



NAPH Members Respond to the Haiti Earthquake

America's safety net hospitals and health systems provide essential services to their communities, caring especially for low-income and vulnerable patients while maintaining emergency and trauma services for all. Fully 33 percent of the members of the National Association of Public Hospitals and Health Systems (NAPH) are the only Level 1 trauma facility in their counties; 22 percent are the only trauma center of any level. In recent years, events such as Hurricanes Katrina and Rita, the Seattle windstorm and the Minneapolis bridge collapse have demonstrated the prompt response of safety net hospitals to disasters within their own communities and across the country. The assistance provided by NAPH members to the victims of the massive earthquake that devastated Haiti early this year also illustrates the deep commitment safety net hospitals share to caring for the most vulnerable patients, even those outside our borders.

The January 2010 earthquake destroyed Haiti's already fragile medical infrastructure, prompting health facilities in the United States to

offer much needed medical care to its victims. NAPH members provided assistance by traveling to Haiti to provide on-site care, donating critical resources (including medical equipment, medications, and money), and treating patients airlifted to the U.S. from the devastated areas. NAPH members, true to their mission of providing care to all regardless of ability to pay, received more than 500 of the 650 mostly uninsured victims who were airlifted to the U.S. for treatment.

To ascertain the critical role played by safety net hospitals and to clearly articulate the lessons they learned that could help better prepare the U.S. response to future international incidents, NAPH examined how its members worked to address this catastrophe.

Scope of Involvement in Haiti

Given their close ties to local government and their advanced trauma centers, NAPH members often serve as first responders and coordinators during mass casualty disasters in the United States. Surgical teams at U.S.

trauma centers, including members of NAPH, also have been called upon in the past decade to respond to complex international disasters, including terrorist events and natural disasters like the 2010 Haiti earthquake.¹ A review of news media and press releases revealed that 40 percent of the NAPH membership (i.e., 32 members, representing 83 individual hospitals) provided some form of aid to Haiti. (See Table 1 for list and Figure 1 for map.) Follow-up interviews with individuals in NAPH member facilities directly involved with relief efforts provided greater insight into the expertise that safety net hospitals can provide in emergencies affecting vulnerable patients, the challenges involved, and the lessons learned.

ON-SITE CLINICAL SERVICES

NAPH-affiliated hospitals sent more than 250 medical personnel to Haiti, a majority of whom were physicians; however, nurses, technicians, and physician assistants also provided on-site medical care (see Figure 2). Many clinicians volunteered their time without pay and used personal vacation time to aid in relief efforts.²

The earthquake damaged not only the nation's physical infrastructure, but the very core of Haiti's health care delivery system. Clinicians from

**BROWARD HEALTH,
FORT LAUDERDALE, FL**

Following the earthquake in Haiti, Jeanne Eckes-Roper, RN, MBA, then-Director of Emergency Preparedness for Broward Health and the Region VII Health/Medical Chair for the Southeast Domestic Security Task Force, began coordinating medical evacuation flights that carried more than 650 injured U.S. citizens and Haitians to Florida hospitals; 563 of those patients were treated in South Florida hospitals, including those within the Broward Health system.

Broward Health partnered with the aid organization, Partners in Care, to coordinate the rotation of more than 40 Broward Health physicians, nurses, and physician assistants to Haiti. These teams volunteered at the only public hospital in Haiti, Hopital de l'Universite D'Etat D'Haiti, which was nearly destroyed in the earthquake. In addition to treating earthquake victims, Broward Health donated nearly 150 pallets of medical supplies and water and more than \$30,000 raised from employees.

TABLE 1 | NAPH Members Responding to the Haiti Earthquake

Alameda County Medical Center	San Leandro, CA
Arrowhead Regional Medical Center	Colton, CA
Boston Medical Center	Boston, MA
Broward Health	Fort Lauderdale, FL
Cambridge Health Alliance	Cambridge, MA
Carolinas HealthCare System	Charlotte, NC
Erlanger Health System	Chattanooga, TN
Grady Health System	Atlanta, GA
Halifax Health	Daytona Beach, FL
Health and Hospital Corporation of Marion County	Indianapolis, IN
Health Care District of Palm Beach County	West Palm Beach, FL
Hurley Medical Center	Flint, MI
Jackson Health System	Miami, FL
Lee Memorial Health System	Fort Myers, FL
Los Angeles County Department of Health Services	Los Angeles, CA
LSU Health Care Services Division	Baton Rouge, LA
Maricopa Integrated Health System	Phoenix, AZ
Memorial Healthcare System	Hollywood, FL
Natividad Medical Center	Salinas, CA
New York City Health and Hospitals Corporation	New York, NY
NuHealth	East Meadow, NY
Orlando Health	Orlando, FL
Shands HealthCare	Gainesville, FL
SUNY—State University of New York	Albany, NY
Tampa General Hospital	Tampa, FL
The Ohio State University Medical Center	Columbus, OH
Truman Medical Centers	Kansas City, MO
UMass Memorial Health Care	Worcester, MA
UMDNJ—The University Hospital	Newark, NJ
University of Arkansas for Medical Sciences	Little Rock, AR
University of California Health System	Oakland, CA
University of Colorado Hospital	Aurora, CO

SOURCE NAPH Study, "Safety Net Hospital and Health Systems' Haiti Earthquake Relief Efforts," November 2010.

