: Lessons Learned. 2006.

² Trust for America's Health. Ready or not? protecting the public's health from diseases, disasters, and bioterrorism. 2005.

³ DHH Katrina Project Worksheets (FEMA-1603-DR, Louisiana). Katrina FIPS #: 000-UHH04-00. January 2006.

Key Findings

- ❑ Louisiana lacked the type of "preparedness culture" of nations such as Israel and United Kingdom, and states such as Florida and California, that routinely deal with disasters.
- ❑ Louisiana had no shortage of disaster plans. However, the existence of those plans gave the illusion of preparedness. The planning assumptions were not valid, they lacked an inter-organizational perspective, and they were not accompanied by the needed funding and resources.
- ❑ Virtually all health system emergency preparedness programs in Louisiana were created outside the operational design of the health system. As a result, constant alignment was required to keep pace with technology and changing requirements.
- ❑ Pre-hurricanes, Louisiana had two trauma centers. Post-hurricane, it has one. By contrast, Colorado, whose population size is similar, has 62. On a per-capita basis, Texas had 19 times more trauma capacity than pre-hurricane Louisiana.⁴
- ❑ Despite massive planning efforts by federal, state and local governments to prepare for future disasters, the lessons learned were strikingly similar to the lessons learned from the California wildfires of 1970 – more than 30 years ago.⁵

Research

- ❑ Reviewed emergency preparedness systems from around the country and the world, in an effort to create a 'best in class' system for Louisiana.
- ❑ Recently published reports and after action reviews.
- ❑ Leading disaster medicine and public health emergency preparedness literature.
- ❑ Technical journals.
- ❑ Best practices in other states and countries.
- ❑ Interviews with Louisiana emergency response and health system officials.

Recommendations

- ❑ Fund the Louisiana Emergency Response Network to operationalize a time-sensitive illness response system linking homeland security initiatives with healthcare operational standards and trauma care requirements. Implementation of this network is estimated to cost \$26.5 million over a three-year period.
- ❑ Formalize the ESF-8 incident command structure in accordance with the National Response Plan and the National Incident Management System to minimize chaos and enhance decision making during a disaster.
- ❑ Establish long-term funding and planning mechanisms to sustain emergency preparedness of the Louisiana health system by creating an Office of Public Health Preparedness as its own entity within the Department of Health and Hospitals. An estimated annual budget for this agency would be \$1 million, including salary costs and costs for disaster planning activities.

⁴ www.amtrauma.org/tiep/reports/TCPopulationPV.html.

⁵ Auf Der Heide E. *Disaster response: the principles of preparation and coordination*. St Louis: CV Mosby, 1989.

NATURE OF A DISASTER

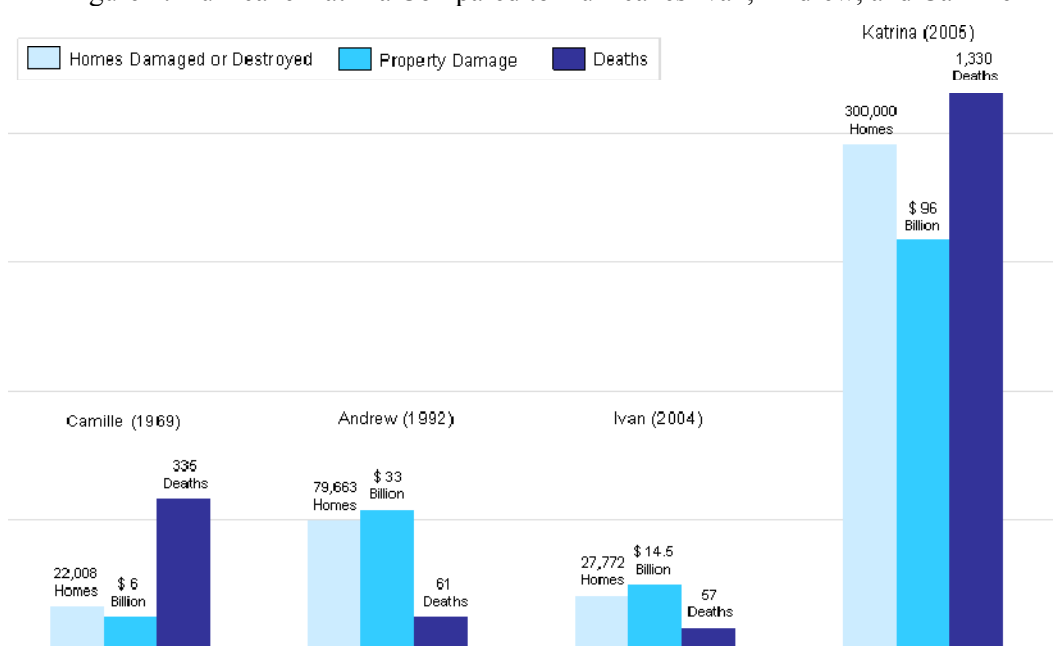
Worldwide, a major disaster occurs almost daily. In the United States, every state and territory has communities that are at risk from one or more natural hazards. A level 3 to 5 scale hurricane strikes the continental United States every 1.5 years.⁶ The most frequent of all natural hazard-related disasters are those due to devastation caused by flooding which has been estimated to account for 40% of all disasters worldwide.⁷

Disasters are generally considered “low probability – high impact” events. In fact, only a few disasters in the United States have resulted in over 1000 casualties.⁸ These statistics are often used to defer funding for disaster planning efforts in lieu of other projects. However, the impact of disasters in the United States is much more significant than this statistic implies.

Disasters are defined by the event and the venue in which it occurs. In order to call an event a disaster, people must be affected. Complex disasters usually involve situations in which civilian populations suffer casualties and loss of property, basic services and a means of livelihood. In many cases, people are forced to flee their homes temporarily or permanently. From the standpoint of healthcare providers, a disaster should be defined on the basis of its consequences on health and health services.⁹

Hurricane Katrina impacted nearly 93,000 square miles across 138 parishes and counties across Louisiana, Mississippi, Alabama and Florida – roughly an area the size of Great Britain.¹⁰ Figure 1 charts the effects of Hurricane Katrina against other major hurricanes in recent U.S. history.

Figure 1: Hurricane Katrina Compared to Hurricanes Ivan, Andrew, and Camille



Source: *Federal Response to Hurricane Katrina: Lessons Learned*. White House Report.

⁶ Hogan DE, Burstein JL. *Disaster medicine*. Philadelphia: Lippencott Williams & Wilkins, 2002.

⁷ Ibid.

⁸ Ibid.

⁹ Noji EK. *The public health consequences of disasters*. New York: Oxford, 1997.

¹⁰ White House. *Federal Response to Hurricane Katrina: Lessons Learned*. 2006.

Natural hazards, such as hurricanes and floods, themselves are not disasters but are factors in causing a disaster. Hurricane Katrina while being the most expensive disaster in United States history will more likely be remembered for its human toll. In its report – *The Federal Response to Hurricane Katrina: Lessons Learned*, the White House describes the human toll:

- ❑ An estimated 1,330 people died as a result of the Hurricane Katrina.
- ❑ An estimated 80% of the fatalities came from the New Orleans metropolitan area.
- ❑ As of February 2006, 2,096 people from the Gulf Coast area were still reported missing.
- ❑ Around 770,000 people were displaced.

A metropolis of 470,000 people before the storm, the consequences for New Orleans were dire.¹¹ Approximately 80% of the New Orleans, the nation's 35th largest city, was flooded. Tens of thousands of residents who had not left prior to the storm required emergency evacuations. The evacuees were taken via helicopter or boat to the Superdome, the Convention Center or any other dry spot in the city. At these locations, they were subjected to unbearable conditions: limited light, air, sewage facilities, water and food. Significant portions of the city remain uninhabitable. St. Bernard Parish, once home to nearly 70,000 people, has seen its population dip to about 7,000, with nearly all of those people living in temporary housing.¹²

Historically, those most impacted by natural hazards are the poor. The poor are probably most at risk because they are:

- ❑ Least able to afford housing that withstand seismic activity
- ❑ Often live along coasts or floodplains
- ❑ Forced by economic circumstances to live in substandard housing
- ❑ Not educated as to the appropriate lifesaving behaviors or actions that they can take when a disaster occurs.

These circumstances fit a large percentage of the population that was impacted by the hurricanes.

Analysis found that the victims of hurricanes were roughly proportionate to the pre-landfall population (based on U.S. Census data) in terms of race, sex, and wealth. In terms of race, the dead in New Orleans were 62 percent black, compared to 66 percent for the total parish population. The dead in St. Bernard Parish were 92 percent white, compared to 88 percent of the total parish population.¹³ The percentage of the dead by sex was approximately the same as the overall population. In terms of wealth, the analysis found that the percentage of dead bodies found in poorer New Orleans and St. Bernard Parish neighborhoods—as measured by poverty rates and median household incomes—was roughly equivalent to their percentage in the overall population.¹⁴

However, seniors were disproportionately impacted. A February 2006 report from St. Gabriel morgue revealed that people over the age of 51 accounted for 84% of the 815 bodies identified.¹⁵ In Louisiana, approximately 71 percent of the victims were over sixty years of age, and 47

¹¹ US House of Representatives. *A failure of initiative*. 2006.

¹² Ibid

¹³ US House of Representatives. *A failure of initiative*. 2006.

¹⁴ Ibid

¹⁵ Vital statistics of all bodies at St. Gabriel morgue. February 2006.

percent of those were over 65.¹⁶ At least 68 people were found in nursing homes, some of whom were allegedly abandoned by their caretakers.¹⁷ At St. Rita's Nursing Home in St. Bernard Parish, 34 nursing home residents drowned in the floods resulting from Hurricane Katrina.¹⁸ Of the total known fatalities, almost 200 unclaimed bodies were in Carville, La.¹⁹

Hurricanes Katrina and Rita demonstrated why disasters should be considered a public health problem. The hurricanes and flood:

- ☐ Caused an unexpected number of deaths, injuries, or illnesses in the affected communities, exceeding the therapeutic capacities of the local health services and requiring external assistance.
- ☐ Destroyed local health infrastructure such as hospitals and nursing homes, which were unable to respond to the disaster. Disrupted the provision of routine health services and preventative activities.
- ☐ Adversely effected the environment and the population, increasing the potential risk for communicable diseases and environmental hazards.
- ☐ Affected the psychological and social behavior of the stricken community.
- ☐ Caused shortage of food with severe nutritional consequences.
- ☐ Caused a large, spontaneous population movement.

The 2005 hurricane season tested Louisiana's planning and preparedness for a major public health threat. Despite deficiencies in coordination, communication and capacity, public health and medical support services treated a massive and overwhelming evacuee population.

The following is an extract from *A Failure of Initiative*, a report from the U.S. House of Representatives, that captured the impact on one Louisiana hospital during the Hurricane Katrina flood.

- ☐ 600 people in hospital
- ☐ 13 patients on gurneys
- ☐ Staff is dehydrating
- ☐ Temperature is 110 degrees with humidity
- ☐ No fuel left to operate the hospital tower
- ☐ 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
- ☐ Everything is manual due to loss of power
- ☐ Snakes in hospital
- ☐ Rashes on staff from water

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid.

DISASTER PLANNING

Emergency preparedness is defined as the state of readiness to respond to a disaster, crisis or any other type of incident. Nations such as Israel and United Kingdom, and states such as Florida and California, that routinely deal with disasters have developed a “preparedness culture” in which preparedness is of primary importance and becomes part of daily operations.²⁰ The Louisiana health system has several disaster plans; however, it does not have an emergency preparedness culture.

Disasters are highly complex events resulting in immediate medical problems, as well as longer-term public health disruptions. Emergency preparedness is not defined by the existence of plans or by the periodic testing of those plans. To be effective, plans must be practical, accepted by all its users, inter-organizational, and based on valid resource information. The planning process, which addresses the key concepts of medical emergency preparedness, is crucial.

