National Association *of* Public Hospitals *and* Health Systems

EMERGENCY PREPAREDNESS IN PUBLIC HOSPITALS:

Complete Findings of the 2006–2007 Emergency Preparedness Study

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About The National Association of Public Hospitals and Health Systems (NAPH)

NAPH represents America's largest urban safety net hospitals and health systems. These facilities provide high-quality health services for all patients, including the uninsured, regardless of ability to pay. They also provide many essential community-wide services, such as primary care, trauma care, and neonatal intensive care and educate a substantial proportion of America's doctors and nurses. At the national level, NAPH advocates on behalf of its members on issues of importance to safety net health systems across the country. NAPH also conducts research on a broad range of issues that affect safety net hospitals.

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Executive Summary

The delivery of health care during emergency situations is becoming increasingly complex for health care providers. Reaction to recent disasters has prompted heightened public scrutiny, new regulation and mandates, and increased integration of health systems. In particular, Hurricane Katrina's devastation to Charity Hospital in New Orleans highlighted the vulnerability of the health care delivery system during a natural disaster.

At the urging of its members, the National Association of Public Hospitals and Health Systems (NAPH) and its affiliated research arm, the National Public Health and Hospital Institute (NPHHI), responded to Katrina and the devastating hurricanes in Florida by conducting a brief Internet survey to identify the major hospital preparedness issues. This initial effort created a demand for more information about the state of emergency preparedness (EP) in safety net hospitals.

To address this need, NPHHI undertook a comprehensive study to (1) determine the role of public hospitals during an emergency and (2) identify emergency-related concerns and activities at member hospitals. NAPH and NPHHI's 2006–2007 EP Study covered a broad range of topics—from communications systems to worried-well management and is the most comprehensive work to date on safety net hospital preparedness.

Its findings indicate that public hospitals have a unique set of responsibilities in an emergency event. Perhaps because they have close connections with state government, local departments of health, and other public agencies involved with implementing surge capacity plans, NAPH members often serve a coordinating role during times of crisis. The study found that nearly three-quarters of respondents serve on three or more local EP committees, and 73 percent report having a mutual aid or cooperative assistance agreement with local governments.

Many safety net hospitals serve as the only point of emergency care in their communities. Indeed, 33 percent of respondents are the only source of Level I trauma care in their counties, and 22 percent are unable to ever go on diversion because they are the only trauma center in their areas. In an analysis using 2005 American Hospital Association data, NPHHI found that NAPH-affiliated hospitals operated 40 percent of the Level I trauma centers and 59 percent of the burn care centers in the top 15 most

populated cities in the United States.[1] As a result, NAPH members have been on the scene of the nation's biggest disasters.

While all hospitals are required by the Joint Commission to have written "emergency plans," NAPH members' plans must take added precautions for patients in their inpatient psychiatric wards (present at 72 percent of surveyed NAPH members) and in their prison wards and clinics (which exist at 30 percent of surveyed NAPH members). In addition to addressing plans for such facilities, public hospitals frequently include in their emergency plans specific provisions for patient populations that are at particular risk during an emergency, including pediatric patients (85 percent) and the chronically ill (73 percent).

These plans also outline EP activities in each facility. Common EP practices in safety net hospitals include:

- Disaster training—Using drills and educational materials;
- Emergency staffing—Employing effective techniques to ensure workforce capacity;
- Crisis communications—Developing effective internal and external communications plans;
- Coordinating resources—Working with public health officials and other hospitals to arrange evacuation, relocation, and emergency resources;
- Stocking supplies—Such as generators, food storage, water storage, pharmaceutical supplies, ventilators, etc.;
- Medical records management—Securing emergency access and security of medical records;
- Security planning—Building a team to handle security concerns during a crisis; and
- Mental health—Developing a flexible mental health response plan.

Findings from the study can be grouped into five major themes:

1. Given their representation in the hospital industry as a whole, public hospitals provide disproportionately more emergency services (e.g., trauma and burn care) than their non-public counterparts.

2. Public hospitals' response to an emergency is dependent on internal readiness (including in-house preparedness plans and systems, sufficient equipment and supplies, and adequate amounts of trained staff).

3. Because of their relationship with state and local government, NAPH members play an important role in their communities' emergency preparedness.

4. As safety net providers, NAPH members are committed to providing care during an emergency to the most vulnerable members of their communities, despite insufficient resources for preparedness planning.

5. NAPH members have limited access to resources for preparedness planning.

Public hospitals have always been recognized for their role in serving the uninsured, but as evidenced in the fol-

lowing pages, NAPH members also play a critical role in disaster response. They demonstrate capacity to provide essential emergency services, coordinate preparedness efforts internally, participate in external community planning, and care for vulnerable populations during an emergency—all with limited funding.

1

Introduction

The delivery of health care during emergency situations is becoming increasingly complex for health care providers. Nothing has made this more apparent than the aftermath of the Minneapolis bridge collapse (2007), blizzards in Colorado (2006), Seattle's windstorm (2006), Hurricanes Katrina and Rita (2005), the Northeast Blackout (2003), and of course, 9/11 (2001). Reaction to these events has prompted increased regulation, mandates, and greater integration of health systems. In light of the federal government's requirement that all hospitals be compliant with National Incident Management System (NIMS) guidelines by September 2008, it is essential that hospitals understand and address issues of emergency readiness. Indeed, emergency preparedness (EP) has never been more critical an issue for public hospitals.

The National Public Health and Hospital Institute (NPHHI)—the research arm of the National Association of Public Hospitals and Health Systems (NAPH)—conducted a series of surveys of member facilities to (1) determine the role of public hospitals during an emergency and (2) identify emergency-related concerns and activities at member hospitals.

NPHHI first began to examine members' emergency preparedness in 2005. Preliminary results released in September 2006 identified the major hospital preparedness issues and provided a framework for subsequent work. This initial effort created a demand for more information and knowledge-sharing among members. Subsequently, NPHHI embarked upon the second phase of the study, in which staff surveyed 60 NAPH members in one-to-three-hour-long structured interviews from December 2006 to April 2007. The 152-question survey covered a broad range of topics—from communications systems to worried-well management. The NAPH/NPHHI study is the most comprehensive study to date on safety net hospitals and these hospitals' essential role in emergency response.

Findings from the study can be grouped into five major themes:

1. Given their representation in the hospital industry as a whole, public hospitals provide disproportionately more emergency services (e.g., trauma and burn care) than their non-public counterparts.

2. Public hospitals' response to an emergency is dependent on internal readiness (in-house preparedness plans/systems, equipment/supplies, and adequate amounts of trained staff).

3. Because of their relationship with state and local government, NAPH members play an important role in their communities' emergency preparedness.

4. As safety net providers, NAPH members are committed to providing care during an emergency to the most vulnerable members of their communities, despite limited resources for preparedness planning.

5. NAPH members have limited access to resources for preparedness planning.

WHAT IS EMERGENCY PREPAREDNESS?

"[It is] the capability of the public health and health care systems, communities, and individuals to prevent, protect against, quickly respond to, and recover from health emergencies, particularly those whose scale, timing, or unpredictability threatens to overwhelm routine capabilities. Preparedness involves a coordinated and continuous process of planning and implementation that relies on measuring performance and taking corrective action."[2]

Study Findings

2

Five major findings about public hospitals and emergency preparedness. They provide disproportionately more emergency services than non-public facilities; internal readiness is the key to the public hospital's emergency response capabilities; their relationship with state and local government results in the public hospital's critical role in community-wide preparedness efforts; they are committed to providing EP services to vulnerable populations; and they have limited access to preparedness funding.

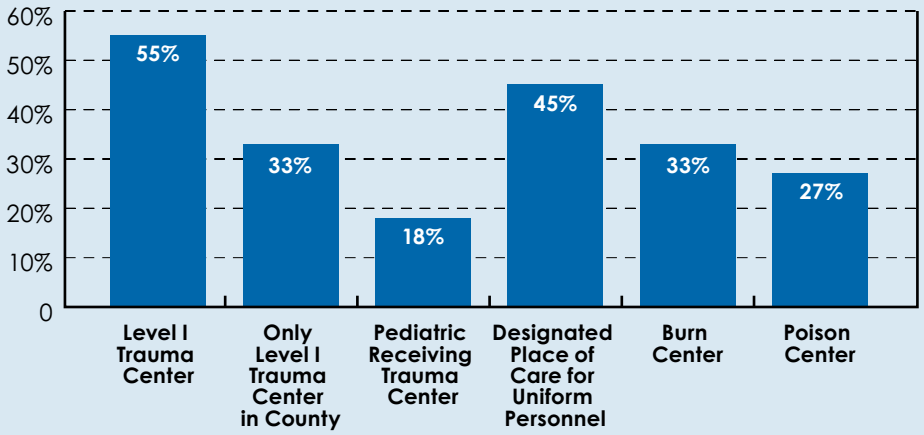
FINDING 1
PUBLIC HOSPITALS PROVIDE A DISPROPORTIONATE AMOUNT OF EMERGENCY SERVICES

Public hospitals play a critical role in medical emergency response and preparedness efforts. More than half (55 percent) of responding public hospitals operate Level I trauma centers. In fact, one out of every three NAPH member hospitals (33 percent) provide the only Level I trauma center in their counties. (See Figure 1.)

Data from the most recent annual NAPH Hospital Characteristics Survey and the latest American Hospital Association's annual survey (2005) indicate that NAPH members provide trauma care in 56 cities and communities across the country. Although NAPH members comprise only two percent of acute care hospitals nationally, they operate 14 percent of the nation's Level I trauma centers (or 39 percent of the Level I trauma centers in the markets in which they are located).[3] In 24 cities/counties, NAPH members are the only Level I trauma center or the only trauma center of any level.[4] NAPH members also provide other important specialty services that contribute to community emergency readiness, such as poison centers (27 percent) and burn centers (33 percent)—indeed, NAPH members represent 44 percent of all burn care centers in the U.S.,[5] and many public hospitals offer the only poison or burn centers in their states. Harborview Medical Center in Seattle, for example, is the only burn center for the entire Northwest region, which includes the states of Washington, Alaska, Montana, and Idaho.[6]

Many public hospitals are affiliated with academic institutions, enabling them to provide emergency preparedness education to other health professionals in the community. The Univer-

FIGURE 1 Percent of NAPH Hospitals with Specialized Emergency Services



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

sity of Mississippi Medical Center, for instance, provides emergency training for medical personnel to the entire state. Similarly, public hospitals often take on a coordinating role within their communities during times of crisis. One example is Atlanta's Grady Hospital, which coordinates all the hospitals in its region during an emergency.

Public hospitals comprise only two percent of acute care hospital beds in the U.S., but by providing trauma services, teaching disaster readiness, coordinating preparedness efforts, and offering specialty services like poison and burn centers, they are an essential part of the nation's emergency health care infrastructure.