NAPH member facilities also worked with Haitian officials to help reestablish the country's public health infrastructure. Others provided direct health care in makeshift field hospitals and on hospital ships in nearby waters. To ensure that victims continued to receive proper follow-up medical care, several NAPH members reported plans to continue sending medical personnel to Haiti. For example, in

the months since the earthquake struck, volunteers from the LAC+USC Healthcare Network, part of the Los Angeles County Department of Health Services, have been making week-long medical missions to Haiti. LAC+USC volunteers returning from a trip in June reported continued inadequate staffing to handle the enormous volume of patients, many of whom seek

treatment from LAC+USC clinicians for non-earthquake-related ailments—a result of Haiti’s disorganized post-disaster health care system.

In interviews with NAPH researchers, clinicians from member hospitals and health systems related their experiences in Haiti, helping to draw a clearer picture of the challenges they face. A volunteer medical team member from Broward Health in southern Florida explained that fears of potential aftershocks and the weakened

foundations of remaining hospital buildings forced them to treat patients in outdoor tents where daily temperatures climbed as high as 110 degrees. In these extreme temperatures, lab equipment frequently malfunctioned, leading them to perform tests manually. In Port-au-Prince, where an average of eight babies per day competed for two neonatal isolettes, a nurse volunteer from Ohio State University Medical Center helped establish the only area NICU using suitcases lined

with thin plastic and heating lamps to hold injured and premature newborns. Volunteers from Shands HealthCare in Gainesville, Florida, reported that the majority of their patients had been ill prior to the disaster, but their conditions were exacerbated by the quake (e.g., many were chronic disease patients who lost their medications).

DONATIONS

NAPH found that 44 percent of its members contributed critical provisions

FIGURE 1 Geographic Distribution of the NAPH Members that Provided Support To Haiti Earthquake Victims*



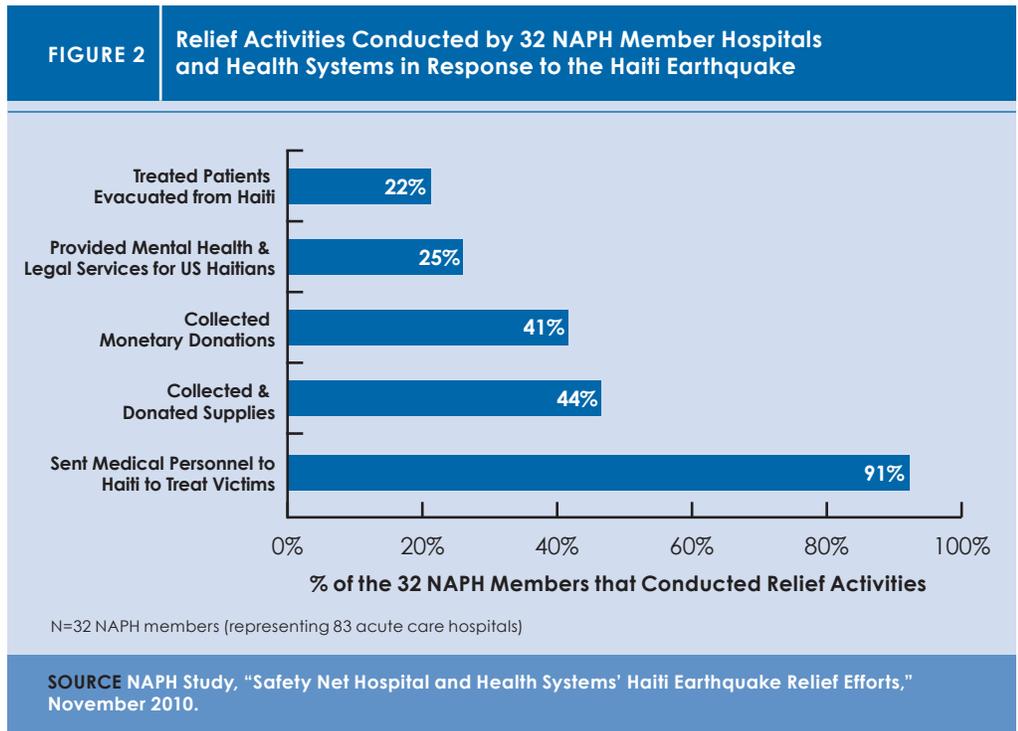
*This includes 32 NAPH members, representing 83 hospitals that aided earthquake victims.