In this section, we focus on the following areas of the Louisiana health system – (i) incident management; (ii) trauma care; and (iii) patient movement and care – to portray the state of preparedness leading up to the 2005 hurricane season.

Incident Management

The National Response Plan establishes a comprehensive all-hazards approach to enhance the ability of the United States to manage domestic incidents.²¹ The plan integrates incident management disciplines – designated as Emergency Support Functions (ESF) – into a unified structure and establishes protocols to help protect the nation from terrorist attacks and other natural and manmade hazards.²² ESF-8 is the Public Health and Medical Services emergency function. The function provides public health and sanitation; emergency medical, dental, and hospital services; crisis counseling and mental health services to disaster victims and workers. The purpose of the function is to supplement and support disrupted or overburdened local medical personnel and facilities and relieve personal suffering and trauma.²³

ESF-8 coordinates the appropriate state, local, and tribal organizations to determine current medical and public health assistance requirements and is comprised of the following core functional areas: assessment of public health/medical needs; public health surveillance; medical care personnel; medical equipment and supplies; patient evacuation; safety and security of human drugs; blood supply and blood products; food and agriculture safety and security; worker health/safety; all-hazard public health and medical consultation; behavioral healthcare; vector control; potable water/wastewater and solid waste disposal; victim identification/mortuary services; and protection of animal health.

In the 2005 version of the Louisiana Emergency Operations Plan, two agencies shared primary responsibility for ESF-8 – Department of Health and Hospitals (DHH), and Louisiana State

²⁰ McGlown JK. Terrorism and disaster management – preparing healthcare leaders for the new reality. Chicago: Health Administration Press, 2004.

²¹ Federal Emergency Management Agency. *National Incident Management System*.

²² Louisiana Office of Homeland Security and Emergency Preparedness. *Emergency operations plan*. 2005.

²³ Louisiana Office of Homeland Security and Emergency Preparedness. *Emergency operations plan – Annex M: Public Health and Medical Services*. 2005.

University Health Sciences Center (LSUHSC) – supported by other state agencies (Figure 2). The DHH was responsible for public health, sanitation, medical, and health assistance to Special Needs shelter operations, as well as mental health and crisis counseling. The LSUHSC was responsible for providing hospital care and shelter support for nursing home and home health patients with acute care requirements, as well as casualties of emergencies and disasters. LSUHSC had the lead role in coordinating hospital planning and actions with private hospitals and other facilities.²⁴

It was the responsibility of the Secretary of DHH and the Chief Executive Officer of LSUHSC to designate ESF-8 coordinators to organize and administer the ESF. It was the responsibility of the ESF-8 coordinators to develop plans, procedures, arrangements and agreements to identify, acquire and mobilize public health and medical resources for emergencies.²⁵

Figure 2: Public Health and Medical Services Responsibility Chart

Agency support to the Louisiana Department of Health and Hospitals, and the Louisiana State University Health Sciences Center											
	Medical – Facilities	Medical – Personnel, Supplies, & Equipment	Medical Consultation	Laboratory Facilities	Medical – Field Hospitals	Medical – Emergency Procurement	Technical Assistance – Food Quality	Water Quality Control & Waste Treatment	Communications Equipment	Transportation – Air	Transportation – Land
Louisiana National Guard	X	X	X	X	X	X	X	X	X	X	X
Department of Agriculture & Forestry				X			X		X	X	X
Department of Corrections	X	X	X								
Department of Environmental Quality				X				X			X
Board of Regents		X	X							X	X
Department of Transportation and Development				X				X	X		X
Volunteer Organizations *	X	X	X	X		X	X	X	X	X	X

Source: Louisiana Office of Homeland Security and Emergency Preparedness Emergency Operations Plan

Trauma Care

More than 15 years ago, the United States Congress passed the Trauma Systems Planning and Development Act of 1990 to address the importance of trauma systems in responding to injury as a public health threat.²⁶ The Act created Section XII of the Public Health Service Act, on the subject of trauma care. The importance of trauma systems in injury prevention was also emphasized in the Public Health Security and Bioterrorism Preparedness and Response Act of

²⁴ Ibid.

²⁵ Ibid.

²⁶ Health Resources and Services Administration. *Model trauma system planning and evaluation*.

2002. This Act called for trauma and burn care to be a component of State preparedness plans.²⁷

In 2002, Health Resources and Services Administration released the National Assessment of State Trauma System Development, Emergency Medical Services Resources, and Disaster Readiness for Mass Casualty Events. This national assessment revealed that those states with the most developed trauma systems were most ready to medically manage day-to-day operations as well as respond to mass casualty incidents.²⁸ The assessment, which was designed to characterize each state's program and infrastructure available to respond when facing an emergency medical event, found that in many states trauma system development was influenced more by historical precedence and political bias than a rational, population-based needs assessment.

The report showed that while Louisiana had a state operations center, protocols for a multi-casualty incident and a system linking health information, it also had significant shortfalls – no standardized triage protocol, no trauma centers, no plan for professional shortages, no communications system, and no surge capacity plan.²⁹

Louisiana Emergency Response Network

In January 2004, a report on regional trauma care was presented to the Governor of Louisiana. The report provided a framework for a statewide network which, when fully implemented, would enhance community health through an organized system of injury prevention, acute care and rehabilitation and would be fully integrated with the public health system in rural, suburban and urban Louisiana. The network, later named the Louisiana Emergency Response Network (LERN), was designed to address the daily demands of trauma care as well as interface with Homeland Security for demands placed on the health system during a disaster.³⁰

During the regular session of 2004, the Louisiana legislature passed Act No. 248 establishing the LERN.³¹ Also referred to as the "Heather, Skylar, and Ellie Law" in memory of Heather Greer, Skylar Jarreau, Ellie Waring, and other trauma victims, the Act was passed unfunded.

Trauma Centers

Licensure standards for hospitals in Louisiana were revised in 2003. Emergency room services were designated as an optional service for hospitals. Two trauma centers were registered with the State Department of Health Standards, the first in New Orleans and the second in Shreveport – 300 miles apart.³²

According to data provided by the Trauma Information Exchange Program, Louisiana had two trauma centers that provided coverage of 0.45 (per million of population). By contrast, Florida had 17 trauma centers providing coverage of 1.06, Mississippi had 64 trauma centers providing

²⁷ Ibid.

²⁸ Ibid.

²⁹ Health Resources and Services Administration. A 2002 National Assessment of State Trauma System Development, Emergency Medical Services Resources, and Disaster Readiness of Mass Casualty Events. 2002.

³⁰ Patient Care Statewide System Task Force. *Regional trauma care – report to the governor*. 2003.

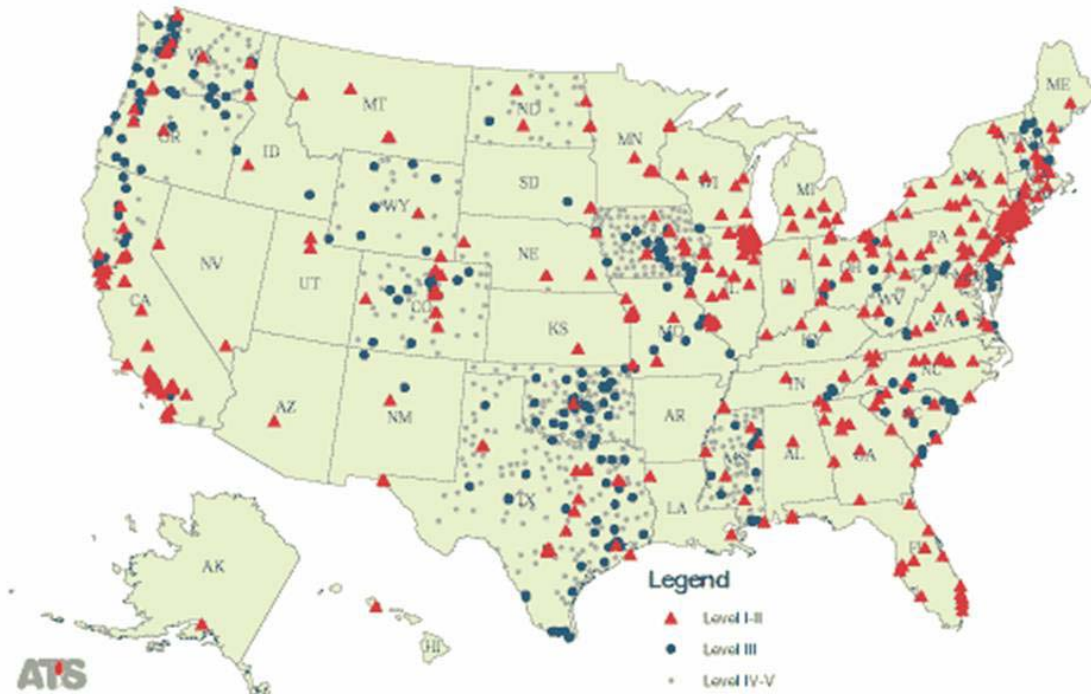
³¹ HB 272 – 2004 Regular Session (Act 248).

³² Patient Care Statewide System Task Force. *Regional trauma care – report to the governor*. 2003.

coverage of 22.50 and Texas had 183 trauma centers providing coverage of 8.78 (Figure 3).³³

Moreover, Colorado, whose population size is similar to that of Louisiana, has 62; Iowa, whose population is smaller at 2.9 million, has 116 trauma centers; Oklahoma, whose population is 3.5 million has 102 trauma centers.³⁴

Figure 3: All Levels of Trauma Centers – January 2005



Patient Movement and Care

Louisiana hospitals and nursing homes were responsible for implementing their own emergency evacuation plans. The primary priority for all hospitals was to “shelter in place” rather than evacuate.

The Special Needs Plan, a component of the Shelter Operations Plan in Louisiana, provided a framework within which parish and state government agencies, private industries, non-profit organizations, and volunteer groups could coordinate their actions to deal with the problems and situations associated with Special Needs people in emergencies and disasters.³⁵ The growing vulnerable population in Louisiana resided in: (i) nursing homes; (ii) group homes; (iii) home health; (iv) assisted living; and (v) other health care facilities. Parish and state government authorities, according to the plan, would encourage the evacuation of vulnerable populations with their families well before calling for mandatory evacuation of the general population.³⁶

³³ www.amtrauma.org/tiep/reports/TCPopulationPV.html.

³⁴ US Census Bureau. quickfacts.census.gov.

³⁵ Louisiana Office of Homeland Security and Emergency Preparedness. *Emergency operations plan – Annex X: Special Needs Shelter Plan*. 2005.

³⁶ Ibid.

Special Needs shelters were shelters pre-designated by state and local offices of the OHSEP to house individuals who require special assistance. Special Needs agencies were required to make every effort to secure emergency shelter for their patients. Three types of shelters would provide a triage network of shelter care for vulnerable patients: (i) General shelter, (ii) Special Needs shelter, and (iii) Hospital-based shelter.³⁷ Special Needs shelters were primarily for medically dependent individuals who did not require care in a hospital setting and whose pre-arrangements had failed and left them with no other recourse. Regional shelters were used to support the local Special Needs shelter but only after the local parish resources have been totally exhausted.