FINDING 2
PUBLIC HOSPITALS' RESPONSE TO AN EMERGENCY DEPENDS UPON INTERNAL READINESS

A. Organizing and Coordinating Readiness Efforts Internally at Public Hospitals

EMERGENCY PREPAREDNESS PLANNING COMMITTEES

Public hospitals are frequently the lead health care agency charged with organizing and coordinating emergency response strategies in their communities. In order to take on this role, each NAPH member hospital must have an internal EP planning committee that collects input from multiple depart-

TABLE 1 Percentage of NAPH Members that Include Representatives of Selected Departments on Emergency Preparedness Committees

Departments Type	Percentage
Emergency Departments	100%
Administration	97%
Nursing Groups	95%
Physician Groups	92%
Security	90%
Environmental Services	83%
Intensive Care Unit	67%
Dietary	65%
Allied Health	63%
Social Work	57%
Pediatrics (not all respondents have pediatrics)	52%
Pastoral Care	32%
Other (Information Technology, Infection Control, Psych/Behavioral Health, Veterinary Medicine/Research)	10%

SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

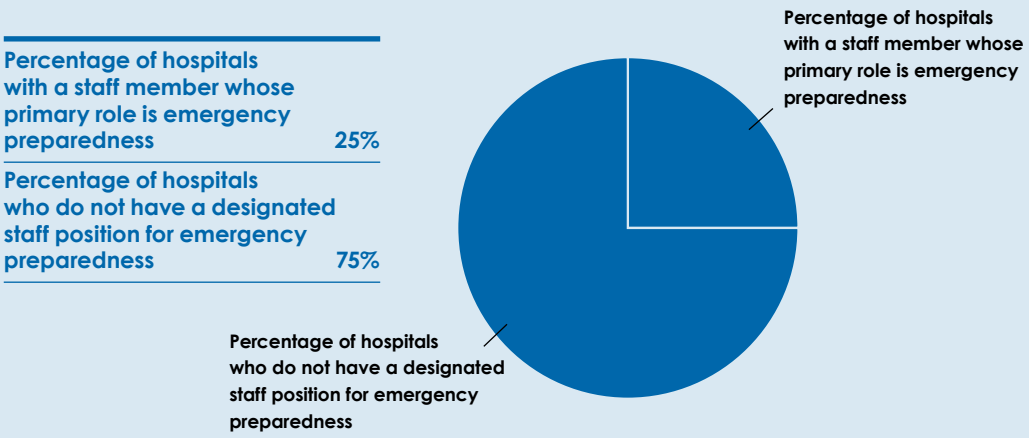
ments about preparedness efforts within the facility. At 100 percent of the studied hospitals, these committees included staff representatives from the emergency department. Others commonly represented on these committees include administration (97 percent), nurses groups (95 percent), physician groups (92 percent), and security personnel (90 percent). (See Table 1.)

The number of departments represented on disaster committees ranged from 5 to 25 (average: 12). Meetings were held as infrequently as three times per year or as often as 24 times annually (average: 10 meetings annually), at which time participants discuss drills, update the emergency response plan and, most importantly, prioritize emergency preparedness efforts. When asked about the top three priorities for the hospital's preparedness committee, the most common responses were pandemic flu planning, emergency communications, and surge capacity.

EMERGENCY PREPAREDNESS COORDINATORS

When Existing Staff Serve as EP Coordinators: Although each hospital's EP planning committee determines preparedness priorities and discusses internal hospital preparedness efforts, it usually falls to one person to act as the "emergency coordinator." Most public hospital facilities (75 percent) assign disaster preparedness functions to an existing staff member, who takes on this role in

FIGURE 2 | **Hospitals with a Designated EP Staff Member**



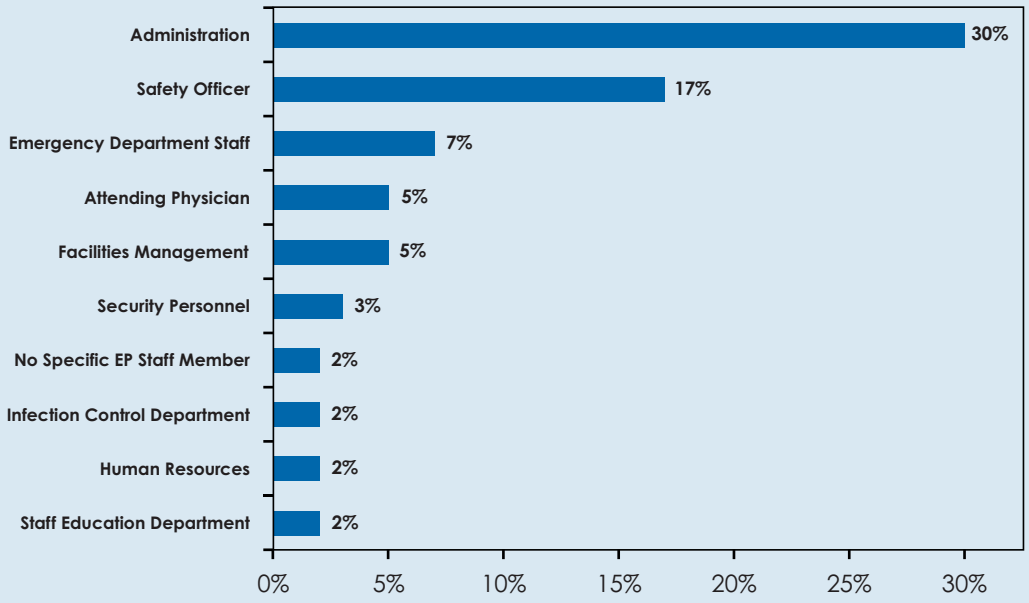
SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

addition to other responsibilities. (See Figure 2).

Of those facilities that assign the coordinating role to existing staff, many give this task to hospital administrators (30 percent), safety officers (17 percent), emergency department staff (7 percent), attending physicians (5 percent), facilities managers (5 percent), and security personnel (3 percent). (See Figure 3.) Other disaster coordinators work in infection control, human resources, and staff education departments. Some hospitals (two percent) do not have a specific emergency preparedness staff member, but instead rely solely on their emergency preparedness committee to coordinate disaster readiness activities.

When Hospitals Hire Dedicated EP Coordinators: A substantial and growing portion of NAPH member hospitals (25 percent) have established a dedicated, full-time preparedness coordinator position. Respondents attribute this emerging trend to increased federal regulations and Joint Commission accreditation standards, which have increased the workload necessary to be compliant with external mandates. Preparedness culture has also changed dramatically since September 11, 2001. One example is the increased emphasis on collaboration with local hospital groups, regional preparedness agencies, and other first responders (such as local police and fire). A designated EP coordinator is able to act as a liaison and work with these different groups to develop effective relationships with external preparedness stakeholders.[7] Designated planners assimilate preparedness protocol into the hospital culture—thereby engaging all staff members while simultaneously coordinating with other agencies and

FIGURE 3 | **EP Management in Hospitals Without Designated EP Coordinators**



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

tailoring preparedness activities and procedures for their own hospital.[8]

HOSPITAL INCIDENT COMMAND SYSTEM (HICS)

One of many tools public hospitals use to effectively respond and coordinate emergency services for their communities, is a facility-wide coordinating system known as the Hospital Incident Command System (HICS), which is used by 90 percent of NAPH members. The remaining ten percent of surveyed hospitals that do not use HICS instead rely on a general incident command system. HICS offers a framework that enables emergency response organizations, including health care institutions, to work in concert with the appropriate local, state and federal agencies.[9] Established in the 1970s by the National Wildfire Coordinating Group in California,[10] HICS helps hospitals prepare for, respond effectively to, and recover capabilities after a disaster.[11] Coordinating systems prove extremely helpful by focusing on the incident priorities, such as continuity of operations during an emergency.[12]

EMERGENCY ACTION PLANS

One responsibility of the coordinating system in each hospital is the development and maintenance of an emergency

TABLE 2 | Activities Included in Hospital Emergency Action Plans

Activities	Percentage
Staff Communication	98%
Security	98%
Decontamination of Victims	97%
Evacuation Measures	93%
Establishment of Alternative Care Sites	92%
Cancellation of Elective Procedures and Admissions	92%
Pharmaceuticals to Treat Hospital Employees and Medical Staff	90%
Food and Water Resources	88%
Surge Capacity Issues	88%
Isolation	88%
Obtaining Additional Staff for Surge Capacity	87%
Mass Patient Management	87%
Increased Inventory of Antibiotics and Supplies	83%
Coordinating Supply-Chain Management of Critical Supplies and Pharmaceuticals	83%
Mass Evacuation	83%
Medical Equipment	82%
Provisions for Counseling and Mental Health Services	82%
Utilization for Medical Purposes of Non-Clinical Space Within the Hospital	77%
Providing for Patients/Patient Families with Limited English Proficiency	75%
Mass Fatality Management	72%
Psycho-Social Care	72%
Worried Well Management	71%
Activation of Decommissioned Ward Space (Not all hospitals had decommissioned ward space)	65%
Provisions for Dialysis Patients	45%
Staff Incentives	32%

SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

action plan that specifies procedures used during an emergency event. There are many similarities among NAPH members' emergency action plans (see Table 2). For example, almost all (98 percent) respondents report that their plans include provisions that address staff communication and security.

Similarly, nearly all NAPH members' emergency plans include decontamination of victims (97 percent), evacuation measures (93 percent), establishment of alternative care sites (92 percent), cancellation of elective procedures and admissions (92 percent), and provisions for pharmaceuticals to treat hospital employees and medical staff (90 percent). The decision to activate the emergency response plan is also very similar among hospitals. Most NAPH members

(77 percent) report that their hospitals' administration is responsible for activating the emergency response plan; the remaining hospitals indicate that staff in the emergency department (15 percent) or a designated incident commander (13 percent) has that authority.

While many hospital emergency plans have similar provisions, some hospitals include additional items in their plans. Specifically, 45 percent of responding public hospitals include provisions for dialysis patients during an emergency, and 32 percent report that their emergency plans include incentives for staff to report to work during an emergency.

In addition to general EP activities, NAPH members frequently include provisions for specific emergencies in their emergency plan, such as internal fire and smoke (98 percent), chemical or internal hazmat spill or release (98 percent), bomb threat (97 percent), internal flooding (97 percent), and electrical failure (97 percent).

Given that all hospitals experience different threats based on population, geography, and local industry, another component of EP plans is a "hazard vulnerability analysis" to identify its most likely emergency scenarios. Hospitals must conduct this analysis as per Joint Commission requirements. The most commonly anticipated disaster events among NAPH members include severe heat/humidity (53 percent), severe rainfall/flood (52 percent), and airplane, bus, or train crash in the community (52 percent).

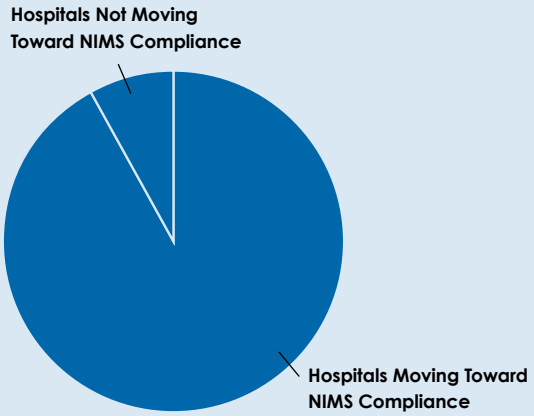
B. National Incident Management Systems

The National Incident Management System (NIMS), a national coordination system developed in 2003 by the Federal Emergency Management Agency (FEMA), seeks to homogenize emergency response nationally by standardizing efforts between states and encouraging different agencies and jurisdictions to work together.[13] For example, NIMS enables hospitals and other agencies to have common terminology when dealing with a disaster event.[14] To that end, NIMS is compatible with the more established Hospital Incident Command System protocol, described above. The federal government mandates that all hospitals that receive federal preparedness and response grants much reach NIMS compliance by September 30, 2008.

Almost all NAPH member hospitals currently are working toward NIMS compliance (92 percent). (See Figure 4). Not only is NIMS compliance important to maintain federal funding, it is essential to facilitate public hospitals synchronization with outside agencies.