SOURCE NAPH Study, “Safety Net Hospital and Health Systems’ Haiti Earthquake Relief Efforts,” November 2010.

and supplies and 42 percent collected and dispensed monetary donations. Some NAPH members gathered funds by establishing online donation centers; others offered payroll deductions in which employees could allocate a portion of their paychecks to earthquake victims.³ Safety net hospitals also sent medical supplies, such as surgical tools, medications, and IV solutions. Additionally, hospitals shipped pallets of food and water, clothing, hygiene items, tents, and air mattresses to support victims in Haiti and the medical staff serving them (see Figure 3).

CARING FOR EARTHQUAKE VICTIMS IN THE U.S.

The U.S. military began evacuating patients to Florida hospitals on January 13, the day after the earthquake struck. NAPH members received more than 500 of the 650 mostly uninsured victims who were airlifted to the U.S. for treatment. However, this concentration of Haitian evacuees to so few facilities overwhelmed Florida's safety net hospitals, where patient censuses soared. Hospitals quickly began to reach surge capacity levels, particularly for high-level trauma care. The federal government temporarily halted U.S. military evacuations of victims to Florida hospitals on January 31 at the request of the Florida governor.⁴ Within days, the federal government activated key components of the National Disaster Medical System (NDMS), a federal program that assists state and local authorities in distributing and caring for patients evacuated to the



SHANDS HEALTHCARE, GAINESVILLE, FL

Within days of the earthquake, several health care teams from the University of Florida and Shands (UF&Shands) mobilized to provide care for victims in Haiti. One of the first UF&Shands teams to travel to Haiti included David Chesire, Ph.D., an assistant professor of surgery in the UF College of Medicine-Jacksonville; Lucy Shenk, an occupational therapist with Shands; and Sarah Suter, a Shands physical therapist. "When I was asked to join the team in Haiti, it never occurred to me to say no," commented Dr. Chesire. "Witnessing such humanity in a time of grim despair was perhaps the most remarkable thing I had ever seen. I consider myself a better person because of that experience." During its time in Haiti, the team worked to help victims suffering from spinal cord injuries get back on their feet through intensive rehabilitation.

On January 18, a second team of medical and public health personnel from UF&Shands arrived in Haiti to provide

assistance in the surgical facilities of Croix-des-Bouquets, northeast of Port-au-Prince. This team, consisting of two nurses, three physicians, and two public health experts from the UF College of Public Health and Health Professions, also treated more than fifty amputee and burn patients per day in a makeshift clinic the team established in the town of Gressier. The scope of the team's services included not only health care provision, but assistance with food preparation as well. Given the enormous need for ongoing support of Haiti's damaged care delivery infrastructure, a subsequent team of UF&Shands public health experts (nicknamed *Santè pou Lavi*—Creole for "Health for Life") returned to Haiti in April to address the need for: malaria detection and screening; clean water; health education for teachers, parents, and children; health data tracking; and basic medical care for children in orphanages. The *Santè pou Lavi* team is planning additional trips to Haiti to further address these ongoing concerns.

JACKSON HEALTH SYSTEM, MIAMI, FL

Jackson Health System employees and their colleagues at the University of Miami Leonard M. Miller School of Medicine were among the first to respond to the disaster. Within hours of the earthquake, trauma surgeons, orthopedic surgeons, and nurses established a field hospital in Haiti. Joined later by physical and occupational therapists, this team cared for up to 300 patients a day—creating leg and arm braces out of shoelaces, ropes, and pieces cut from Styrofoam swimming “noodles,” and retrofitting adult crutches for use by children with amputated and broken limbs.

Back home in Miami, Jackson Health System activated its Hospital Incident Command System to manage 205 airlifted earthquake victims. All Jackson Health System hospitals, centers, and services received patients from Haiti. Patients arrived initially via private planes, followed by military flights and then commercial flights from neighboring countries. Jackson’s Ryder Trauma Center, UM/JM

Burn Center, Holtz Children’s Hospital, Medical/Surgical Units and Emergency Services performed initial assessment, stabilization, treatment, and the disposition of patients. Among the patients airlifted to Jackson: a two-month-old baby buried beneath rubble for four days, who has since been reunited with her parents; an Arizona State University graduate student injured in the earthquake while doing volunteer work in Haiti, who now ice-climbs with her prosthetic leg; and a Julliard-trained violinist who suffered multiple injuries, but is expected to play again. According to Eneida O. Roldan, MD, MPH, MBA, Jackson’s President and CEO, the Jackson Health System staff “worked relentlessly, both at our hospitals in Miami and in the field hospital in Haiti, providing compassionate care.” NAPH formally recognized these relief efforts by awarding the 2010 NAPH Emergency Preparedness Award to Jackson Health System at the 2010 NAPH Annual Conference.