Nursing homes were expected to make all arrangements to evacuate and shelter their patients in emergencies. They were required to follow the planning instructions set forth in the Louisiana Model Nursing Home or Home Health Emergency Plan. It was the responsibility of nursing homes to seek out the appropriate care from hospitals or other providers to ensure the safety of their patients during disasters. Nursing homes could not use Special Needs shelters as a planned option for patient care. Also nursing homes were expected to make all arrangements to evacuate and shelter their patients in emergencies. They were expected to contract in advance with commercial carriers for emergency transportation for patients, staff, and staff families. They were also expected to arrange for supplemental transportation.³⁸

If prearranged transport failed, shortfalls would be reported to the parish Office of Homeland Security and Emergency Preparedness (OHSEP). The parish OHSEP would then consolidate transportation needs and report them to the state agency responsible for transportation, the Louisiana National Guard (LANG). If needs exceed assets, the LANG would arrange for supplemental transportation assistance from other agencies, the federal government, private businesses, or other organizations and volunteer groups.³⁹ This would be done as a reactive measure to a disaster.

Home Health agencies were required to evaluate the condition of each patient and categorize them as 'Hospital Based Shelterees' or 'Special Needs Shelterees'.⁴⁰ Home health agencies were required to report only Special Needs Shelter eligible patients who require public assistance in an emergency, to the OHSEP in each Parish. The reports were due yearly and would be used to develop transportation and sheltering requirements. Similar to Nursing homes, Home Health agencies, hospitals, and other organizations or agencies that provided care to patients, were expected to arrange for supplemental transportation if they did not have enough transportation for all patients in an emergency. Only if prearrangements failed and transportation could not be arranged, would the agencies report their shortfalls to the parish OHSEP.⁴¹

LSUHSC was designated as the lead state agency in the area of regional hospital emergency operations in support of Special Needs people. They were the core hospital system responsible for support to hospital-based evacuees who could not be accommodated elsewhere. As the lead agency, LSUHSC would work with DHH, the Louisiana Hospital Association, the Metropolitan Hospital Council of New Orleans, and other hospital and healthcare organizations to formulate acceptance and allocation procedures during emergencies.⁴²

³⁷ Ibid.

³⁸ Ibid.

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² Ibid.

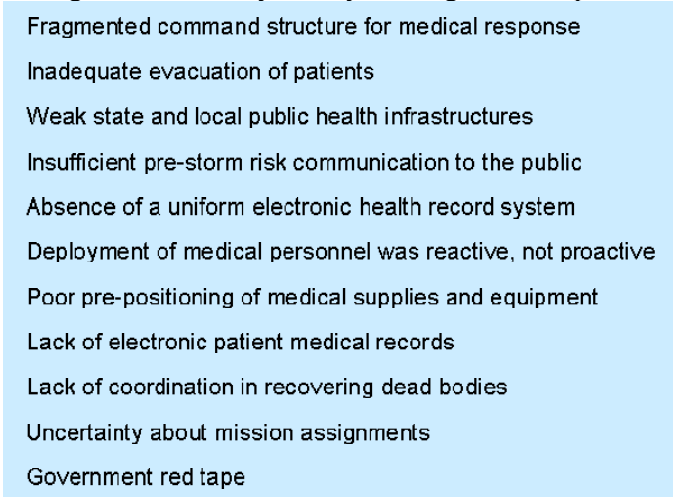
LESSONS LEARNED

In the months following Hurricanes Katrina and Rita, the White House, the U.S. House of Representatives, and the Government Accountability Office conducted investigations to gather the facts about the preparations for and the response to hurricanes.

The goal of the reports was clear - to learn what worked and what did not work. The United States would then chart a new and better course for emergency preparation and response. *A Failure of Initiative*, released by the House of Representatives marked the culmination of nine public hearings, numerous interviews and briefings, and the review of more than 500,000 pages of documents.

The reports concluded that the response to the hurricanes was a national failure. Despite all the emergency preparedness efforts since September 2001, hurricanes Katrina and Rita were a deadly reminder that the United States could do better. Figure 4 presents the key findings of the reports. In essence, the overwhelming conclusion was that while there was an abundance of plans there was a shortage of planning; and that lessons from past experiences were not learned or not fully implemented.

Figure 4: Summary of Key Findings from Reports



- Fragmented command structure for medical response
- Inadequate evacuation of patients
- Weak state and local public health infrastructures
- Insufficient pre-storm risk communication to the public
- Absence of a uniform electronic health record system
- Deployment of medical personnel was reactive, not proactive
- Poor pre-positioning of medical supplies and equipment
- Lack of electronic patient medical records
- Lack of coordination in recovering dead bodies
- Uncertainty about mission assignments
- Government red tape

The Reports also acknowledged the heroic efforts of many individuals who demonstrated astounding initiative that saved lives. In this section, we focus on the key findings most applicable to Louisiana – the positive and the negative.

Courage Under Fire

In the aftermath of the hurricanes, federal investigations and after action reviews were quick to point out problems with plans. Louisianan medical responders – who lost their homes, watched their communities get destroyed, and had to work through the devastation – were given little credit. Workers were provided with limited planning resources and caught in the middle of a perpetual federal-state-local political tug of war. The Louisiana medical responders should be proud of their accomplishments knowing that if it weren't for their valiant efforts, Hurricane Katrina would have been deadlier than it was.

Some of the pre-storm accomplishments include:⁴³

- ❑ DHH established triage lines to assist Special Needs evacuees in making decisions about either leaving with their families, reporting to Special Needs shelters, or seeking shelter at hospitals.
- ❑ DHH accepted 150 Special Needs evacuees in Baton Rouge from the Superdome prior to the storm.
- ❑ DHH assisted with opening of Superdome for Special Needs evacuees.
- ❑ DSS and DHH opened 7 Special Needs Shelters.
- ❑ DHH cared for 1,200 Special Needs evacuees.
- ❑ LNHA assisted 19 nursing homes evacuate.
- ❑ LHA assisted hospitals evacuate patients that were able to travel and admitted patients that were too ill to travel.
- ❑ EMS assisted with the transport of hospital and Special Needs evacuees.

Some of the post-hurricane accomplishments include:⁴⁴

- ❑ DHH Advance Team assisted the Federal DMAT sent to the Superdome.
- ❑ Special Needs sheltering expanded at Nicholls State University and LSU to establish TMOSAs – Temporary Medical Operations and Staging Areas.
- ❑ LSU–TMOSA, Pete Maravich Assembly Center opened as a surge facility for emergency rooms with the capacity for 800 beds. Over 40,000 evacuees were triaged at this facility.
- ❑ Nicholls State TMOSA, Lafourche triaged over 20,000 evacuees.
- ❑ Other Special Needs Shelters around the state expanded capacity to care for over 2,000 Special Needs evacuees at one point.
- ❑ DHH worked with NDMS to create a Med-evac Program at the Kenner Airport to send 1,800 hospital patients out of state.
- ❑ DHH sent EMS Teams to Search and Rescue Base of Operations (SARBOO) at the Causeway to help triage thousands of evacuees.
- ❑ LNHA helped evacuate another 34 homes.
- ❑ LHA helped evacuate 25 hospitals – 12,000 patients and caregivers.
- ❑ DHH evacuated 120 premature and newborn babies to Woman’s Hospital in Baton Rouge.
- ❑ Immunizations and pharmaceuticals were disseminated by DHH to evacuees in shelters with the help of OPH, NDMS, and USPHS.
- ❑ DHH assisted with medical professionals and supplies to help West Jefferson, East Jefferson and Oschner hospitals remain open.
- ❑ DHH coordinated credentialing and placement of medical volunteers.
- ❑ DHH worked with DMORT to handle the deceased.

Funding

Following the terrorist attacks in September 2001, the United States began investing heavily in disaster planning. Faced with the likelihood of disasters – natural or manmade, New York, California, and Florida stepped up their state-wide disaster planning efforts. Louisiana continued to demonstrate a general lack of commitment in terms of funding and resources. Since 2002 the Department of Health and Hospitals in Louisiana received approximately \$17.5 Million in Health

⁴³ DHH presentation to the HRSA Advisory Board. February 2006.

⁴⁴ Ibid.

Resources and Services Administration bioterrorism grants: \$1.98 Million (2002-2003); \$7.7 Million (2003-2004); and \$7.7 Million (2004-2005).⁴⁵ In the past three years, Florida obtained and spent the maximum amount of federal bioterrorism dollars available, totaling more than \$184 Million.⁴⁶

Plan Quality

The lack of funding and resources shifted the focus from “quality” of plans to the “existence” of plans. Plans contained significant amounts of boilerplate information that was required to receive funds and resulted in the development of plans that were unworkable in practice.

The “paper” plan syndrome, defined by Quarantelli as the tendency to believe that disaster preparedness can be accomplished merely by the completion of a written plan, created an illusion of preparedness⁴⁷ because (i) the planning assumptions were not valid; (ii) plans were not created based on an inter-organizational perspective; (iii) plans were not accompanied by the provisions of resources to carry out the plans; and (iv) end users were not involved in the planning process.

Planning Assumptions

The value of planning is in its ability to anticipate the problems that are likely to be faced in a disaster. As a result, disaster planning is only as good as the assumptions on which it is based. Some argued that disasters are just like everyday emergencies, only larger and required more resources for an appropriate response. Planning was focused on the mobilization of large numbers of resources. Unfortunately, the establishment of procedures and mechanisms to coordinate these resources was neglected. Others assumed that disasters resulting from hurricanes such as Katrina and Rita could not be planned for and neglected planning.

If planners consider Hurricane Katrina to be the worst case scenario, then at a minimum their plans should be developed to respond to a future disaster of the same magnitude. At the state level, planners should take into account that:

- ☐ Millions of customers in the Gulf Coast will report power outages.
- ☐ The communications infrastructure will be devastated across the Gulf Coast, incapacitating telephone service, police and fire dispatch centers, and emergency radio systems.
- ☐ Customer phone lines will be knocked out, telephone switching centers will be seriously damaged, and 1,477 cell towers will be incapacitated.
- ☐ Most of the radio stations and many television stations area will be knocked off the air.
- ☐ The 800 MHz radio system, designed to be the backbone of mutual aid communications, will cease functioning and repairs will be delayed for several days.
- ☐ The Gulf Coast region’s healthcare infrastructure will sustain extraordinary damage – several large hospitals will be destroyed, many will be rendered inoperable, and nearly all other healthcare facilities will be forced to close.
- ☐ The region’s most vulnerable residents and those individuals with Special Needs will

⁴⁵ DHH presentation. Sustainability of Emergency Preparedness.

⁴⁶ Florida Department of Health. Office of Public Health Preparedness. *5 Year Strategic Plan: Midpoint Review*. March 2005.

⁴⁷ Quarantelli EL. *Delivery of emergency medical care in disasters: assumptions and realities*. New York: Irvington Publishers, 1983.

- suffer terribly inadequate evacuation operations.
- ❑ Hundreds of hospital patients will be stranded inside dark and flooded facilities that lack basic supplies – some patients will succumb to the horrible conditions before they can be evacuated.
- ❑ Residents in some nursing homes will drown in the floods.

New Orleans emergency planners should assume that (i) some percentage (10 – 25 percent) will not evacuate; (ii) several of the levees and floodwalls will be overtopped, and some will be breached; (iii) the overtoppings and breaches of the levee system will lead to the catastrophic flooding of New Orleans. Approximately 80 percent of the city will be filled with water up to 20 feet deep; (iv) many of the pumping stations will stop working due to power outages and flooded pumping equipment; (v) authoritative reporting from the field will be extremely difficult to obtain because of the widespread destruction of communications infrastructure; (vi) officials will be forced to depend on a variety of conflicting reports from a combination of media, government and private sources, many of which will continue to provide inaccurate or incomplete information; and (vii) some emergency personnel will not report to work.

The 2005 hurricane season proved, disasters are not only quantitatively different, but they are also qualitatively different from everyday emergencies. Hurricanes Katrina and Rita compromised the four key elements of any system – personnel, facilities, data and technology. Most planners planned for a hurricane or flood but not both. In 2005, Louisiana was faced with a triple threat – a hurricane, a flood, followed by a second hurricane.