FIGURE 4 Hospitals Working Towards NIMS Compliance

Hospitals Moving Toward NIMS Compliance	92%
Hospitals Not Moving Toward NIMS Compliance	8%



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

C. Public Hospital Equipment and Supplies for a Disaster Event

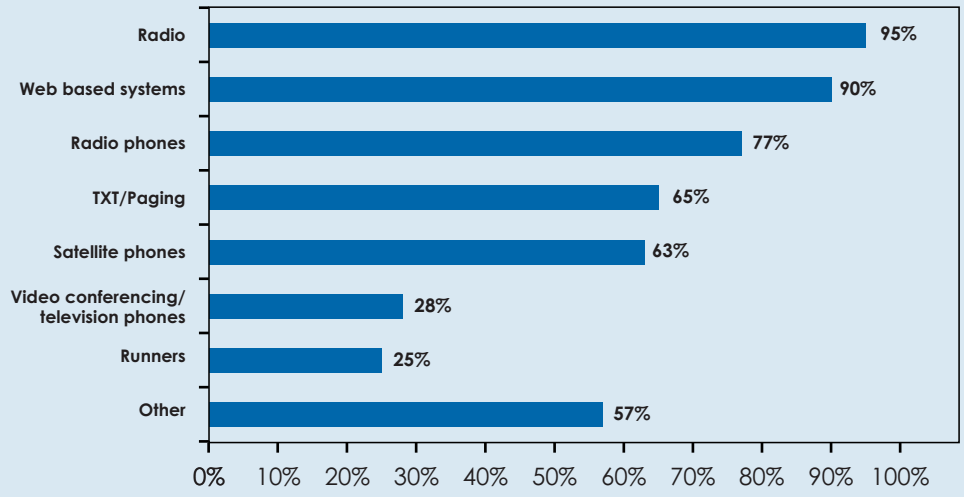
EMERGENCY COMMUNICATION SYSTEMS AND EQUIPMENT

One key component to productively responding to an emergency event is effective communication tools and protocols. All hospitals report having an alternative communication system within the hospital if standard hospital communications fail. (See Figures 5 and 6). Additionally, all NAPH hospitals use a combination of communication tools in an emergency to establish "redundancy," which helps ensure coverage in case one system fails. According to the data, the most commonly used alternative communication mechanisms are radio (95 percent) and Internet based systems (90 percent). (See Figure 5).

Other alternative communication systems include radio phones (77 percent), text/paging (65 percent), and satellite phones (63 percent). A majority of public hospitals (83 percent) make alternative communication tools available to all departments in the hospital. These types of systems are important for coordinating staff members and identifying help from outside agencies during an emergency.

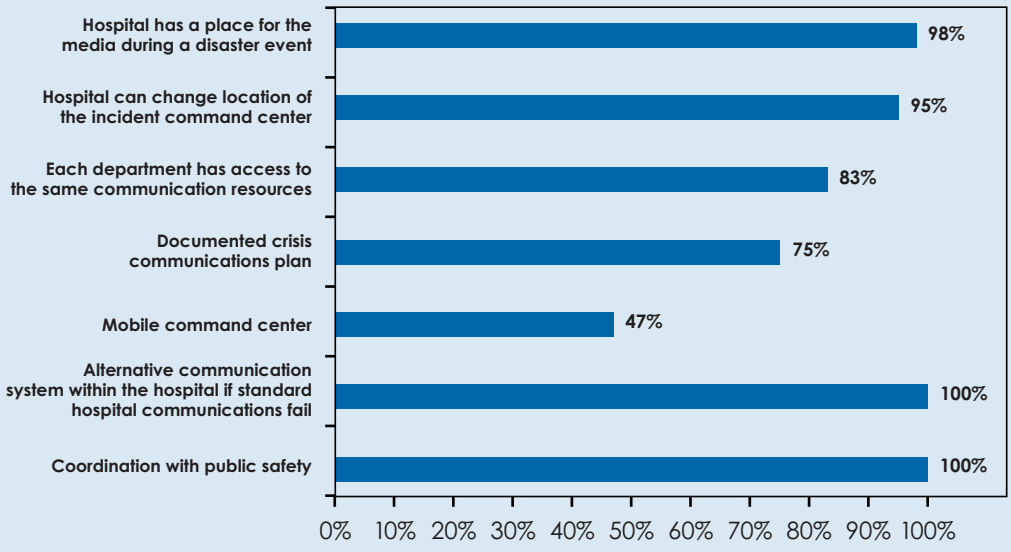
In particular, crisis communications plans are used to communicate with hospital staff, local authorities, and media.[15] Many hospitals (75 percent) have these types of plans as part of their preparedness activities. Hospitals need a communications plan for dealing with the media during a crisis, and nearly all (98 percent) have a specific place for media during such an event. These pro-

FIGURE 5 Emergency Communications Systems



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

FIGURE 6 Hospital Communication Tools and Provisions



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

visions allow a hospital to interact more efficiently with the media.

D. Medical Records and Patient Tracking

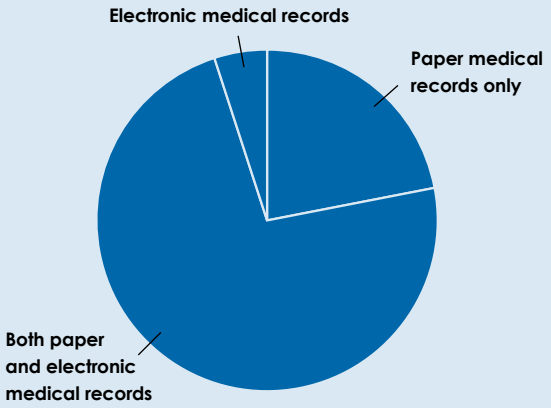
PAPER VERSUS ELECTRONIC RECORDS

One of the most important lessons public hospitals learned during Hurricane Katrina is the importance of portable and accessible medical information. For example, many residents who either currently live in or fled from Katrina-affected areas did not have their prescription information because paper medical records were destroyed in the flooding. This demonstrates the need to include accessibility and transferability of medical information in EP planning efforts.

The ways in which hospitals preserve documents vary depending on how the hospital maintains patient records. Most public hospitals (73 percent) have a combination of electronic and paper medical records. (See Figure 7). A total of 22 percent have only paper medical records, while few (5 percent) have only electronic medical records (EMRs). More than half of the surveyed hospitals (57 percent) report having the means to "back-up" or preserve paper records by scanning them into an electronic format. Of the hospitals with EMRs, 77 percent report the ability to back up their files during an emergency, and 68 percent can access EMRs during a power outage. As hospitals are transitioning to EMR systems, NAPH members are making provisions to preserve and access medical information in an emergency.

FIGURE 7 Paper and Electronic Medical Records

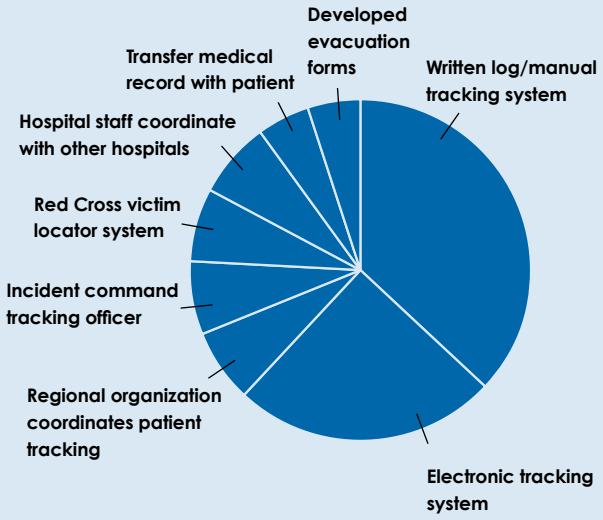
Paper medical records only	22%
Both paper and electronic medical records	73%
Electronic medical records	5%



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

FIGURE 8 Strategies of Hospitals with Patient Tracking Provisions

Written log/manual tracking system	37%
Electronic tracking system	25%
Regional organization coordinates patient tracking	7%
Incident command tracking officer	7%
Red Cross victim locator system	7%
Hospital staff coordinate with other hospitals	7%
Transfer medical record with patient	5%
Developed evacuation forms	5%



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

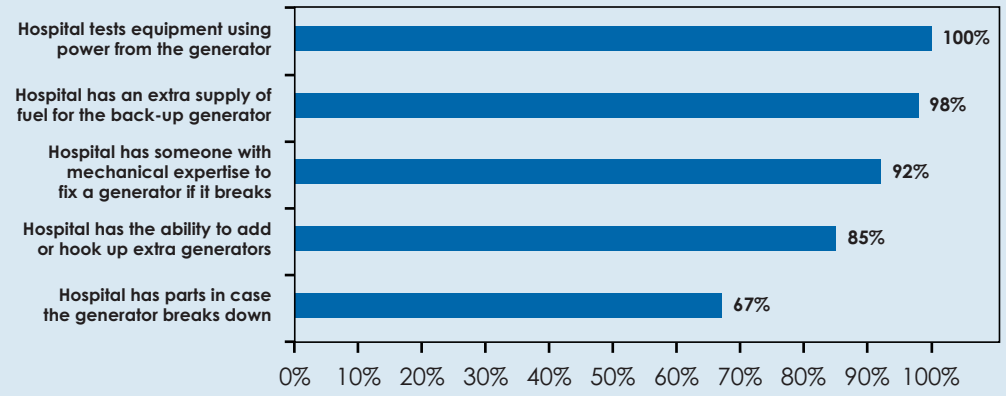
PATIENT TRACKING SYSTEMS AND STRATEGIES

Another important lesson from Hurricane Katrina is the need for effective patient tracking systems. As hospital patients were evacuated out of flooding hospitals and transported elsewhere, efforts to track patients' medical regimens—as well as patients' relatives—were particularly critical. More than three-fourths (72 percent) of studied hospitals report having provisions for tracking evacuated patients. Of those with a tracking system, the most common technique (37 percent) was a simple handwritten log or manual tracking system. A smaller proportion of hospitals used other means, including electronic tracking systems (25 percent), the Red Cross victim locator system (7 percent), and regional coordination efforts (7 percent). (See Figure 8).

E. Emergency Generators and Fuel

One of the most fundamental components of a hospital's EP planning efforts is the provision of generators and fuel in the case of a power outage. The Joint Commission has many requirements regarding emergency generators, including a recently-clarified condition that hospitals must complete a four-hour generator test by July 2008 (and then must complete an additional one every 36 months thereafter).[16] A full 100 percent of NAPH hospital respondents report testing equipment using power

FIGURE 9 Percent of Public Hospitals with Emergency Generators and Fueling Capabilities



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

from the generator. Almost all (92 percent) hospitals studied report having someone with mechanical expertise to fix a generator during an emergency, and 67 percent of hospitals report having backup equipment parts in case the generator breaks down. (See Figure 9).