Public-Private Coordination

Understanding the nature of the disaster is only one half of the planning equation – planners also require a clear understanding of available medical assets in order to determine readiness. One lesson drawn was that several problems with the response were due to the lack of inter-organizational coordination and communication.

To model surge and plan accordingly, information such as the (i) number of emergency vehicles available for evacuations and patient movement; (ii) number of hospital and nursing home personnel available and their qualifications; (iii) number and type of patients requiring movement and their medical records; (iv) hospital bed circulation and surge capacity; (v) types of medical care available at healthcare facilities; and (vi) quantity and types of medical supplies available is crucial.⁴⁸ In Louisiana, planners did not have the information they needed to plan because the information resided with several stakeholders who were either not required to share information or were not included in the planning process.

The Louisiana health system is a complex system with several autonomous and independent stakeholders. Some of these stakeholders include the Louisiana Department of Health and Hospitals, Louisiana State University Health Sciences Center, Louisiana Hospital Association, Louisiana Nursing Home Association, Louisiana Primary Care Association, Acadian Ambulance Services, Rural Ambulance Alliance, Louisiana Ambulance Alliance and a number of private hospitals and nursing homes.

⁴⁸ Claypool R, Hupert N, Shannon M, Bogdan G. *Bioterrorism and health system preparedness – addressing surge capacity in a mass casualty event*. Agency for Healthcare Research and Quality, 2006.

A lesson learned from the Israeli preparedness infrastructure is the close cooperation between the military operations through the Israel Defense Forces Home Front Command and the civilian agencies and organizations through the Ministry of Health.⁴⁹ Together they have developed a number of committees to draft recommendations on a variety of preparedness issues. Some of these committees include (i) Policy Committee; (ii) Hospital Preparedness; and (iii) Community Health Preparedness.⁵⁰

Evacuation of Healthcare Facilities

State and local governments can order evacuations of the population during emergencies but healthcare facilities may be exempt from these orders. Hospital and nursing home administrators have to consider several complex issues when deciding whether to evacuate hospitals and nursing homes.⁵¹

The decision to evacuate is complicated by (i) the risk of physically moving patients; (ii) whether timely transportation can be secured; (iii) whether a facility can be located to accept the evacuated patients; and (iv) whether the evacuation can be timed accurately.⁵² Other critical factors include the cost associated with an evacuation and the transportation of patient records and medication. Without a central mechanism to track the contracting of evacuation vehicles, many healthcare facilities competed for the same local resources.

Hospitals lacked sufficient guidance for patient evacuation. Development of an analysis tool that calculates the optimal time to evacuate – weighing the costs and risks associated with evacuating versus sheltering in place as a function of time and potential impact of the disaster – may prove to be beneficial decision support system to hospital and nursing home administrators.

The fact that NDMS, a federal system designed to evacuate patients, is not configured to provide assistance evacuating nursing homes complicates the decision to evacuate nursing homes because nursing home residents generally have no other home and cannot care for themselves. A further complication is that if a resident is evacuated, the receiving facility ought to be able to accommodate the resident for a potentially long period.

No matter how successful evacuations are, they are ultimately measured by the number of people awaiting rescue.

Triage

Triage is the cornerstone of good disaster medical management yet a standardized method of triage did not exist. Triage was further complicated by the insertion of the Louisiana National Guard, Federal Responders, and Volunteers following their own variations of triage.

⁴⁹ Marcus LJ. Israel's preparedness for responding to the health requirements of its civilian population in the event of deployment of a nuclear, biological or chemical weapon of mass destruction. 2002.

⁵⁰ Ibid.

⁵¹ United States Government Accountability Office. Disaster preparedness: preliminary observations on the evacuation of hospitals and nursing homes due to hurricanes. 2006.

⁵² Ibid

Triaging of Special Needs patients is handled differently by each parish.⁵³ For example, Plaquemines Parish, before the start of hurricane season, solicits people to register if they have Special Needs. Jefferson Parish conducts 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.

The implications of under-triage and over-triage should be understood and managed in future disasters to minimize morbidity and mortality. High levels of over-triage, due to unfamiliarity of triage categories, have been demonstrated to increase the mortality of critical patients.⁵⁴

Surge Capacity

The current tracking mechanism provides administrators with information on how hospitals spend the HRSA grants they receive. The information is not translated into emergency services procured. As a result, a true sense of surge capacity cannot be determined. During a national emergency, Israel expands its healthcare workforce by moving everyone from an 8 hour shift to a 12 hour shift – instantly creating a 50% increase in staff time.⁵⁵ In a war, the capacity of all Israeli hospitals can be increased by 30 – 40 percent, by expanding the number of beds in the wards, using “surge capacity” treatment space, and increasing the number and work hours of medical personnel.⁵⁶

Without federal resources and aid, reports stated that the public health system in Louisiana and its neighboring states were not prepared to support their respective populations. State and local medical systems were either destroyed or overwhelmed and when resources were deployed, in most cases, the deployment was reactive increasing the inefficiency in the delivery of emergency medical services.⁵⁷ In all, Louisiana received the following federal assistance:

- ❑ Louisiana received eight Disaster Medical Assistance Teams (DMATs) and one Portable Morgue Unit (PMU), comprised of four Disaster Mortuary Operational Response Teams (DMORTs). DMATs are groups of professional and paraprofessional medical personnel that have the ability to triage and treat patients. DMORTs consist of private citizens with specialized training and experience to help in recovery, identification and processing of deceased victims. Mortuary services were established in St. Gabriel, Louisiana with 96 personnel.⁵⁸
- ❑ Prior to landfall, CDC personnel were on the ground in Louisiana with a Technical Advisory Response Unit (TARU). In anticipation of the need to provide emergency medical services, 27 pallets of medical supplies were pre-positioned prior to landfall. A pallet includes basic first aid material, blankets and patient clothing, suture kits, sterile gloves, stethoscopes, blood pressure measuring kits, and portable oxygen tanks. CDC

⁵³ US House of Representatives. *A failure of initiative*. 2006.

⁵⁴ Hogan DE, Burstein JL. *Disaster medicine*. Philadelphia: Lippencott Williams & Wilkins, 2002.

⁵⁵ Marcus LJ. Israel’s preparedness for responding to the health requirements of its civilian population in the event of deployment of a nuclear, biological or chemical weapon of mass destruction. 2002.

⁵⁶ McGlown JK. *Terrorism and disaster management – preparing healthcare leaders for the new reality*. Chicago: Health Administration Press, 2004.

⁵⁷ US House of Representatives. *A failure of initiative*. 2006.

⁵⁸ Ibid.

sent over 100 personnel to help reestablish services, conduct surveillance, and improve communication when New Orleans lost its public health department.⁵⁹

- ❑ Federal Medical Shelters (FMS), a new component of the HHS hurricane response, are rapidly deployed, minimal care medical kits capable of housing, triaging, and holding displaced patients. Each FMS is a 250-bed emergency shelter with pharmaceutical suite, designed to provide care to patients for three days before the need to re-supply and restock materials. One FMS arrived at Louisiana State University in Baton Rouge on August 30 and began operations staffed by Public Health Service (PHS) commissioned Corps officers. FMS was also staged at Fort Polk Army Base in central Louisiana.⁶⁰
- ❑ The National Air Guard supplied Expeditionary Medical Support Systems (EMEDS) to provide front line, field hospital care with 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. On September 1, the Air Force deployed an EMEDS to provide medical assistance at the New Orleans Airport. An additional EMEDS was set up at the Ernest N. Morial Convention Center in New Orleans to take place of Charity Hospital.⁶¹

Special Needs

Disaster medical care is significantly different from the care medical providers deliver on a daily basis. The principal of emergency medical care is to do the greatest good for the greatest number of patients, while the objective of conventional medical care is to do the greatest good for the individual patient.⁶² Special Needs patients consume disproportionate supplies, casualty care space, and caregiver attention. To ensure that scarce medical resources are put to the most beneficial use during a natural hazard with a slow onset (such as a hurricane), Special Needs patients should be evacuated with enough time to redeploy and stage the medical resources.

Shelters

Special Needs sheltering was a priority of planners in ESF-8 yet a standard definition of Special Needs did not exist prior to Hurricane Katrina.⁶³ Consistent inventorying of Special Needs patients was not performed. As a result, Special Needs sheltering consumed and continues to consume a disproportionate amount of planning time.

Last minute evacuees will use any and all available shelters whether they are designated or prepared to receive them. It is estimated that between 18,000 and 25,000 people broke in and entered the Convention Center. The Convention Center was never intended to serve as a shelter of any kind.⁶⁴

⁵⁹ Ibid.

⁶⁰ Ibid.

⁶¹ Ibid.

⁶² Briggs SM, Brinsfield KH. *Advanced disaster medical response*. Boston: Harvard Medical International, 2003.

⁶³ US House of Representatives. *A failure of initiative*. 2006.

⁶⁴ Ibid.

Regulations

Licensure standards for hospitals in Louisiana were revised and published in 2003. Emergency room services were designated as an optional service and hospitals were not required to declare the level of emergency service care provided.⁶⁵

The Emergency Medical Treatment and Active Labor Act (EMTALA) of 1989 provides for medical screening examination, stabilizing treatment, and appropriate transfer. Plans should include provisions for adhering to these federal regulations during patient transfers. Adherence to these requirements were challenged when the transferring and receiving hospitals did not have two-way radio communications capability and the telephone and cellular systems were damaged or rendered inoperable.

Public Readiness

A disaster is ultimately defined by the vulnerability of the people impacted. It is difficult to define a disaster by its physical characteristics. Natural hazards, by themselves, are not disasters. To be a disaster, a natural hazard has to affect people. The impact of a hazardous event on a community is partially determined by the mechanisms and adaptations that the population has developed to deal with the effects of potentially damaging events.

Natural hazards are more likely to be disasters in Third World countries, with poor people and inadequate medical infrastructures, than in modernized countries.⁶⁶ Unfortunately, rural parts of Louisiana and sections of New Orleans resembled the former rather than the latter. As of 2001, the U.S. Census Bureau reported that Louisiana was among the top five poorest states in the nation. In 2001, Louisiana ranked 4th highest in the U.S. in uninsured population. Louisiana also had a high unemployment rate (6.3%); a high crime index (4th highest in the US; 1st in murder rate); and extremely poor health outcomes (last in the U.S. for three consecutive years).

Communication

The one consistent factor in disaster response is the breakdown in communications. The reasons include (i) the lack of radio channels; (ii) incredible radio traffic volume; (iii) unclear communication chains; (iv) differing radios and frequencies; and (v) loss of communication capability.

Issues with communications are not confined to technology. Most hospital systems did not traditionally communicate among themselves. As they grew more competitive, they have become more reluctant to share information. As a result, during disasters no mechanism existed for the hospitals to communicate and most were left coordinating within their system.

⁶⁵ Patient Care Statewide System Task Force. *Regional trauma care – report to the governor*. 2003.

⁶⁶ Guha Sapir D, Lechat MF. *Reducing the impact of natural disasters: why aren't we better prepared?* Health Policy and Planning, 1986.

Working with the Media

Although interaction with the media is often perceived as adversarial, the media have definite roles and responsibilities in disasters. Involvement of the news media before disasters can provide a valuable source of public education and support for community planning. The changing demographics of Louisiana reminds us to not neglect the media that reach non-English speaking audiences. Managing expectations is a critical component of incident management and should be done proactively. The media should be educated on existing plans so that expectations are realistic.

The Israel Television Authority maintains 20 videos that provide authoritative information about what to do in the event of a disaster. The Ministry of Health authorizes which tape will be shown depending on circumstances. The objective of the videos are to reduce public panic and hysteria, by demonstrating that plans are in place, the situation is under control and the appropriate treatment is being made available. Medical personnel rather than politicians deliver the information in the video.⁶⁷

⁶⁷ Marcus LJ. Israel's preparedness for responding to the health requirements of its civilian population in the event of deployment of a nuclear, biological or chemical weapon of mass destruction. 2002.