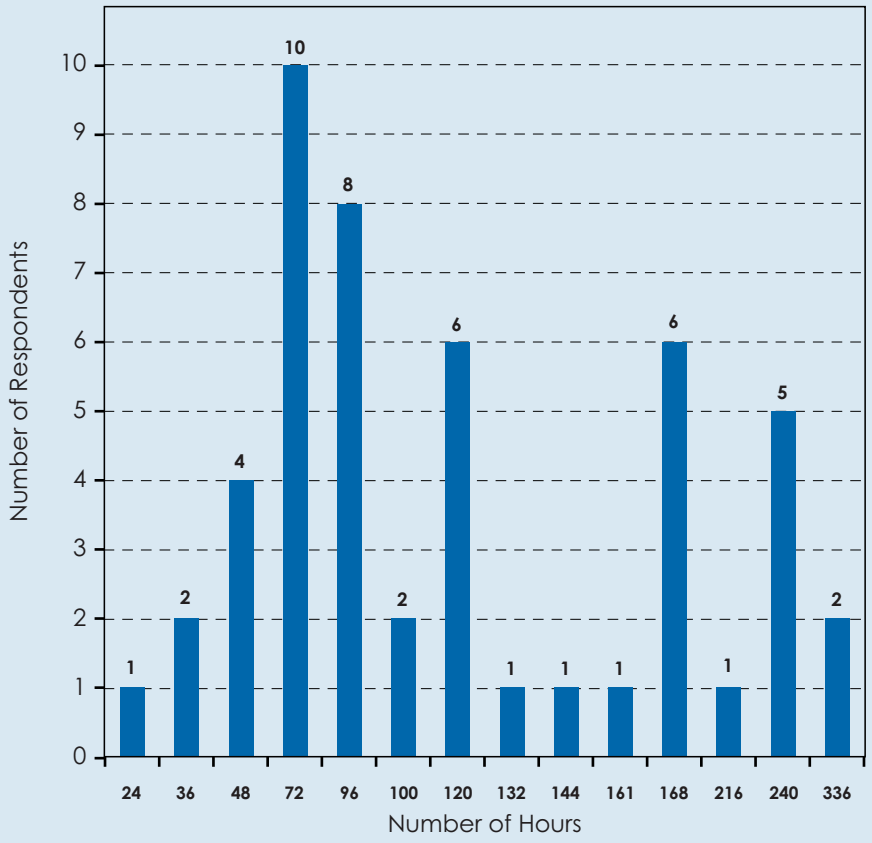
Sufficient fuel supply is another key factor affecting continuation of hospital operations during a power outage. Generator failure can lead to loss of air conditioning, access to EMRs, and other capabilities. Nearly all (98 percent) of responding public hospitals report having an extra supply of fuel for their back-up generators.

When asked about the number of hours their hospital could last without obtaining additional fuel, survey respondents gave a variety of answers. The minimum amount of time reported was 24 hours, and the maximum time reported was 336 hours. The largest number of hospitals reported being able to last 72 or 96 hours without obtaining additional fuel. (See Figure 10).

F. Food and Water Resources

Food and water supplies are essential during an emergency, not only to continue caring for patients, but also to feed staff, families of staff, and any volunteers. Most surveyed hospitals indicate that anticipated food storage would last either three days (38 percent) or one week (38 percent). Fewer hospitals estimate their supplies would last over one week (13 percent). (See Table 3). Food storage is difficult because it requires large amounts of refrigerated storage. Therefore, many hospitals have developed plans with food suppliers to increase supplies during an emergency.

FIGURE 10 Number of Hours NAPH Hospitals Can Use Generators Without Obtaining Additional Fuel



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

Nearly all surveyed hospitals (92 percent) report that they have specific provisions to access additional food and water during an emergency.

Maintaining adequate water supplies is an extremely complex because hospitals need both potable and running water for toilets, hand washing, and other sanitary purposes. Hospitals were asked about their storage of potable water during an emergency event.

Over one quarter (35 percent) reported having enough drinkable water to last a week. (See Table 4). Other hospitals had enough storage for four days (12 percent), three days (20 percent), and two days (12 percent). These percentages reflect the amount of water on hand and stored at the hospital. Some hospitals arranged to have water brought in during a crisis instead of, or in addition to, supplies on hand.

TABLE 3 Time (in Days) that Public Hospitals Anticipate Food Storage to Last During Emergencies

Time Period	Percent
Two Days	8%
Three Days	38%
One Week	38%
Over One Week	13%
Don't Know	3%
Total	**100%**

SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

TABLE 4 Periods of Available Potable Water Access During an Emergency

Time Period	Percent
Less Than a Day	2
One Day	7
Two Days	12
Three Days	20
Four Days	12
One Week	35
Over One Week	3
Don't Know	9
Total	**100%**

SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

G. Infectious Disease and Decontamination Supplies and Equipment

Pharmaceutical supplies are an important part of any comprehensive emergency response. Survey data show that many NAPH member hospitals have pharmaceutical supplies, including antiviral medications (57 percent), bronchial dilators (70 percent), antidotes for cyanides (38 percent), medication for nerve agents (65 percent), and medication for biological agents (82 percent) to respond to a 25 percent increase in patient load above normal hospital demands. (See Figure 11). These supplies are central to a hospital's ability to respond to specific crises, such as a flu outbreak.

COOPER GREEN MERCY HOSPITAL
BIRMINGHAM, ALABAMA

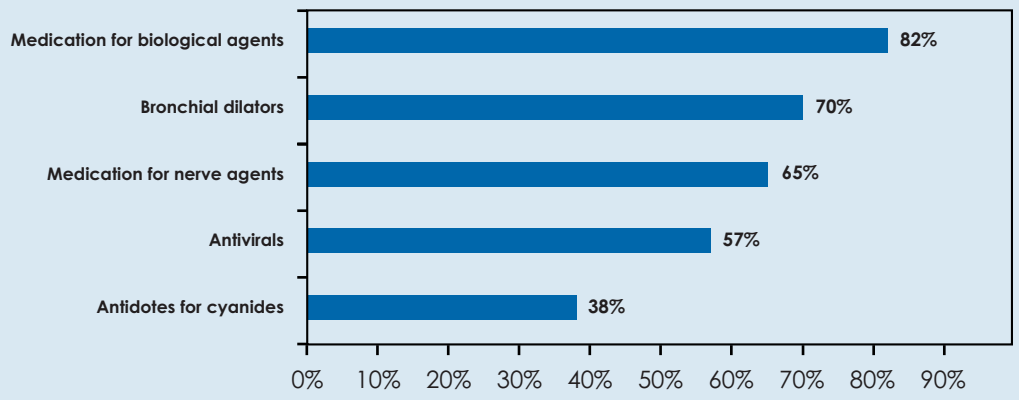
Staffed Beds: 141
Inpatient Days: 23,732
Emergency Department Visits: 26,593
Other Outpatient Visits: 124,125 [17]

A $28 million renovation project at Cooper Green Mercy Hospital is not only giving the facility the much-needed ability to expand its operations, it is better preparing the hospital's infrastructure for disasters. The main incentives for the project were (a) to address the hospital's need for emergency-dedicated electrical circuits and (b) to relocate its powerhouse (i.e., power distribution center—the main station where electricity enters the building), which was located in an area vulnerable to flooding. Other aspects of the renovation included adding new fire alarms, sprinkler systems, and nurse call systems, as well as refurbishing the hospital's generators.

In addition to those upgrades, the project highlighted other building and system shortcomings. For example, although electrical, plumbing, and mechanical blueprints existed, changes to electrical circuits, cut-off valves and the like had been made—but not properly documented—over the building's 32-year history. This meant there was no clear understanding of where critical circuits ran, where by-pass switches or valves were located, or which systems they controlled. Identification of actual versus documented electrical and mechanical systems revealed that a portion of the laboratory was not wired with critical circuits. The project also uncovered deficiencies not previously identified, such as the need to upgrade medical gas systems (e.g., oxygen, medical air, and nitrous oxide) in the operating suites.

As important as the infrastructure upgrades are, the renovation in many ways is preparing Cooper Green to handle future emergencies. Contingency plans encompassing back-up systems, suppliers, and designation of critical personnel enable staff to deal effectively with unexpected challenges related to the renovation. For instance, after the chilled water system failed and rendered the air conditioning system inoperable, Cooper Green engineers were able to marshal needed resources and had a back-up system running in short order. Beyond discoveries about the hospital's infrastructure and overall personnel preparation, the renovation has boosted the staff's ability to communicate efficiently by clarifying key contacts and the chain of command.

FIGURE 11 Supply of Internal Pharmaceuticals During First 72 Hours of a 25 Percent Patient Surge



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

H. Preparing for Flu Outbreaks

One of the biggest preparedness priorities for all hospitals nationally is pandemic flu planning. A total of 93 percent of surveyed NAPH hospitals have developed a plan to provide medication during a biological attack or pandemic flu. Hospitals also have supplies of personal protective equipment (PPE) to respond to a flu outbreak and many other types of chemical or biological exposure. The three most common types of PPE stored by public hospitals are N95 masks (a mask which filters out 95 percent of the particles that attempt to flow through the mask), powered air purifying respirators (PAPRs), and decontamination suits.

The amount of PPE equipment stored varies greatly across NAPH member hospitals—from five-hundred to several hundred thousand. When NPHHI compared the quantity of PPE to hospital bed size (as a proxy for hospital size), larger hospitals did not necessarily have more PPE than smaller hospitals. Rather, the number of PAPRs was linked to overall EP spending. Respondents report that having an appropriate amount of PPE equipment is dependent upon adequate EP funding levels, location of facility (i.e., in a low or high risk area), and the familiarity of hospital administration and staff with best practices around EP. However, there are virtually no national mandates dictating an amount of PPE equipment that hospitals must acquire and store.[18]

I. Decontamination Mandates

The Joint Commission requires health care facilities to develop plans to handle mass decontamination efforts.[19] All surveyed NAPH members (100 percent) report having decontamination showers, and some report having complex decontamination systems that could be ramped up or down depending on the type of emergency. On average, public hospitals report that they could decontaminate 56 ambulatory patients per hour (the maximum was 252 ambulatory patients per hour). Almost all hospitals (98 percent) also report having supplies to decontaminate non-ambulatory victims in the event of a chemical or biological incident.

J. Staffing During an Emergency

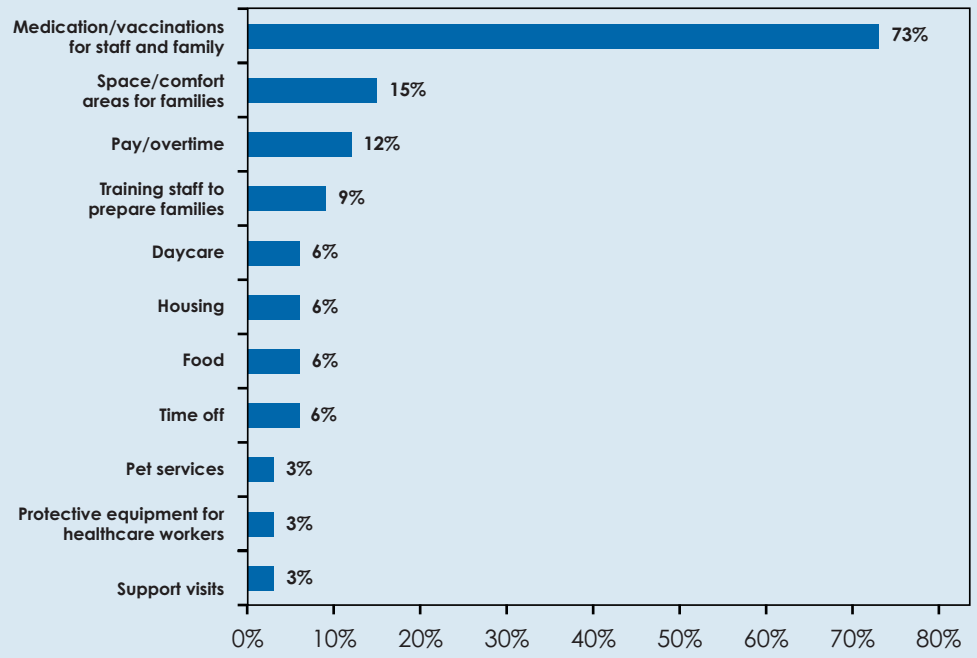
A hospital's ability to respond to an emergency is dependent not only on bed size, but also upon staffing levels during the event. The survey indicates that the number of licensed (i.e., theoretically available) beds exceeds the number of operational (i.e., staffed) beds at members' facilities by an average of 100 beds. Therefore, the ability to provide care for an increased number of patients is almost singularly dependent on available staff during an emergency.

Even though many NAPH hospitals (62 percent) mandate that staff must report to work in an emergency, it is common for hospitals to offer explicit staff incentives and/or include provisions for staff's families during times of crisis. These incentives are important because researchers believe that purposeful absenteeism—that is, staff not reporting to work to care for family during a disaster—will be a significant barrier to ensuring adequate staffing levels during an emergency. Indeed, according to health care employee attitudinal surveys, many employees are unwilling to report to duty during a disaster because of fear and concern for the safety of their families and themselves.[20]

More than half of NAPH member hospitals (55 percent) report having specific incentives or provisions to encourage health care workers to come to work in the event of a major infectious disease outbreak. Many hospitals (73 percent) plan on having medication and vaccinations for staff and family during an outbreak. Other incentives include space / comfort areas for staffs' families (15 percent) and enhanced pay for staff (12 percent). (See Figure 12.)

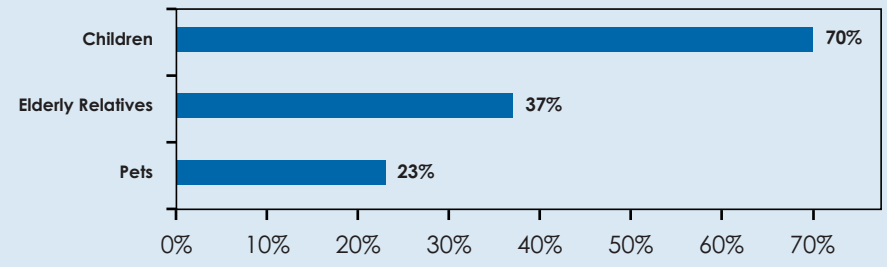
The NAPH/NPHHI study findings indicate that 73 percent of hospitals report having general support structures for staffs' dependent family. Specifically, 70 percent of hospitals offer daycare, housing, food, and related provisions for the children of hospital staff, and 37 percent have similar services for staffs' elderly relatives. (See Figure 13). Some hospitals (23 percent) have even made arrangements to care for staffs' pets during an emergency event.

FIGURE 12 Incentives for Employees to Report to Work during Infectious Disease Outbreaks



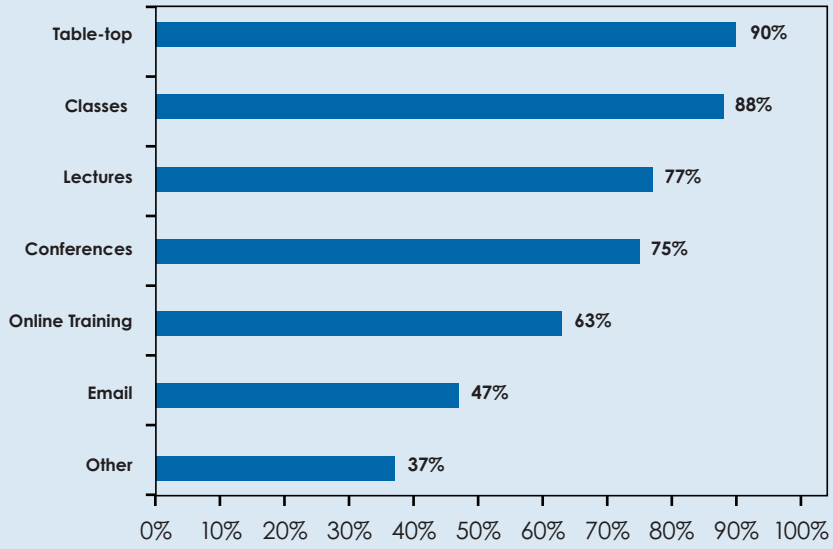
SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

FIGURE 13 Percent of Public Hospitals with Provisions to Handle Staffs' Dependents during General Emergencies



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

FIGURE 14 | **Training Tools Used by NAPH Members**



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

K. Emergency Preparedness Training and Drills

TRAINING EXERCISES

Because disaster events are relatively rare, staff does not have regular experience with emergency equipment and protocol. Therefore, regular staff training is crucial to effective response to a disaster surge. All NAPH members provide emergency preparedness training for staff at least once a year, and 57 percent train staff upwards of three times annually. However, there is no standard curriculum for emergency response training of health care workers,[21] and disaster training topics and methods can vary greatly from one hospital to the next. (See Figure 14). At 91%, the most common training method among NAPH members is "table-top" exercises (i.e., role-play of a disaster event). Other common training methods include classes (88 percent) and lectures (77 percent).

Hospitals must also train multiple departments on EP protocol. Many provide emergency training during staff orientation to ensure a baseline knowledge among all staff. NAPH members report that all emergency departments (100 percent), administration (97 percent), and nursing groups (95 percent) received emergency training over the past year. (See Table 5).

TABLE 5 Departments Receiving Emergency Training

Department	Percentage
Emergency Department	100%
Administration	97%
Nursing Groups	95%
Environmental Services	93%
Security	87%
Physician Groups	85%
Intensive Care Unit	78%
Allied Health	77%
Dietary	72%
Pastoral Care	62%
Pediatrics (not all respondents have pediatrics)	60%
Other (facilities, emergency medical technicians, information technology, all other staff)	22%

SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

DRILLS FOR HOSPITAL STAFF

Survey data show that all responding hospitals had one or more emergency drills in the past year, and 57 percent train staff upwards of three times annually. Staff participation is crucial during an emergency exercise because these activities give all hospital personnel the necessary training to respond to a crisis. Not surprisingly, departments most likely to drill include administration (100 percent), emergency (97 percent), and security (92 percent). These departments usually lead hospital incident command. NAPH members involve many other departments as part of emergency drills. In fact, on average, twelve departments took part in the most recent emergency exercises held by survey respondents.

According to the hospitals surveyed, drills at NAPH hospitals ranged from one hour to forty hours; the most recent drill at NAPH hospitals averaged five hours. Almost all hospitals simulated coordination with local agencies (95 percent) and simulated discharging patients (90 percent) as a part of the exercise. Hospitals also report simulating call procedures for extra staff (88 percent) during their most recent drill. These types of simulations are important for a hospital to understand how to boost the amount of clinical space for disaster victims by discharging patients and increasing staff.

FINDING 3:
BECAUSE OF THEIR RELATIONSHIP WITH STATE AND LOCAL GOVERNMENT, NAPH MEMBERS PLAY AN IMPORTANT ROLE IN THEIR COMMUNITIES' EMERGENCY PREPAREDNESS.

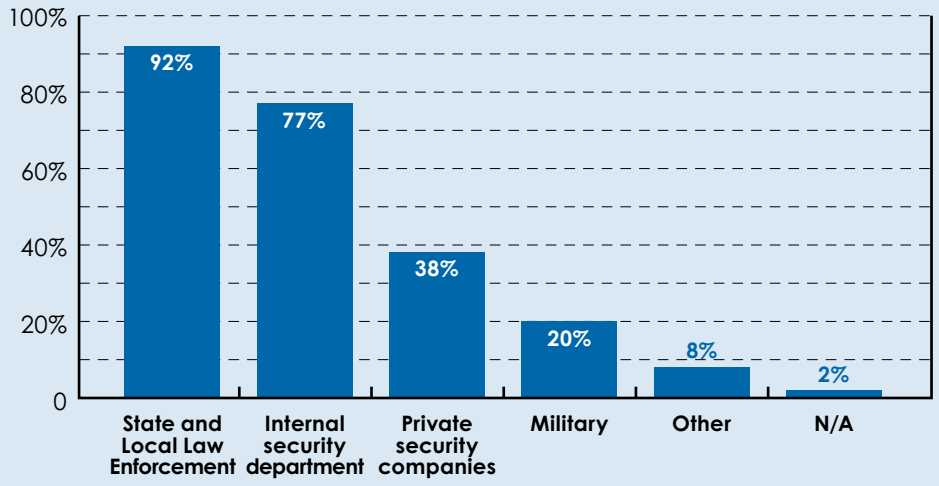
A. Public Hospitals Participate in Community Preparedness Activities

One of public hospitals' most critical assets is a strong connection with their communities. A large percentage (97 percent) of NAPH member hospitals serve on a local community EP committee and over half (62 percent) are involved with three or more such groups. These committees include the Metropolitan Medical Response Service (MMRS, described on page 24), local emergency operations center (EOCs), and regional bioterrorism groups.

Many public hospitals are responsible for managing the medical response in a crisis event. Indeed, 28 percent of NAPH members report having medical oversight for mass gatherings, and 25 percent either coordinate or have medical oversight for their local 911 system. These services are just two examples of the leadership role of NAPH members in preparedness efforts within their community.

In addition to working with community groups, nearly all surveyed NAPH members (92 percent) work directly with state and local law enforcement during an emergency. (See Figure 15).

FIGURE 15 Security Personnel During Emergencies



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

UNIVERSITY OF KANSAS HOSPITAL
KANSAS CITY, KANSAS

Staffed Beds: 451
Inpatient Days: 108,477
Emergency Department Visits: 39,089
Other Outpatient Visits: 381,610 [22]

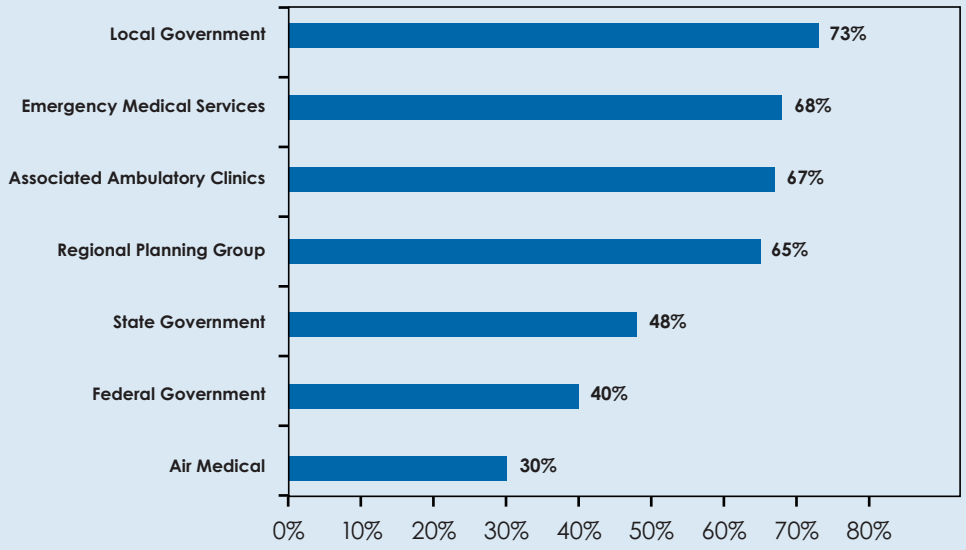
The University of Kansas Hospital has provided medical coverage for all race events at the Kansas Speedway since its opening in 2001. The NASCAR facility hosts two major events each year, one in April and one in September, each lasting several days. During the events, the Speedway—which holds 82,000 spectators—becomes like the state's fourth largest city. KU Hospital took on this role as an extension of its mission to serve the overall Kansas City community.