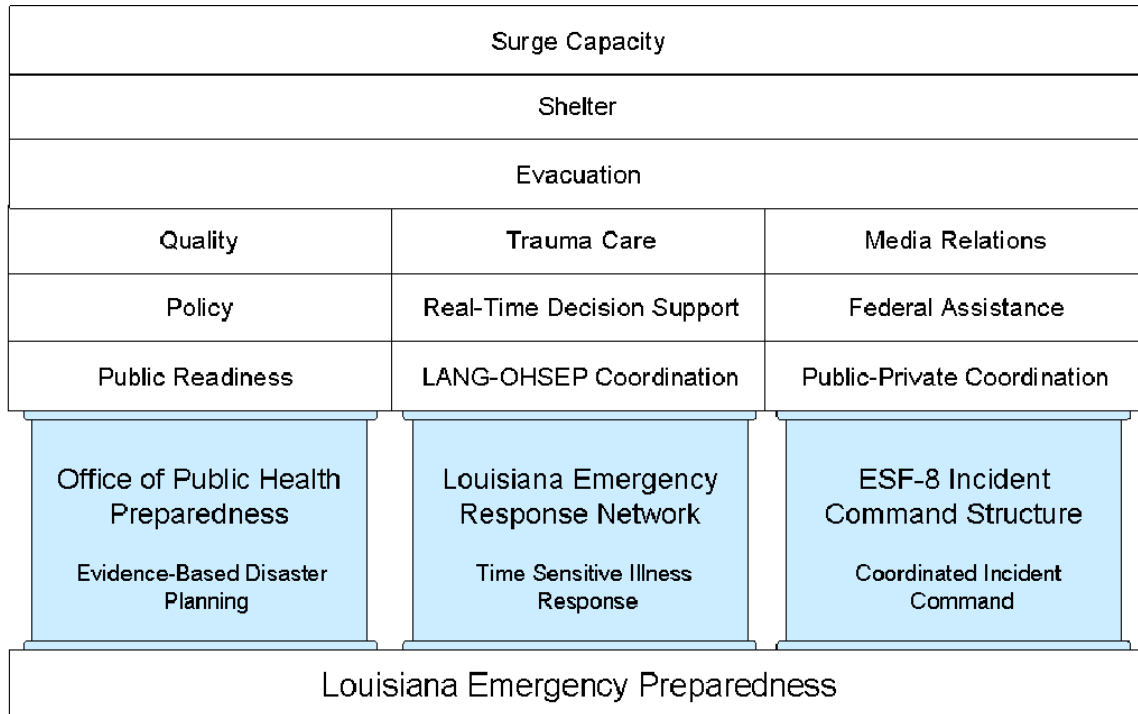
PREPARING THE LOUISIANA HEALTH SYSTEM FOR THE FUTURE

The primary goal of disaster planning is to increase the resiliency of a system allowing it to sustain a pre-determined level of operation through a disaster. The Merriam-Webster dictionary defines resiliency as the ability to recover from or adjust easily to misfortune or change. In order to be resilient, preparedness should be integrated into daily operations – funded through the budgeting process, implemented with operational standards, and measured through performance evaluations.

Our goal is to offer Louisiana policy makers with recommendations that will result in immediate opportunities for positive change. The following three recommendations are cost effective, timely, and relatively easy to implement. Moreover, they are based on proven strategies that have been employed successfully nationally and internationally.

These recommendations will form the three pillars of preparedness (Figure 5) for the Louisiana health system and will create a consistent framework to sustain emergency preparedness in the Louisiana health system by addressing the gaps identified during the 2005 hurricane season.

Figure 5: Three Pillars of Preparedness



Recommendation 1: Fund the Louisiana Emergency Response Network to operationalize a time-sensitive illness response system linking homeland security initiatives with healthcare operational standards and trauma care requirements.

Communities have five basic approaches to managing trauma-emergency networks. The first approach is to ignore it – resulting in lower level care to the patient. The second approach involves the creation of voluntary networks which depend entirely on the willingness of participants to cooperate. The third approach creates an independent agency to develop a system plan and to convince providers to participate. Under a fourth approach, the planning agency is granted regulatory powers in order to enforce implementation of the plan. The fifth approach places the entire system under a single agency.⁶⁸

Based on systems in existence today, system development is best accomplished through the designation of a lead governmental agency with the authority to develop policy, including those for trauma system development, implementation, coordination, evaluation, and identification of additional funding sources using a combination of the third and fourth approaches. However, to fulfil policy responsibilities, the lead agency must receive sufficient funding and human resources.

For several years, Louisiana chose the first approach. Then, in 2004, the Louisiana State Legislature passed Act No. 248 – creating the Louisiana Emergency Response Network (LERN). The LERN was created to be a comprehensive, coordinated statewide system for access to regional trauma-patient care throughout the state in order to safeguard the public health, safety, and welfare of the people of Louisiana against unnecessary trauma and time-sensitive related deaths and incidents of morbidity due to trauma. The LERN provided the blueprint required to develop a time-sensitive illness response system in Louisiana. However, the LERN was never adequately funded. Now Louisiana operates under the second approach.

By contrast, successful time-sensitive illness response systems have been implemented in a number of states including California (EMSA), Alabama (Birmingham Regional Emergency Medicine System), West Virginia (Rural/Trauma Network System), New York (New York State Trauma System) and Mississippi (Trauma Care System). Maryland runs one of the oldest and most established systems in the country. Internationally, it can be argued that Israel operates one of the most effective trauma systems in the world. The collaboration between these systems and their respective public health systems has resulted in several mutual benefits.

The need for a time-sensitive response system has never been greater in Louisiana. It was estimated that almost 1000 Louisianans died each year from trauma-related deaths.⁶⁹ Hurricane Katrina destroyed one of the two ACS-verified Level 1 trauma centers in the state. With the 2006 hurricane season only months away, the state's only trauma center is in Shreveport, 300 miles away from the Gulf coast.

The LERN will serve in dual capacity; it will function on a daily basis in accordance with well established national guidelines, and will be able to expand at the time of an incident to provide the elements of disaster medical care: triage and initial stabilization, definitive care, and

⁶⁸ Smiley DR, Loboda A, Starling C, Rubin J. Transformation from planning to operations: emergency medical services in disaster response. 2004.

⁶⁹ Patient Care Statewide System Task Force. *Regional trauma care – report to the governor*. 2003.

rehabilitation. When functional, the LERN will:

- ❑ Link key stakeholders of the health system with the Office of Homeland Security
- ❑ Include resources that are organized specifically for immediate life-saving response for severely injured patients
- ❑ Maintain a specialty trained workforce that is prepared to provide a range of emergency care, including the deployment of specialty trauma teams
- ❑ Include pre-hospital services, acute care in trauma centers and non-trauma acute care
- ❑ Utilize a well-established communications system and patient care protocols
- ❑ Provide surge capacity for patient care by integrating other specialty teams such as DMAT, military and other state trauma systems

Operational Structure

Of primary importance is the availability of the LERN to respond to local needs to ensure that all communities of Louisiana: rural, suburban, and urban; receive the best possible care. The LERN will be connected to pre-hospital, hospital, post-acute and injury programs across the state via nine regional command centers.⁷⁰ Operating out of existing EMS facilities, the nine regional centers will be linked together by a tenth state-level command center. This structure will mirror the unified emergency medical system in Israel where eleven regional dispatch centers are linked via a national dispatch center.⁷¹

Consisting of an integrated network of hospitals, personnel, and EMS, the LERN will match pre-hospital patient care needs with available hospital resources. The commitment of Louisiana hospitals will be required to provide optimal time-sensitive care to patients. Using Designated Regional Coordinators (DRCs), the LERN will determine the level of trauma-patient care available at each facility and track against this level. In order to accomplish this, we recommend that the reporting of pre-hospital and hospital emergency care data be made mandatory. Oversight of the data collection and analysis should be provided by the Department of Health and Hospitals.

LERN Board

The LERN Board is comprised of members from the Louisiana Senate, the Louisiana House of Representatives, the Department of Health and Hospitals, the Office of Homeland Security and Emergency Preparedness, the Louisiana Hospital Association, and other key stakeholders. The Board is in the process of appointing nine Regional Commissions. After the Regional Commissions have been appointed, the LERN Board will provide oversight and support funding of the LERN.

Regional Commissions

Members of the Regional Commissions will include representatives from the Office of Homeland Security, the Office of Public Health Regional Medical Director, local Ambulance Services, local Hospitals, the LERN Tri-Regional Coordinators and other local stakeholders. Each commission will be responsible for the planning and management of the regional response network, network

⁷⁰ Ibid.

⁷¹ Marcus LJ. Israel's preparedness for responding to the health requirements of its civilian population in the event of deployment of a nuclear, biological or chemical weapon of mass destruction. 2002.

improvement, and ongoing funding.

State Command Center

The State Command Center will function as the hub of the LERN system responsible for oversight, policy development, integration with homeland security initiatives and overall system improvement. Staffing for the State Command Center will include:

- ❑ A *Medical Director* who will be responsible for oversight of the LERN system; financial reporting; policy development; and will serve as the LERN liaison to the Louisiana Office of Homeland Security and Emergency Preparedness and the Louisiana National Guard.
- ❑ An *Executive Director* who will serve as the chief operating officer of the system and will be responsible for system efficiency and performance; development and implementation of trauma care strategy; and implementation of LERN policies.
- ❑ Three *Tri-Regional Coordinators* who will be responsible for collection and analysis of data for performance improvement within their respective regions; designing and executing injury prevention training programs; coordination with local Homeland Security personnel on preparedness planning for communities, families, schools and day cares; and participating in local emergency preparedness exercises.
- ❑ One *Staff* member to provide administrative support.

Regional Command Centers

Integrated with the 911-EMS infrastructure, the nine Regional Command Centers will constitute the LERN operations. Each Regional Command Center will include:

- ❑ A *Medical Director* to provide support and supervision.
- ❑ A *Designated Regional Coordinator* who will liaison with hospitals in their region.
- ❑ An *EMT-P Supervisor* to coordinate the EMT-P staff and track performance of the Regional Command Center.
- ❑ Three *EMT-P Staff* who will facilitate the seamless movement of patients.

LERN IT System

When accurate and timely information is available and shared, mortality and morbidity is prevented. The LERN, through its IT systems, will facilitate information sharing between key health system stakeholders.⁷²

We recommend the implementation of a LERN IT System that will gather and track real-time information such as the (i) number of emergency vehicles available for patient movement and their geographic location; (ii) number of hospital and nursing home personnel available and their qualifications; (iii) hospital bed availability and surge capacity; (iv) medical care available at healthcare facilities; and (vi) quantity of medical supplies available. Using this information, trauma patients will be transported to the appropriate facility in a timely manner.

⁷² Patient Care Statewide System Task Force. *Regional trauma care – report to the governor*. 2003.

Such a complex information system will require the cooperation of the Louisiana Department of Health and Hospitals, Louisiana State University Health Sciences Center, Louisiana Hospital Association, Louisiana Nursing Home Association, Louisiana Primary Care Association, Acadian Ambulance Services, Rural Ambulance Alliance, Louisiana Ambulance Alliance and a number of private hospitals and nursing homes.

The design and implementation of the LERN IT System may take up to three years to complete. In the meantime, we recommend that the LERN, through its Regional Commissions, initiate:

- Creation of policies, procedures and protocols pertaining to real-time information gathering, sharing, analysis and reporting
- Standardization of trauma-emergency care definitions and processes such as Special Needs and triage
- Definition of uniform data sets which at a minimum will include patient identification and gender, the main injury or problem, the interventions performed and the time, the pre-hospital provider identification, the EMS unit number and the triage category
- Definition of performance metrics, reporting requirements and operational standards
- Data collection, validation and analysis
- Creation a state-wide trauma registry

LERN's Role in Medical Disaster Response

The LERN is a natural foundation on which to build the Louisiana disaster medical response.