During race events, KU Hospital staffs a 24-hour infield care center to provide medical services to drivers and their teams, race officials, journalists covering the race, and others situated nearby. The six-bay center has trauma and resuscitation capabilities and is staffed, at a minimum, by one physician, two nurses, and a medical technician at all times (with additional physicians, nurses and technicians there during races). The hospital also mans two four-bed first-aid stations located near the stands when the public is at the Speedway, typically with one physician, two nurses, and a medical technician. The bays are equipped to handle minor medical problems and have cardiac monitoring capabilities. Spectators in need of additional care can be transferred either to the infield care center or to the hospital.

In the case of a disaster or mass casualty event, KU Hospital would fall within the Speedway's incident command structure, which is under the jurisdiction of its director of operations and the Wyandotte County emergency management system. The medical director of KU Hospital's operations at the Speedway would serve as medical coordinator.

A nurse manager at KU Hospital oversees the operations administratively, ensuring that the care centers have adequate supplies and are staffed appropriately. KU Hospital staff volunteer to work at the Speedway. About half of these volunteers come from the emergency department. The remainder, all of whom have advanced cardiac and trauma certification, work in various capacities at the hospital. Although the hours are long and the service can be hectic—sometimes with more patients treated than at the KU Hospital emergency department during a comparable period—assignments at the Speedway are popular. KU Hospital involvement at the Speedway fulfills an important community service while also providing an interesting and different practice environment for its staff.

FIGURE 16 Hospitals with Mutual Aid/Cooperative Agreements with Various Entities



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

The connection public hospitals have with the community is especially clear when looking at the number and types of mutual aid and cooperative assistance agreements between public hospitals and outside agencies. A majority of member hospitals have a mutual aid or cooperative assistance agreement with an outside agency (82 percent). Almost all have an agreement with their local government (73 percent), local emergency medical services (EMS) (68 percent), associated ambulatory clinics (67 percent), and regional planning groups (65 percent). (See Figure 16).

Public hospitals also created agreements with other stakeholders, including state government (48 percent), federal government (40 percent), and air medical (30 percent).

METROPOLITAN MEDICAL RESPONSE SERVICE

The Metropolitan Medical Response Service (MMRS) is a federal system that assists highly populated jurisdictions increase their capacity to respond to a mass casualty event caused by a terrorist attack.[24] The MMRS does so by helping the hospital develop emergency plans, conduct readiness training and exercises, acquire pharmaceuticals, and obtain personal protective equipment.[25] Most NAPH member hospitals (82 percent) participate in the MMRS program, and

VIRGINIA COMMONWEALTH UNIVERSITY MEDICAL CENTER
RICHMOND, VIRGINIA

Staffed Beds: 678
Inpatient Days: 180,762
Emergency Department Visits: 75,702
Other Outpatient Visits: 339,190 [23]

Virginia Commonwealth University Medical Center (VCUMC) plays a crucial role in emergency preparedness as the coordinating hospital for Virginia's central region, which covers 14 counties, including the City of Richmond. Representatives from VCUMC also chair the Central Virginia Hospital Disaster Planning Committee, comprised of representatives from the region's 17 hospitals, which meets monthly to discuss key aspects of disaster planning—such as resource and communication needs and joint exercises. As the medical control hospital for the central region's disaster planning, VCUMC hosts the region's web-enabled crisis information management system, which uses WebEOC software. WebEOC is a crucial tool for central region hospitals to communicate critical information and status reports internally, as well as to other hospitals and to the state, and it helps facilitate VCUMC's coordinating role. VCUMC also conducts communications checks several times each month between all central region hospitals to ensure that systems and procedures are functioning properly.

The philosophy of the VCUMC in planning and operating disaster drills is to develop aggressive scenarios that test both systems and personnel to their limits. For instance, a recent exercise simulated an evacuation of the entire Medical Center, which required the back-up coordinating hospital to assume medical control responsibilities.

VCUMC's role as medical control hospital has led to a restructuring of its own chain of command and internal emergency response procedures, resulting in better organization, a clearer understanding of individual responsibilities, and better identification of needed improvements after disaster exercises. VCUMC's position as the only Level I trauma center in central Virginia dictates its role as the region's disaster coordinating hospital. Emergency department leaders maintain strong relationships with their counterparts at other hospitals in the region, allowing VCUMC to keep abreast of other facility resources during times of crisis. In addition, mindful of the hospital's coordinating role, emergency department leaders consider the impact of VCUMC's actions on other facilities in the central region in decision-making and planning.

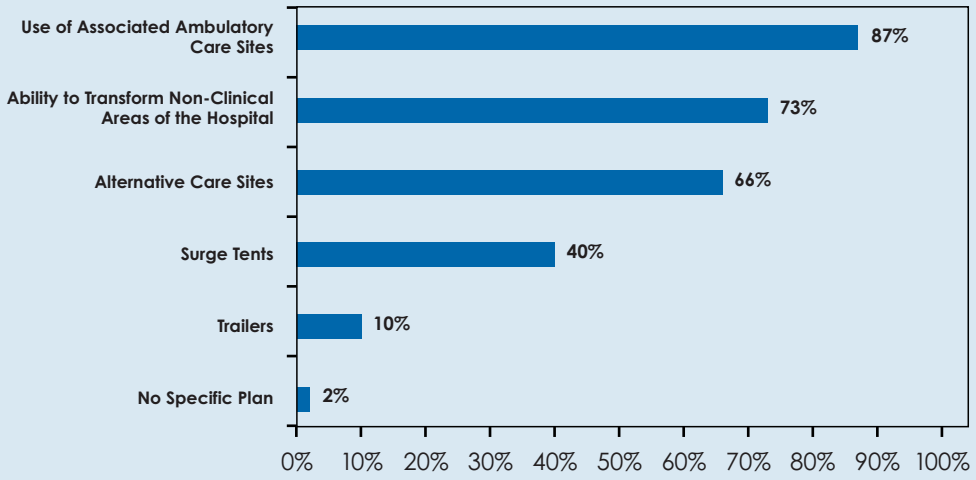
over half of those participants (57 percent) receive funding for their involvement.

B. Surge Capacity and Capability

"Surge capacity" as defined in this report refers to the health care system's ability to expand quickly to meet an increased demand for medical care in the event of bioterrorism or a large-scale public health emergency.[26] A hospital's surge capacity is dependent on multiple factors such as equipment, staffing, and space. The number of additional beds an NAPH member hospital can staff in six hours ranged from four to 704. This broad spectrum demonstrates how widely public hospitals vary in their ability to handle a patient surge.

Many safety net hospitals run at full capacity and, therefore, must make other plans for increasing patient space. Most public hospitals (87 percent) plan to use affiliated ambulatory care clinics as a part of surge capacity plans. (See Figure 17). Hospitals also plan to transform non-clinical areas into patient care space (73 percent). Other strategies include alternative care sites (66 percent), surge tents (40 percent), and trailers (10 percent). Over half of hospitals with plans for an alternative care site have a specified memorandum of understanding (MOU) with these sites (59 percent). In fact, of hospitals with plans to use alternative care sites, 79 percent receive tangible support from the community—either in the form of funding, supplies, or volunteers for the alternative care site(s). Approximately 56 percent

FIGURE 17 Surge Capacity Plans



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

UNIVERSITY OF MISSISSIPPI MEDICAL CENTER
JACKSON, MISSISSIPPI

Staffed Beds: N/A*
Inpatient Days: N/A*
Emergency Department Visits: N/A*
Other Outpatient Visits: N/A*

In the devastating aftermath of Hurricane Katrina, the state of North Carolina sent a mobile field hospital to provide much-needed medical support in Mississippi. Inspired by that model, the state of Mississippi has since purchased three such hospitals for its state medical assistance team. The hospitals are expected to provide crucial surge capacity during natural disasters or other crises, such as an individual hospital being rendered inoperable. Each hospital will have a 50-bed capacity for a total of 150 beds statewide. The University of Mississippi Medical Center (UMC) is the host agency for the mobile hospital that will cover the state's 19-county central region. UMC is in the process of fully developing the manpower, supplies and logistics needed to operate the hospital in times of crises. The hospital is expected to be deployed in 2010.

Each field hospital is contained in a semi-trailer and can be installed in one or more sites. As many as six tents can be setup flexibly to meet needs at each site. For example, an isolation tent, trauma tent and surgery tent may be set up at one site, while another site may need triage and general medicine tents. UMC is identifying teams of volunteers to handle various aspects of deploying and operating the hospital, including medical response, site preparation, equipment and supplies. Although UMC staff will be involved, the institution is reaching out to private industry, law enforcement, other health care providers, and agencies to assemble all of the necessary skills and support needed. For example, local engineering firms are being recruited to help with site identification and preparation, and area pharmacists are being solicited to serve in that capacity during deployment.

The first exercise to test the process of transporting and setting up the tents took place in December 2007. UMC expects to sponsor several other such exercises and conduct extensive training before formally putting the hospital into operation.

*data unavailable

have equipment and beds, and 64 percent have a staffing plan for these alternative care sites. These plans are frequently the result of collaborative efforts with local departments of health and other agencies.

C. Credentialing Additional Health Care Providers

As stated before, an essential factor for surge capacity is additional staffing. NAPH member hospitals plan to increase the number of staff available during an emergency by identifying and credentialing outside health care volunteers. Nearly 92 percent of NAPH members report plans to credential outside volunteers during a disaster, including physicians (85 percent), nurses (78 percent), and pharmacists (68 percent). (See Figure 18).

Hospitals also report the ability to identify and credential respiratory therapists, psychologists, and emergency medical technicians. Most NAPH members (83 percent) report that they expect to have a sufficient supply of trained staff in a disaster event that increases patient load by 25 percent or more.

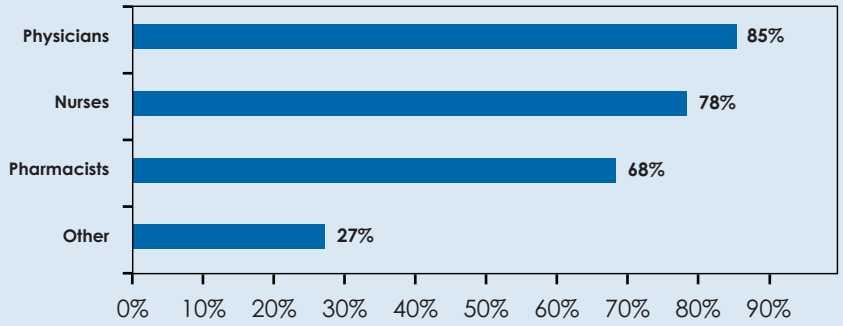
Along with surge capacity, surge *capability* is another factor essential for effective disaster response. "Surge capability" is defined as the ability to manage patients requiring specialized medical evaluation and care. It also includes the ability to respond to unique health problems (e.g., burns, chemical exposure) that require a particular intervention to adequately care for affected patients. When asked to rate medical surge capability during an emergency, over half of respondents (57 percent) reported that public hospitals were overall moderately capable to handle patients requiring specialized care. (See Figure 19.)

D. Evacuation

Evacuation, be it small-scale when there is a flood or fire within the hospital, or a full-scale mass departure that occurs during larger disasters such as hurricanes or earthquakes, is a difficult decision for all health care facilities. Multiple departments work together to determine whether a hospital should undergo evacuation, although the CEO usually makes this decision in public hospitals, based on information given to him/her by the fire chief and/or patient safety officer.

Once the decision is made, complex transportation plans are essential to an effective evacuation. Approximately 42 percent of surveyed hospitals have contracts with a transportation agency for evacuation. The most common transportation plans include EMS, city transportation, local ambulance, and private ambulance companies.

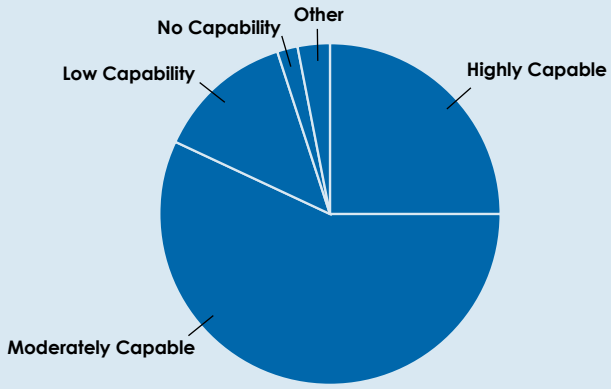
FIGURE 18 Health Care Professionals Credentialed During Emergencies



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

FIGURE 19 Surge Capabilities of NAPH Members

Highly Capable	25%
Moderately Capable	57%
Low Capability	13%
No Capability	2%
Other	3%



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

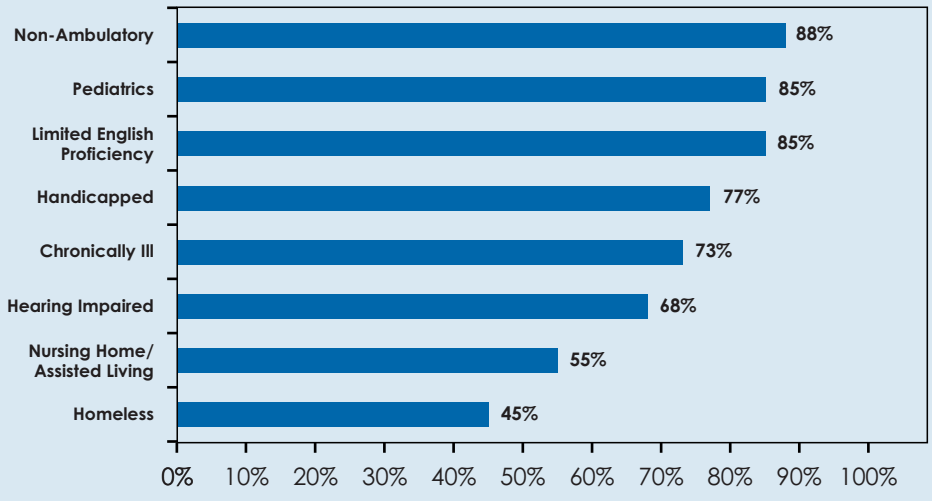
FINDING 4:
NAPH MEMBERS ARE COMMITTED TO PROVIDING CARE DURING AN EMERGENCY TO THE MOST VULNERABLE, DESPITE LIMITED RESOURCES FOR PREPAREDNESS PLANNING

A. Patient Demographics at NAPH Member Facilities

Public hospitals provide care to a diverse patient population. Indeed, the majority of NAPH member discharges in 2005 were for patients who are members of racial and ethnic minorities.[27] Data from the most recent NAPH Hospital Characteristics Survey also indicate that member hospitals provide services to people of all ages—14 percent of discharges were for patients aged 18 or younger, 39 percent were for patients aged 19 to 44, 29 percent were for patients aged 45 to 64, and 19 percent were for patients aged 65 or older.[28] Additionally, public hospitals care for patients requiring special services. For example, 72 percent of NAPH hospitals have an inpatient psychiatric ward, and 30 percent either have a prison ward or otherwise deliver health care to prisoners. This diversity of consumers means that safety net facilities have particular responsibilities and challenges during a disaster event.

The mission of the health care safety net is to provide care to all, regardless of a patients' health status or ability to pay,[30] and as such, NAPH member hospitals are particularly skilled at providing care to vulnerable populations dur-

FIGURE 20 | **Hospitals with Provisions for Vulnerable Populations During an Emergency**



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

SINAI HEALTH SYSTEM
CHICAGO, ILLINOIS

Staffed Beds: 293
Inpatient Days: 80,078
Emergency Department Visits: 43,564
Other Outpatient Visits: 239,019 [29]

Sinai Health System designed a disaster drill in August 2007 to test how well it could meet the needs of vulnerable populations during emergencies. The drill was of particular importance to Sinai because it is a national leader in providing medical services to the deaf, and approximately half of its patient population is Hispanic. The exercise provided valuable insight for Sinai and challenged some of the basic tenets of emergency response.

One of the key findings of the drill was that, by using appropriate techniques and equipment, there was no statistically significant difference in the amount of time it took to decontaminate ambulatory versus non-ambulatory patients, an outcome which calls into question standard practices to evacuate the able-bodied before those with special needs. Communications issues also surfaced during the drill. Sinai team members thought the decontamination process was well-organized and that the participants were well-informed. However, participants did not agree for several reasons. For example, deaf participants reported some difficulty in understanding American Sign Language as communicated by Sinai team members who were wearing bulky personal protective equipment, and they noted that the stress of the process made it even more challenging.

In addition, Sinai discovered that it needed to communicate not only what to do but also why certain procedures were followed. For instance, many participants were concerned that ordinary dishwashing liquid was used during decontamination and that they were not scrubbed extensively. Clarifying such issues will be essential in setting expectations during disasters. Another lesson learned was that patients could more easily transfer and position themselves in decontamination equipment safely, correctly, and with less discomfort than when transferred and positioned by Sinai team members. Sinai also discovered the importance of asking disabled participants if they had other non-observable medical conditions. For instance, the cold water shower used in decontamination made a participant with reduced lung capacity gasp and struggle for breath.

Perhaps the greatest outcome of the exercise was the participation of vulnerable members of the community. Sinai found that despite the stress and challenges involved, participants were willing to be involved and provide feedback so that they could be better served in a true emergency.

BROWARD HEALTH
FORT LAUDERDALE, FLORIDA

Staffed Beds: 343
Inpatient Days: 77,579
Emergency Department Visits: 52,415
Other Outpatient Visits: 74,366 [32]

Hurricane Wilma ravaged South Florida in October 2005, producing an estimated $20.6 billion in damages with widespread injuries to the state's power, water and sewer infrastructure. Broward Health in Fort Lauderdale did not escape Wilma's wrath—three of its four hospitals experienced significant damage. Only Coral Springs Medical Center had potable water and sufficient water pressure throughout the storm and its immediate aftermath. Although Broward Health had plans in place and restored its critical infrastructure quickly, it had to deal with unanticipated problems in the community. One of particular concern involved renal dialysis patients who received services at eight privately owned dialysis centers in Broward County. All eight centers lost power and water and did not have back-up arrangements to restore operations. As a result, patients normally treated at those centers came to Broward Health facilities to receive these services. Broward Health began to triage those most in need of dialysis and spearheaded a public-private effort to return the community dialysis centers to normal operations on a priority basis. This was accomplished quickly after Broward County officials arranged for delivery of water to the centers and worked with local utilities to have the center's power restored.

In the aftermath of Wilma, Broward Health now leads a coalition of health care providers to develop more robust continuity plans for dialysis patients and other vulnerable populations. Although the efforts have yet to be tested with another hurricane, the coalition believes a good back-up system now is in place. One of the first steps was for Broward County to expedite permits so the private dialysis centers could drill back-up water wells and install generators in time for the 2006 hurricane season. Six of the eight dialysis centers now have such systems in place. The private dialysis centers also developed reciprocal arrangements with dialysis centers in neighboring Palm Beach County so they can serve each other's patients in times of distress if necessary. In addition, the coalition of providers focused on educating dialysis patients about making their own preparedness plans and checking into the continuity plans of their physicians and dialysis providers.

Attention to the dialysis population has lead to conversations and planning around other vulnerable groups, particularly people with medical conditions or disabilities who function well during normal circumstances but may be quite challenged during disasters. Plans in this area are still underway in early 2008.

ing an emergency event. In an EP context, "vulnerable populations" can be defined as "those who cannot comfortably or safely access and use the standard resources offered in disaster preparedness, relief, and recovery."[31] Public hospitals accomplish this in both traditional and creative ways. For example, public hospitals provide access to electricity to nearby residents who are dependent on oxygen pumps and other essential equipment during power outages. More than 80 percent of NAPH members report having provisions for non-ambulatory, limited English proficiency (LEP) and pediatric patients during an emergency. Similarly, over half (55 percent) have provisions for nursing home/assisted living patients, and 45 percent have explicit provisions for the homeless. (See Figure 20).

FINDING 5:
NAPH MEMBERS HAVE LIMITED ACCESS TO RESOURCES FOR PREPAREDNESS PLANNING

A. Health Resources and Services Administration Funding

The Health Resources and Services Administration (HRSA) is the most common source of funding for EP activities in all surveyed hospitals—85 percent reported receiving at least some HRSA dollars. However, HRSA does not give the money directly to the hospitals. Instead, the agency provides funding to all 50 states for general health-related preparedness efforts, and each state determines how much should be allocated to hospitals. Frequently, the state earmarks HRSA grants for particular training and equipment, restricting a hospital's say in how to spend these resources. According to the NAPH/NPHHI study, the most common goods and activities purchased by hospitals with HRSA money in 2006 included equipment, communication resources, training, and supplies (e.g., food, water, gasoline).

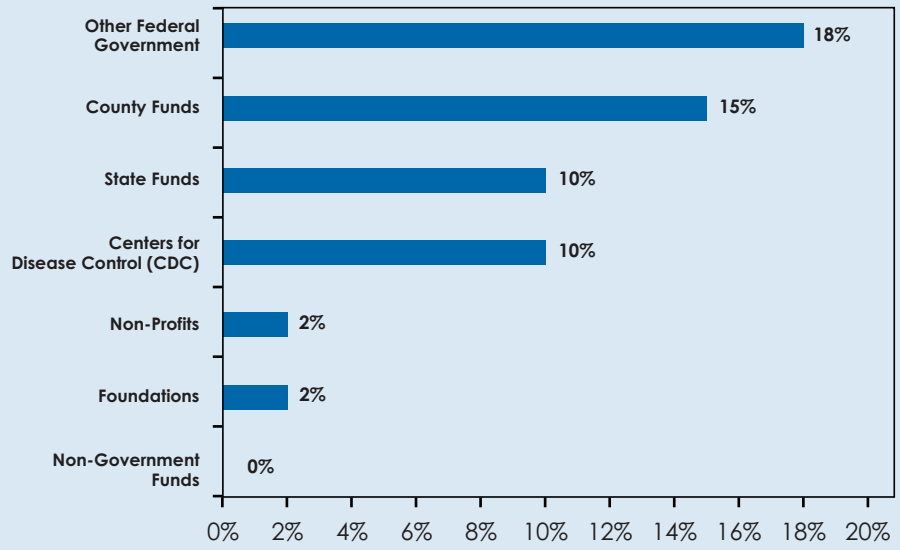
However, because HRSA grants are so often dedicated for specific purposes, these funds provide only partial support for the wide array of preparedness tasks required of public hospitals.

B. Other Sources of Funding are Sparse

The ability to diversify sources of EP funding beyond HRSA is limited. Some NAPH hospitals receive assistance from outside sources, including the other federal government agencies (18 percent)—particularly the Centers for Disease Control (10 percent), county governments (15 percent) and state governments (10 percent). A small number of hospitals receive money from non-governmental groups, such as non-profits (two percent) and foundations (two percent). One fourth of surveyed NAPH member hospitals applied for competitive EP grants from various sources, including federal agencies, such as the Office of Domestic Preparedness, the Metropolitan Medical Response System, as well as at local departments of public health. Of those who applied, 67 percent received funds through competitive grants.