During disaster planning and simulation exercises, the LERN will be a valuable partner to the Office of Homeland Security and Emergency Preparedness and the Louisiana National Guard. Using its information analysis and reporting capabilities, the LERN will facilitate evidence-based planning. Information gleaned from the IT system and LERN processes will help planners gain a better understanding of any gaps that might exist between current emergency resources and public needs. Most importantly, the LERN could help resolve issues pertaining to surge capacity, evacuation routes, and staging areas.

Triage is arguably the most important mission of any medical response based on the assumption of a potential imbalance between health needs and available resources. The well known truism that the closest healthcare facilities to the disaster site will be the ones most significantly impacted by casualties should be factored when determining triage.⁷³ In Louisiana, the geographic effect is of clinical and statistical significance because it may result in substantial maldistribution of casualties throughout the community. The LERN will develop triage mechanisms to decrease the impact of the geographic effect.

Multiple approaches to triage are currently in practice. Daily triage performed on a routine basis, vary from institution to institution. During a disaster, when local resources are unable to provide immediate care on a timely basis to all victims needing such care, LERN will shift the focus from providing the highest intensity of care to the most seriously ill patients to doing the greatest good for the greatest number of patients.

⁷³ Hogan DE, Burstein JL. *Disaster medicine*. Philadelphia: Lippencott Williams & Wilkins, 2002.

Using Israel's *Magen David Adom* as a best practice for field operations, the LERN will follow a clear set of standardized instructions when dealing with disasters. In Israel, the first ambulance to arrive takes a command position and is not to provide any treatment. They immediately report to the Home Front Command on the scope of the incident and the approximate number of casualties so that appropriate resources can be directed to the site. Emergency services use a "scoop and run" approach to disaster response. All victims, with the exception of dismembered bodies, are removed from the scene. Life saving procedures are generally done in the ambulance during evacuation. No treatment is provided on site.

Using standardized triage criteria, uniform data sets, enhanced communications, and real time asset management, during a disaster, the LERN could become a critical component of the public health and medical services emergency support function (ESF-8) – discussed in recommendation 2.

We recommend that the LERN IT System be enhanced to serve as a medical emergency decision support system during a disaster. The decision support system will:

- Provide status updates and support decision making at the ESF-8 State EOC.
- Provide logistical support to the Louisiana National Guard, the Office of Homeland Security, and Local Parish EOCs
- Enable medical responders in the field to make effective decisions quickly by connecting medical personnel, local hospitals, and trauma centers to facilitate a seamless flow of patients, from the field (or a hospital) to the medical facility that possesses the resources and expertise most appropriate for the patient at that particular moment in time

Funding

Financial support is essential for ensuring system integrity to develop, maintain, and improve the trauma system over time. An effective trauma care system relies heavily on maintaining trauma care services and facilities in a constant state of readiness; long-term financial and community support is required. Other states have identified various ways to fund ongoing trauma-EMS systems in addition to general fund appropriations (Figure 6). States can no longer rely on federal funding to develop their systems. Systems in existence today are funded through a combination of:

- Motor vehicle fees, fines, and penalties
- Court fees, fines, and penalties (not motor vehicle related)
- 9-1-1 system surcharge
- Intoxication offence fees
- Controlled substance act or weapons violation fees
- Taxes on sale of tobacco
- Tribal gaming

Figure 6: System Funding in Other States

State	State Trauma/EMS Plans	Statutory State Funding	Other Funding Available
Alabama	No	Yes	Yes
Arizona	Yes	No	Yes
Florida	Yes	Yes	Yes
Louisiana	No	No	No
Mississippi	Yes	Yes	No
Texas	Yes	Yes	Yes

To develop a sound financial framework for the LERN, we took into consideration many categories of cost pertaining to administration and planning, infrastructure and equipment, communications, staffing, and patient care. Funds will be required to train personnel. Salary support was included in financial planning.

At an average cost of \$8.84 Million per year, implementation of the LERN will cost approximately \$26.5 Million over a three year period (Figure 7). This estimate includes costs associated with the implementation and operation of (i) Nine Regional Commissions; (ii) One State Command and Control Center; and (iii) Nine Regional Command and Control Centers.

The three-year estimate does not include the costs associated with the evaluation and implementation of the LERN IT System or the Medical Emergency Decision Support enhancement. Design and implementation of the LERN IT System will begin after the LERN Regional Commission structure is operational and the pre-system activities described above have been completed.

Figure 7: LERN Implementation Costs

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Total Cost</u>
State Command Center	\$ 644,793	\$ 624,086	\$ 648,809	\$ 1,917,689
9 Command Centers	\$ 8,109,084	\$ 8,089,835	\$ 8,411,268	\$ 24,610,187
Total	\$ 8,753,877	\$ 8,713,920	\$ 9,060,077	\$ 26,527,875

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Total Cost</u>
State Command Center				
Oversight	\$ 531,000	\$ 552,240	\$ 574,330	\$ 1,657,570
Space	\$ 45,053	\$ 46,855	\$ 48,730	\$ 140,638
Equipment	\$ 50,480	\$ 6,000	\$ 6,000	\$ 62,480
Other Expenses	\$ 18,260	\$ 18,990	\$ 19,750	\$ 57,000
Total	\$ 644,793	\$ 624,086	\$ 648,809	\$ 1,917,689

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Total Cost</u>
9 Command Centers				
Regional Staff	\$ 7,442,244	\$ 7,739,934	\$ 8,049,531	\$ 23,231,709
Space	\$ 284,520	\$ 295,901	\$ 307,737	\$ 888,158
Equipment	\$ 382,320	\$ 54,000	\$ 54,000	\$ 490,320
Total	\$ 8,109,084	\$ 8,089,835	\$ 8,411,268	\$ 24,610,187

Mississippi committed to a statewide trauma system in 1991.⁷⁴ In 1998, the Legislature passed HB 966, creating a Trauma Care Trust Fund, which established a permanent funding source for a statewide trauma system through a \$5 assessment on all moving traffic violations.⁷⁵ In 1999, the Mississippi Legislature appropriated an additional \$6 million to the Trauma Care Trust Fund bringing the total amount in the trust fund to \$8 million per year.⁷⁶ Maryland adds a tax of \$13.50 on each vehicle registration to fund its network.⁷⁷ Georgia legislators are considering several strategies to fund their state's trauma network, estimated to cost \$25 million to \$30 million.⁷⁸ According to the Health Services and Resources Administration, 39 states already have networks in place.⁷⁹

As the LERN matures, the operating costs are expected to drop significantly, as evidenced by the California Emergency Medical Services Authority (EMSA). EMSA was established in 1980 with a general mandate to develop a statewide system of coordinated emergency medical services. With over 25 years of experience, established policies, and 32 local EMS agencies, the EMSA now operates with a staff of 50 people and a budget of approximately \$5 million.⁸⁰

A 2002 HRSA national assessment revealed that the states with the most developed trauma systems were more medically ready to handle any type of incident because trauma systems are experienced in managing special populations, including children, residents of the inner city, groups of low income, minority groups, women, elder persons and individuals with special healthcare needs.⁸¹

⁷⁴ Mississippi Trauma Care System.

⁷⁵ Ibid.

⁷⁶ Ibid.

⁷⁷ *Trauma network proposed*. Atlanta Business Chronicle. March 2006.

⁷⁸ Ibid.

⁷⁹ Ibid.

⁸⁰ Smiley DR, Loboda A, Starling C, Rubin J. Transformation from planning to operations: emergency medical services in disaster response. 2004.

⁸¹ Health Resources and Services Administration. *A 2002 National Assessment of State Trauma System Development, Emergency Medical Services Resources, and Disaster Readiness of Mass Casualty Events*. 2002.

Recommendation 2: Formalize the ESF-8 incident command structure in accordance with the National Response Plan and the National Incident Management System to minimize chaos and enhance decision making during a disaster.

The incident command system was created in 1970 in response to a series of wildfires in Southern California that illustrated the difficulties of having firefighters from multiple jurisdictions respond to the same event. The goal of the incident command system was to simplify communications and establish clear lines of authority and command.

Figure 8: Core Concepts of the Incident Command System

Common terminology—use of similar terms and definitions for resource descriptions, organizational functions, and incident facilities across disciplines.

Integrated communications—ability to send and receive information within an organization, as well as externally to other disciplines.

Modular organization—response resources are organized according to their responsibilities. Assets within each functional unit may be expanded or contracted based on the requirements of the event.

Unified command structure—multiple disciplines work through their designated managers to establish common objectives and strategies to prevent conflict or duplication of effort.

Manageable span of control—response organization is structured so that each supervisory level oversees an appropriate number of assets (varies based on size and complexity of the event) so it can maintain effective supervision.

Consolidated action plans—a single, formal documentation of incident goals, objectives, and strategies defined by unified incident management.

Comprehensive resource management—systems in place to describe, maintain, identify, request, and track resources.

Pre-designated incident facilities—assignment of locations where expected critical incident-related functions will occur.

The problems that California fire services faced in 1971 are strikingly similar to the lessons learned from Hurricanes Katrina and Rita.⁸² Among them are:

- ❑ *Lack of a common organization.* Several federal, state, and local agencies took part in the incident. There were at least a dozen different organizational structures in use, and these were frequently modified to meet contingencies. Terminologies were different. Even at the local level, departments used different terms for the same items.

⁸² Auf Der Heide E. *Disaster response: the principles of preparation and coordination*. St Louis: CV Mosby, 1989.