Emergency preparedness is an ongoing process that requires an extraordinary amount of resources. According to a study by the Greater New York Hospital Association, preparedness costs from 9/11 averaged $1.7 million per hospital in New York state.[33] NPHHI staff asked NAPH members to estimate the total dollars associated with projects in the past calendar year that were put off due to insufficient funding. Only ten percent of respondents thought the amount of money spent in 2006 was sufficient to be prepared for the most likely emergency scenarios. The top priorities on which hospitals would like to spend additional funds were training, education, and drills. Other priorities included communications and equipment.

FIGURE 21 Additional Sources of Funding



SOURCE NAPH/NPHHI 2006–2007 Emergency Preparedness Survey

3

Conclusion

The critical role that safety net hospitals play in their communities is well documented. They are more likely than for-profit hospitals to provide psychiatric inpatient and outpatient care, alcoholism inpatient treatment, AIDS services, crisis prevention, and psychiatric emergency care.[34]

According to NAPH's most recent survey of financial and utilization characteristics of its membership, the average public hospital provides more than triple the volume of outpatient care and nearly three times the number of emergency department visits compared to other acute care hospitals nationally.[35] Public hospitals also serve a large proportion of the uninsured. Indeed, uncompensated care as a percentage of total hospital costs in 2005 represented 21 percent for public hospitals, compared with 5.6 percent for hospitals nationally.[36] These statistics demonstrate the vast array of services provided by public hospitals to everyone in the community, regardless of ability to pay.

Safety net hospitals are experts in serving their communities, which in turn strengthens their preparedness efforts. They are often the only Level I trauma center or the only safety net provider in their community, making them responsible for all populations who require care during a disaster. This commitment is evident in the data collected in the NPHHI survey, which indicate that public hospitals make provisions for vulnerable populations, coordinate mental health services and provide specialty care during an emergency, despite having very limited preparedness budgets.

Public hospitals already have a strong connection with state government, local departments of health, and other public agencies, therefore acting as essential leaders in medical response and preparedness. This special role as the essential provider of emergency services makes public hospitals the default coordinators of medical response in the United States. As universally noted by emergency readiness experts, the most critical component of any preparedness effort is continuous communication between health providers, local government, outside agencies and community groups. By coordinating comprehensive disaster planning efforts within their communities, public hospitals are major players in preparedness efforts throughout the United States.

Notes

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Methodology

In Fall 2005, NPHHI conducted an exploratory survey of emergency preparedness activities at NAPH member hospitals. The results of this preliminary study, released in September 2006, created a greater demand for information and knowledge-sharing among members. A second phase of the study began in Fall 2006. NPHHI staff, with input from NAPH members, created a survey instrument containing 16 sections and 152 questions. NPHHI used this tool to conduct one-to-three-hour-long telephone interviews with 60 NAPH members from December 2006 to April 2007.

The entire NAPH membership is comprised of approximately 144 safety net hospitals and 111 acute care facilities. Responses were solicited from all NAPH members. Of all the hospitals surveyed, 57 respondents were acute care facilities. (Thus, it had a response rate of 51 percent for acute care facilities and 42 percent for the entire NAPH membership.) T-tests were performed to determine whether the sample of 60 hospitals shared the same characteristics as the entire NAPH population in regard to size and emergency department activity. NAPH hospital characteristics data was used to compare mean staffed bed size and mean number of emergency department discharges between the NAPH membership and the hospitals completing the NPHHI study. Indeed, with 95 percent confidence, NPHHI's analysis found that the mean staffed bed size and mean number of emergency department discharges of the NAPH membership is the same as the mean staffed bed size and mean number of emergency department discharges of the sampled hospitals.

Statistical analysis was conducted using SPSS version 14.0, and all data was reported in the aggregate. Data reflects NAPH member hospitals only; none of the data is compared to non-NAPH hospitals because there is no other available data source on emergency preparedness of hospitals nationally.

NAPH Members

Alameda County Medical Center Oakland CA

Arrowhead Regional Medical Center Colton CA

Boston Medical Center Boston MA

Broadlawns Medical Center Des Moines IA

Broward Health Fort Lauderdale FL

- **Broward General Medical Center** Fort Lauderdale FL
- **Broward Health Coral Springs Medical Center** Coral Springs FL
- **Broward Health Imperial Point Medical Center** Imperial Point FL
- **Broward Health North Broward Medical Center** Deerfield Beach FL

Cambridge Health Alliance Cambridge MA

Carolinas HealthCare System Charlotte NC

Central Georgia Health System Inc. Macon GA

Community Health Network of San Francisco San Francisco CA

- **Laguna Honda Hospital & Rehabilitation Center** San Francisco CA
- **San Francisco General Hospital Medical Center** San Francisco CA

Contra Costa Regional Medical Center Martinez CA

Cook County Bureau of Health Services Chicago IL

- **The John H. Stroger, Jr. Hospital of Cook County** Chicago IL
- **Oak Forest Hospital** Oak Forest IL
- **Provident Hospital of Cook County** Chicago IL

Cooper Green Mercy Hospital Birmingham AL

Denver Health Denver CO

Erlanger Health System Chattanooga TN

Governor Juan F. Luis Hospital and Medical Center St. Croix VI

Grady Health System Atlanta GA

Halifax Health Daytona Beach FL

Harborview Medical Center Seattle WA

Harris County Hospital District Houston TX

- **Ben Taub General Hospital** Houston TX
- **Lyndon Baines Johnson General Hospital** Houston TX

Hawaii Health Systems Corporation Honolulu HI

- **Hale Ho'ola Hamakua Hospital** Honokaa HI
- **Hilo Medical Center** Hilo HI
- **Ka'u Hospital** Pahala HI
- **Kauai Veterans Memorial Hospital** Waimea HI
- **Kohala Hospital** Kapaau HI
- **Kona Community Hospital** Kealakekua HI
- **Kula Hospital** Kula HI
- **Lana'i Community Hospital** Lanai City HI
- **Leahi Hospital** Honolulu HI
- **Maluhia** Honolulu HI
- **Maui Memorial Medical Center** Wailuku HI
- **Samuel Mahelona Memorial Hospital** Kapaa HI

Health Care District of Palm Beach County West Palm Beach FL

- **Glades General Hospital** Belle Glade FL

The Health and Hospital Corporation of Marion County Indianapolis IN

- **Wishard Health Services** Indianapolis IN

Hennepin County Medical Center Minneapolis MN

Howard University Hospital Washington DC

Hurley Medical Center Flint MI

Jackson Health System Miami FL

JPS Health Network Fort Worth TX

Kern Medical Center Bakersfield CA

Lee Memorial Health System Fort Myers FL

Los Angeles County Department of Health Services Los Angeles CA

- **Harbor/UCLA Medical Center** Torrance CA
- **Martin Luther King Jr. Multi-Service Ambulatory Care Center** Los Angeles CA
- **LAC+USC Healthcare Network** Los Angeles CA
- **Olive View—UCLA Medical Center** Sylmar CA
- **Rancho Los Amigos National Rehabilitation Center** Downey CA

LSU Health Care Services Division Baton Rouge LA

- **Bogalusa Medical Center** Bogalusa LA
- **Earl K. Long Medical Center** Baton Rouge LA
- **Lallie Kemp Regional Medical Center** Independence LA
- **Leonard J. Chabert Medical Center** Houma LA
- **LSU Interim Hospital** New Orleans LA
- **University Medical Center** Lafayette LA

NAPH Members

Dr. Walter O. Moss Regional Medical Center Lake Charles LA

Maricopa Integrated Health System Phoenix AZ

Memorial Healthcare System Hollywood FL

- **Joe DiMaggio Children's Hospital at Memorial** Hollywood FL
- **Memorial Hospital Miramar** Miramar FL
- **Memorial Hospital Pembroke** Pembroke Pines FL
- **Memorial Regional Hospital South** Hollywood FL
- **Memorial Hospital West** Pembroke Pines FL
- **Memorial Regional Hospital** Hollywood FL

Memorial Hospital at Gulfport Gulfport MS

The MetroHealth System Cleveland OH

Nashville General Hospital at Meharry Nashville TN

Nassau University Medical Center East Meadow NY

Natividad Medical Center Salinas CA

New York City Health and Hospitals Corporation New York NY

- **Bellevue Hospital Center** New York NY
- **Coler-Goldwater Specialty Hospital and Nursing Facility** Roosevelt Island NY
- **Coney Island Hospital** Brooklyn NY
- **Cumberland Diagnostics & Treatment Center** Brooklyn NY
- **Dr. Susan Smith McKinney Nursing and Rehabilitation Center** Brooklyn NY
- **East New York Diagnostics & Treatment Center** Brooklyn NY
- **Elmhurst Hospital Center** Elmhurst NY
- **Gouverneur Nursing and Diagnostic & Treatment Center** New York NY
- **Harlem Hospital Center** New York NY
- **Jacobi Medical Center** Bronx NY
- **Kings County Hospital** Brooklyn NY
- **Lincoln Medical and Mental Health Center** Bronx NY
- **Metropolitan Hospital Center** New York NY
- **Morrisania Diagnostics & Treatment Center** Bronx NY
- **North Central Bronx Hospital** Bronx NY
- **Queens Hospital Center** Jamaica NY
- **Renaissance Health Care Network Diagnostics & Treatment Center** New York NY
- **Sea View Hospital Rehabilitation Center & Home** Staten Island NY
- **Segundo Ruiz Belvis Neighborhood Family Health** Bronx NY
- **Woodhull Medical and Mental Health Center** Brooklyn NY

The Ohio State University Hospital Columbus OH

Parkland Health & Hospital System Dallas TX

Partners in Health Network Charleston WV

Regional Medical Center at Memphis Memphis TN

Riverside County Regional Medical Center Moreno Valley CA

Safety Net Hospital Alliance of Florida Tallahassee FL

San Joaquin General Hospital Stockton CA

San Mateo Medical Center San Mateo CA

Santa Clara Valley Health & Hospital System San Jose CA

Schneider Regional Medical Center St. Thomas VI

- **Roy Lester Schneider Hospital** St. Thomas VI
- **Myrah Keating Smith Community Health Center** St. John VI

Shands HealthCare Gainesville FL

Sinai Health System Chicago IL

Stony Brook University Medical Center Stony Brook NY

Tampa General Hospital Tampa FL

Thomason Hospital El Paso TX

Truman Medical Centers Kansas City MO

- **TMC Hospital Hill** Kansas City MO
- **TMC Lakewood** Kansas City MO
- **TMC Behavioral Health** Kansas City MO

UMass Memorial Health Care System Worcester MA

UMDNJ-University Hospital Newark NJ

University Health System San Antonio TX

University HealthSystem Consortium Oak Brook IL

University Hospital, The University of New Mexico Health Sciences Center Albuquerque NM

University Medical Center of Southern Nevada Las Vegas NV

NAPH Members

University of Arkansas for Medical Sciences Little Rock AR

University of California Health System Oakland CA

- **University of California, Davis Medical Center** Sacramento CA
- **University of California, Irvine Medical Center** Orange CA
- **University of California, San Diego Medical Center** San Diego CA

University of Colorado Hospital Denver CO

The University of Kansas Medical Center Kansas City KS

University of Kentucky, UK HealthCare Lexington KY

University of South Alabama Medical Center Mobile AL

University of Texas System Austin TX

- **The University of Texas Health Center at Tyler** Tyler TX
- **The University of Texas M.D. Anderson Cancer Center** Houston TX
- **The University of Texas Medical Branch at Galveston** Galveston TX

University of Utah Hospitals & Clinics Salt Lake City UT

VCU Health System Richmond VA

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