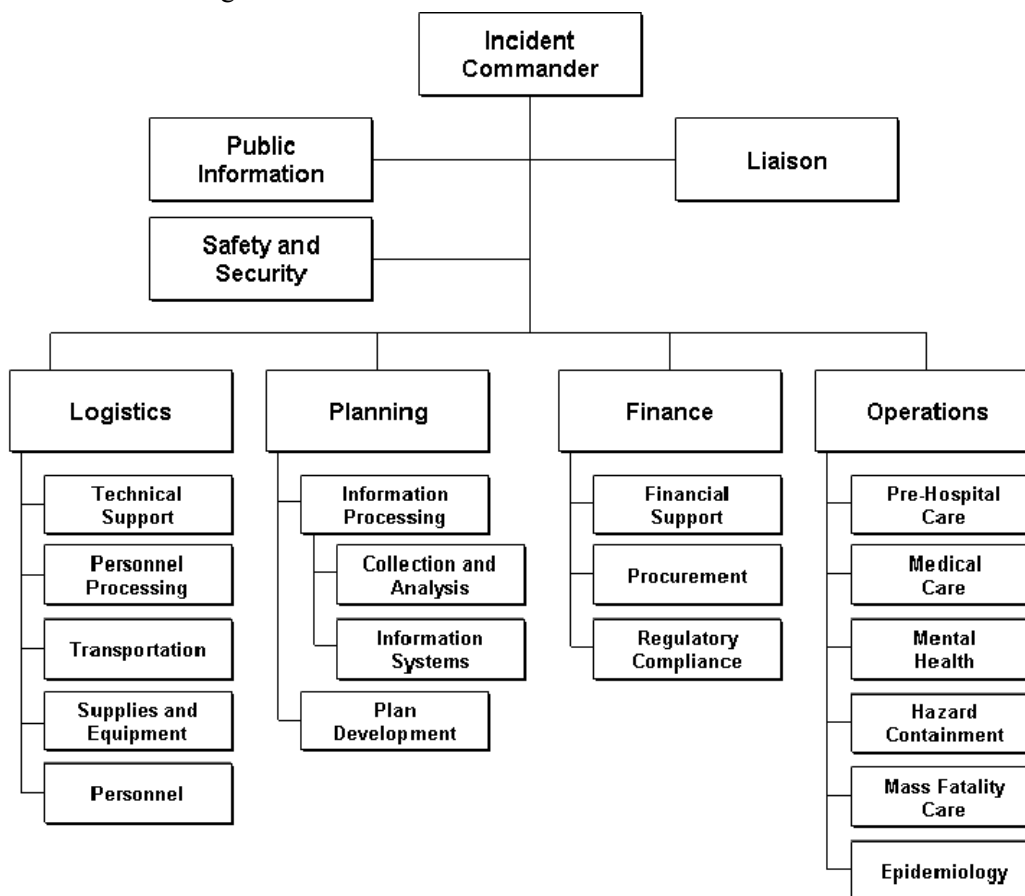
- ❑ *Poor on-scene and inter-agency communications.* Most of the radios were of single-frequency capability; and federal, state, and local forces were operating in different frequency bands. On-scene supervisors could not contact subordinate units and frequently could not talk to those in command. Field units were essentially "on their own" and had to take independent actions that were not necessarily coordinated or effective. Dispatch centers could not communicate with each other.
- ❑ *Inadequate joint planning.* Each agency had done its own planning at its own chosen location. Teams were assigned on a unilateral basis. Logistical support was ordered without knowledge of what other agencies already had available. There were separate and distinctly different objectives created by different jurisdictions.
- ❑ *Lack of valid and timely intelligence.* None of the organizational structures included elements charged with the specific duties of data and intelligence gathering. Information about incident character, size, and intensity were provided to decision-makers on a random and haphazard basis. Much of the information upon which decisions were made was old, and forces were often dispatched to areas that needed no action. Other forces were not dispatched to critically important sectors.
- ❑ *Inadequate resource management.* As the combined consequence of all of the preceding weaknesses, resources were poorly managed. Personnel, equipment, supplies, and other resources were lost, sometimes for days; no one knew where they were, and their potential effectiveness was lost.
- ❑ *Limited prediction capability.* Since these fires occurred under extreme conditions and with compounding challenges, the expertise to predict future conditions (even 1 hour in advance) was lacking. No one knew where the fires were going, how many homes might be threatened, how many people should be evacuated, or where they might go if they were ordered to leave.

Organizational Structure

An ESF-8 Incident Command System could avoid the previously mentioned problems. Such a system should be structured according to the format prescribed by the National Response Plan. Designed to improve effectiveness, accountability, and communications, this command structure should integrate seamlessly with the National Incident Management System.

The command structure must use an incident action planning process that is systematic and comprehensive; integrating multiple agencies and emergency response disciplines into a common organization using the process. The unified command concept used must provide the most effective means of coordinating and directing multiple disciplines during major Louisiana public health emergencies.

Figure 9: Recommended Command Structure for ESF-8



The command structure, comprised of the following five major management activities, should be modular and designed to help organize and allocate medical personnel, services, and resources in a timely manner. We recommend that a thorough study of the Hospital Emergency Incident Command System (HEICS)⁸³, and the Medical and Health Incident Management (MaHIM) System⁸⁴ be undertaken to determine the most appropriate “mapping” of the Louisiana health system to the recommended incident command structure.

Command

Command responsibilities will be executive in nature and should include organizing to meet the needs of the incident, establishing incident control objectives, setting priorities for work accomplishment, assuring development of command-approved action plans, approval of resource orders and releases, approval of public information outputs, and coordination with public officials and other agencies. We recommend that an incident commander and two alternates be formally selected from within the Department of Health and Hospitals and receive training on the concepts

⁸³ www.emsa.ca.gov/dms2/heics3.htm.

⁸⁴ Barbera J. Macintyre AG. *Medical and Health Incident Management System: A comprehensive functional system description for mass casualty medical and health incident management*. Institute for Crisis, Disaster and Risk Management. The George Washington University. 2002.

of Incident Command, the National Response Plan and the National Incident Management System.

A key point about the command function is that the executive responsibilities cannot be ignored. Even though there may be only five or six responders on an incident and the Incident Commander may be quite involved in the actual "doing" work, the command function requires attention to organizing and managing.

Another key point is that Command unifies the incident command structure and regardless of whether the command is represented by one person or a committee, its authority should be unambiguous. In Israel, major decisions regarding disaster response are made by the Supreme Hospital Association, a three person decision-making body. The three people are the Secretary General of the Health Ministry, the Surgeon General of the Israel Defense Forces, and the CEO of the largest health maintenance organization in the country.⁸⁵

The Incident Commander should be supported by a Public Information Officer, Safety Officer, and a Liaison Officer, as needed. These positions report directly to Command and assist in fulfilling the duties of coordination with others and the overall safety of the organization's members.

Command should be the only ESF-8 function housed at the State EOC during a disaster. During the response to Hurricanes Katrina and Rita, several ESF-8 EOCs existed – each housing different offices and bureaus of the Department of Health and Hospitals. We recommend that these EOCs be consolidated into one unified Department of Health and Hospitals EOC which will house all the appropriate offices and bureaus according to their incident command role.

Operations

Operations should be charged with carrying out Command direction and should be responsible for achieving command objectives, directing tactical operations, participating in the planning process, modifying action plans to meet contingencies providing intelligence to Planning and Command, maintaining discipline and accountability.

The Operations activities – while important – should be integrated into a managed system, and not a means unto themselves to the exclusion of all other chores that must be done. To this end, the LERN when implemented will play a crucial role in field operations pertaining to pre-hospital, medical and mass fatality care.

Planning

Planning should encompass all activities that support Command and Operations in the processing of incident information and in the development of plans for managing the incident. Within Planning, Information Processing will be responsible information collection and dissemination and maintenance of information for reporting purposes. Plan Development should support all activities through the planning process during an incident.

⁸⁵ Marcus LJ. *Israel's preparedness for responding to the health requirements of its civilian population in the event of deployment of a nuclear, biological or chemical weapon of mass destruction*. 2002.

Logistics

Logistics should provide all of the personnel, equipment, and supplies required to manage the incident and support the maintenance of facilities used by Operations. Critical support activities, such as receiving, managing, and transporting pharmaceutical surge supplies should be addressed through Logistics.

Finance

Finance should be responsible for financial management and accountability on the incident. Procurement authorizes expenditures in accordance with agency policies, but does not actually order or purchase anything. Procurement is also responsible for contracting services. The Logistics Section does this after receiving approval by Finance. Financial Support uses the Incident Action Planning process, the resource-status tracking, and the Logistics acquisition records to accomplish its accounting tasks. Compliance is responsible for tracking licensure requirements and agency compliance issues.

The command structure would provide public health and medical services with a single, comprehensive, and adaptable system for incident management. Such a structure would preserve jurisdictional organizations by assigning them functions according to their traditional responsibilities and capabilities.

While the concepts of incident command are easy to understand, the implementation is not as simple. Each function should conduct simulation exercises to maintain the desired level of readiness. We recommend that DHH formalize the ESF-8 incident command structure and conduct at least one simulation exercise prior to the start of the 2006 hurricane season. The costs associated with formalizing the ESF-8 incident command structure and conducting an exercise are included in the recommendation 3 implementation costs.

Recommendation 3: Establish long-term funding and planning mechanisms to sustain emergency preparedness of the Louisiana health system by creating an Office of Public Health Preparedness as its own entity within the Department of Health and Hospitals with an appropriate budget and the resources required to develop and sustain realistic disaster plans.

It is a widely held belief in the disaster planning community that the threats posed by future disasters are likely to get worse due to increasing population densities. Disasters of today involve economic dislocation, the collapse of political structures, violence and banditry, civil conflict, and mass population displacements.⁸⁶

In the aftermath of disasters, governments respond with drastic efforts – spending billions of dollars – to protect their citizens from future disasters. Commissions are created to document lessons learned and recommend action steps. Awareness is created on the risks of future threats and a conscious effort is made to mentally prepare the public for future disasters. These activities, if done in earnest, can produce resilient communities.

Figure 10: Major Disaster Declarations in Louisiana since 1985

Year	Date	Title
Major Disaster Declarations		
2005	09/24	Hurricane Rita
2005	08/29	Hurricane Katrina
2005	08/23	Tropical Storm Cindy
2004	09/15	Hurricane Ivan
2004	06/08	Severe Storms and Flooding
2002	10/03	Hurricane Lili
2002	09/27	Tropical Storm Isidore
2001	06/11	Tropical Storm Allison
2001	01/12	Severe Winter Storm
2000	02/15	Winter Storm
1999	04/09	Severe Storms, Tornadoes and Flooding
1999	01/21	Freezing Rain and Ice Storm
1998	09/23	Tropical Storm Frances and Hurricane Georges
1997	03/18	Severe Ice Storms
1995	05/10	Severe Storm, Flooding
1994	02/28	Ice Storm, Winter Storm, Severe Storm
1993	02/02	Severe Storm, Flooding
1992	08/26	Hurricane Andrew
1991	05/03	Flooding, Severe Storm, Tornado
1991	04/23	Flooding, Severe Storm
1989	11/22	Heavy Rains, Flooding
1989	07/17	Tropical Storm Allison
1989	06/16	SEVERE STORMS, TORNADOES
1989	05/20	SEVERE STORMS, FLOODING
1987	11/30	TORNADOES, FLOODING
1985	11/01	HURRICANE JUAN

Source: FEMA

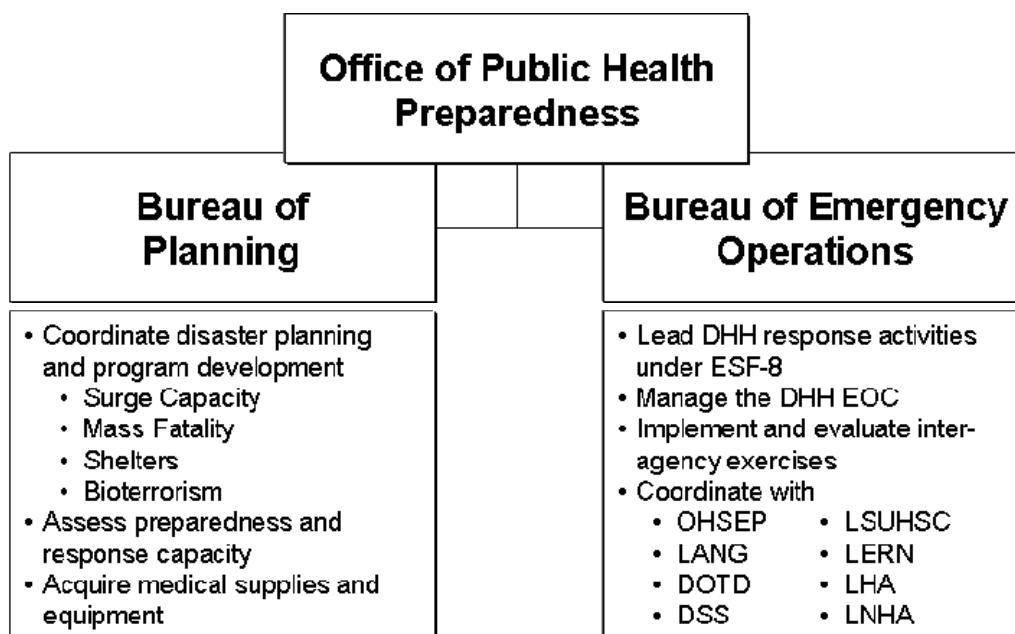
⁸⁶ Noji EK. *The public health consequences of disasters*. New York: Oxford, 1997.

Louisiana is no stranger to disasters. Over a 20-year period between 1985 and 2005, Louisiana declared 26 major disasters (Figure 10). So why was Louisiana not prepared for the 2005 hurricane season? One answer is that complacency had set in because over the past century, America's natural disasters had become steadily less deadly⁸⁷. Another answer is that socio-economic circumstances prevented preparedness, and Louisiana did not have the means or resources to be resilient.⁸⁸ Between 2002 and 2005, DHH did not supplement the \$17.5 Million in HRSA grants to support disaster planning.

The Office of Emergency Preparedness for DHH is housed in the medical director's office. According to the DHH website, the medical director is also responsible for medical consultation on a variety of health care policies, and serves as the department's liaison with medical, nursing, pharmacy, allied health professionals and professional associations throughout the state. The medical director also serves as the state health officer and is responsible for ensuring that the State Sanitary Code is enforced.⁸⁹ With the support of only two staff and no funding from the department for disaster planning, the medical director is expected to ensure public health preparedness throughout the state.

We recommend that DHH create an Office of Public Health Preparedness as its own entity within the department to serve as the Secretary's principal advisory staff on matters related to public health emergencies and to coordinate all disaster planning initiatives within the department. To maintain an unbiased position in executing its mission, it is essential that the agency be a stand alone agency within DHH reporting directly to the Secretary. Being independent will enable the agency to hold key stakeholders accountable.

Figure 11: Office of Public Health Preparedness



⁸⁷ White House. Federal Response to Hurricane Katrina: Lessons Learned. 2006.

⁸⁸ Noji EK. *The public health consequences of disasters*. New York: Oxford, 1997.

⁸⁹ www.dhh.louisiana.gov/offices.asp

We recommend that the agency be comprised of two bureaus – the Bureau of Planning and the Bureau of Emergency Operations (Figure 11). To fulfill its mission, we further recommend that the Department of Health and Hospitals appropriate the Office of Public Health Preparedness an annual budget of up to \$1 Million (Figure 12) – which includes salary costs and costs for disaster planning activities.

Figure 12: Proposed Three-Year Budget for the Office of Public Health Preparedness

	Year 1	Year 2	Year 3
Total	\$ 929,300	\$ 966,472	\$ 1,005,131
Staff	\$ 749,300	\$ 779,272	\$ 810,443
Director	\$ 101,600	\$ 105,664	\$ 109,891
Staff	\$ 609,600	\$ 633,984	\$ 659,343
Admin Assistant	\$ 38,100	\$ 39,624	\$ 41,209
Activities	\$ 180,000	\$ 187,200	\$ 194,688
Training	\$ 25,000	\$ 26,000	\$ 27,040
Supplies	\$ 5,000	\$ 5,200	\$ 5,408
Exercises	\$ 150,000	\$ 156,000	\$ 162,240

The director of emergency preparedness would head the office and within six months of its creation should submit to the Secretary, a three-year *Louisiana Public Health Preparedness Strategic Plan* outlining its goals, objectives and strategies. The report should also include a proposed budget to accomplish its mission during the three-year period.

The *Bureau of Planning*, with a full-time staff of five, should be responsible for the development of policies, plan assessment, and implementation of analytical products that ensure readiness to respond to public health emergencies. This bureau should be responsible for promoting public-private disaster planning.

Within three years, the Bureau of Planning should:

- ☐ Establish and chair committees on
 - Public-private plan integration
 - Hospital and nursing home evacuation planning
 - Special Needs
 - Community preparedness
- ☐ Develop a Readiness Assessment Framework
- ☐ Create a Surge Capacity Calculator
- ☐ Develop and implement an Evacuation Feasibility Tool to
 - Identify overlaps in evacuation vendor contracts
 - Perform evacuation cost-benefit analysis
 - Assess the adequacy of shelter capacity

The *Bureau of Emergency Operations*, with a full-time staff of three, should be responsible for implementation of the ESF-8 Incident Command Structure (Recommendation 2). In close coordination with the LERN, the Office of Homeland Security and Emergency Preparedness,

Louisiana State University Health Sciences Center, Department of Social Services, Department of Transportation and Development, the Louisiana National Guard and other key ESF-8 stakeholders, this Bureau should be responsible for maintaining a desired level preparedness. The Bureau should also be responsible for establishing and maintaining working relationships with federal agencies and the media.

Within eighteen months of its creation, the Bureau of Emergency Operations should:

- ☐ Develop protocols for each function within the ESF-8 Incident Command Structure
- ☐ Create a system to track all applicable federal grants
- ☐ Create a system to track all federal medical assets that would be available in a disaster

The benefits of having the Office of Public Health Preparedness significantly outweigh its costs. An annual budget of \$1 million will help resolve several gaps identified in the current disaster planning process. More importantly, the costs are very reasonable - \$3 million over a three-year period represents less than one percent of the Department's Katrina Project Worksheets⁹⁰ as of January 2006 (Figure 13).

Figure 13: DHH Katrina Project Worksheet (January 2006)

Cost Description	Cost
Operation of Shelters	\$ 38,335,500
Operation of Special Needs Shelters	\$ 312,000,000
DNA Testing of Human Remains	\$ 12,812,051
PW 893	\$ 873,712
PW 894	\$ 982,992
Total	\$ 365,004,255

As a long-term funding mechanism, the Governor of Louisiana and the Secretary of the Department of Health and Hospitals should establish "public health preparedness" as a line item in their annual budget.

CONCLUSION

Disasters start and end at home. In the aftermath of the 2005 hurricane season, Louisiana has been presented with an unique opportunity to set the benchmark in health system disaster planning and emergency preparedness. State and local officials should take the initiative to make responsible use of state and local funding to develop an adequate healthcare disaster response system. Louisiana officials should fulfill the public trust given to them. They should lead. There can be no greater mission and no greater tribute to the victims of Hurricanes Katrina and Rita.

⁹⁰ DHH Katrina Project Worksheets (FEMA-1603-DR, Louisiana). Katrina FIPS #: 000-UHH04-00. January 2006.

REFERENCES

1. White House. Federal response to hurricane katrina: lessons learned. 2006.
2. Trust for America's Health. Ready or not? protecting the public's health from diseases, disasters, and bioterrorism. 2005.
3. DHH Katrina Project Worksheets (FEMA-1603-DR, Louisiana). Katrina FIPS #: 000-UHH04-00. January 2006.
4. Number of trauma centers per million population by state. www.amtrauma.org/tiep/reports/TCPopulationPV.html.
5. Auf Der Heide E. *Disaster response: the principles of preparation and coordination*. St Louis: CV Mosby, 1989.
6. Hogan DE, Burstein JL. *Disaster medicine*. Philadelphia: Lippencott Williams & Wilkins, 2002.
7. Noji EK. *The public health consequences of disasters*. New York: Oxford, 1997.
8. US House of Representatives. *A failure of initiative*. 2006.
9. Vital statistics of all bodies at St. Gabriel morgue. February 2006.
10. McGlown JK. *Terrorism and disaster management – preparing healthcare leaders for the new reality*. Chicago: Health Administration Press, 2004.
11. Federal Emergency Management Agency. *National Incident Management System*.
12. Louisiana Office of Homeland Security and Emergency Preparedness. *Emergency operations plan*. 2005.
13. Health Resources and Services Administration. *Model trauma system planning and evaluation*. www.hrsa.gov/trauma/model.htm.
14. Health Resources and Services Administration. *A 2002 National Assessment of State Trauma System Development, Emergency Medical Services Resources, and Disaster Readiness of Mass Casualty Events*. 2002.
15. Patient Care Statewide System Task Force. *Regional trauma care – report to the governor*. 2003.
16. HB 272 – 2004 Regular Session (Act 248). www.legis.state.la.us
17. US Census Bureau. quickfacts.census.gov.
18. DHH presentation to the HRSA Advisory Board. February 2006.
19. DHH presentation. Sustainability of Emergency Preparedness.
20. Florida Department of Health. Office of Public Health Preparedness. *5 Year Strategic Plan: Midpoint Review*. March 2005.
21. Quarantelli EL. *Delivery of emergency medical care in disasters: assumptions and realities*. New York: Irvington Publishers, 1983.
22. Claypool R, Hupert N, Shannon M, Bogdan G. *Bioterrorism and health system preparedness – addressing surge capacity in a mass casualty event*. Agency for Healthcare Research and Quality, 2006.
23. Marcus LJ. *Israel's preparedness for responding to the health requirements of its civilian population in the event of deployment of a nuclear, biological or chemical weapon of mass destruction*. 2002.
24. United States Government Accountability Office. *Disaster preparedness: preliminary observations on the evacuation of hospitals and nursing homes due to hurricanes*. 2006
25. Briggs SM, Brinsfield KH. *Advanced disaster medical response*. Boston: Harvard Medical International, 2003.
26. Guha Sapid D, Lechat MF. *Reducing the impact of natural disasters: why aren't we better prepared?* Health Policy and Planning, 1986.
27. Smiley DR, Loboda A, Starling C, Rubin J. *Transformation from planning to operations: emergency medical services in disaster response*. 2004.
28. Mississippi Trauma Care System. www.ems.doh.ms.gov/trauma/trauma_care_sys.html.

29. *Trauma network proposed*. Atlanta Business Chronicle. March 2006.
Atlanta.bizjournals.com/Atlanta/stories/2006/03/20/story6.html.
30. Hospital Emergency Incident Command System Update Project. www.emsa.ca.gov/dms2/heics3.htm.
31. Barbera J, Macintyre AG. Medical and Health Incident Management System: A comprehensive functional system description for mass casualty medical and health incident management. Institute for Crisis, Disaster and Risk Management. The George Washington University. 2002.
32. Anderson MB. Which costs more: prevention or recovery? World Bank, 1991.
33. Knabb RD, Rhome JR, Brown DP. *Tropical cyclone report: hurricane katrina*. National Hurricane Center, 2005.
34. Johnson LW. Cut them into little stars. Journal of the Louisiana State Medical Society, 2006.
35. Mattox K. Katrina's aftermath – lessons learned: an expert interview with Kenneth Mattox, MD. Medscape, 2006.
36. Meade C. Planning the safety of healthcare structures. Rand Health, 2005.
37. Dick A, Mattke S. The level of state involvement in the reconstruction of the municipal healthcare system. Rand Health, 2005
38. Levy BS, Sidel VW. Terrorism and public health – a balanced approach to strengthening systems and protecting people. New York: Oxford, 2003.
39. Morgan O. Infectious disease risks from dead bodies following natural disasters. Rev Panam Salud Publica. 2004.
40. Kreimer A, Munasinghe M. *Managing natural disasters and the environment*. World Bank, 1990.
41. Texas Institute for Health Policy Research. Bioterrorism preparedness planning for Texas hospitals. Texas Department of Health, 2003.
42. Greater New York Hospital Association. Do you know your incident command system? Ensuring effective emergency response and management.
43. New Zealand Government. National civil defence emergency management plan order 2005.
44. Rosenfeld JV, Fitzgerald M, Kossmann T, Pearce A, Joseph A, Tan G, Gardner M, Shapira S. Crisis – Personal Perspective. Is the Australian hospital system adequately prepared for terrorism? Medical Journal of Australia. 2005.
45. United Health Foundation. America's health: state health rankings. 2004.
46. Public Health Foundation. PHF Calls on Congress to Invest in Improving Public Health Performance. 2005.
47. Bazzoli, G.J., Meersman, P.J., and Chan, C. Factors that enhance continued trauma center participation in trauma systems. J Trauma, 1996.
48. Cerise FP. How do health care systems recover, and even improve, after a catastrophe? United Health Foundation.
49. Louisiana Department of Health and Hospitals. State Health Officer/Medical Director Operating Budget. 2000.
50. Prats R. The state of Louisiana department of health and hospital's emergency preparedness policy and associated implementation costs. June 2000.