U.S. during major disasters, and evacuations of injured patients from Haiti resumed.⁵

NDMS activation enabled certain U.S. hospitals (i.e., those with over 100 beds located in large U.S. metropolitan areas) to voluntarily admit incoming patients and receive federal reimbursement at 110 percent of Medicare rates.⁶ By better coordinating the flow of patients and offering non-safety net hospitals incentives to accept patients, the NDMS relieved the burden on Florida safety net hospitals and allowed them to continue providing critical services to earthquake victims and local patients alike. With NDMS in place, military and civilian flights of injured patients brought an additional 79 Haitian nationals and ten U.S. citizens for treatment in U.S. hospitals.⁷

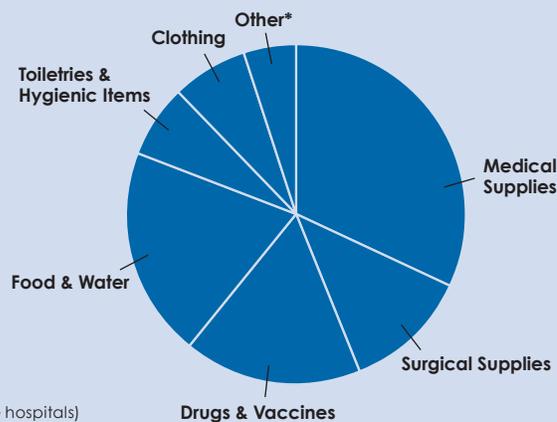
Both in Florida and across the U.S., NAPH members also provided support services to the Haitian American community, including mental health services, such as grief and post-traumatic stress disorder counseling. NAPH members also sponsored community forums for Haitians seeking temporary U.S. residency status.

Lessons Learned

The earthquake in Haiti shed light on U.S. preparedness to handle disaster victims from outside its borders. Because public hospitals are often the first responders during times of domestic emergencies, they may step into a leadership role in responding to international disasters. The Haiti

FIGURE 3 Items Collected and Donated by 14 NAPH Member Hospitals and Health Systems in Response to the Haiti Earthquake

Medical Supplies	32%
Surgical Supplies	12%
Drugs & Vaccines	17%
Food & Water	20%
Toiletries & Hygienic Items	7%
Clothing	7%
Other*	5%



N=14 NAPH members (representing 39 acute care hospitals)

*Other includes tents and bedding

SOURCE NAPH Study, “Safety Net Hospital and Health Systems’ Haiti Earthquake Relief Efforts,” November 2010.

Just four days after the earthquake, a ten-person medical response team from LAC+USC, including three trauma surgeons and two emergency medicine physicians, traveled to Haiti to bring donated supplies and provide medical care. Led by Dr. Ramon Cestero, a trauma surgeon at LAC+USC Medical Center, the team performed amputations on those with damaged or infected limbs. One of the team's surgeons, Dr. Henri Ford, Vice Dean for Medical Education for the USC Keck School of Medicine, worked with Dr. Sanjay Gupta, Chief of Neurosurgery at NAPH member Grady Memorial Hospital and chief medical correspondent for CNN, to repair the skull of a young girl injured by falling concrete.

In anticipation of ongoing missions to Haiti, a second group traveled to Haiti in March to conduct a one-day assessment of the surgical and medical needs still plaguing the country. These missions began on April 3. Since then, six additional medical teams have traveled to Haiti to provide care.

earthquake experience suggests that timely activation of NDMS, including a coordinated distribution of airlifted patients to a sufficiently broad range of hospitals, is critical to ensure efficient and continuous care. In order to better position safety net hospitals to respond to the next foreign disaster, the federal government may want to consider

activating NDMS at the outset of the crisis rather than after the few responding hospitals approach surge capacity levels. Moreover, reimbursement mechanisms for hospitals that aid patients in foreign disasters could be established immediately to better enable NAPH members to provide uninterrupted health care in times of crisis. ■

Notes

1. Surgical teams at academic trauma centers are increasingly responding to complex international disasters. Three International Medical Surgical Response Teams (IMSurTs), all within the federal National Disaster Medical System and comprised of multidisciplinary surgical specialists, are sponsored by academic trauma centers, including Harborview Medical Center in Seattle, WA. For more about the international response of U.S. trauma centers, see *The Role of Civilian Surgical Teams in Response to International Disasters*, by Susan M. Briggs, featured in the January 2010 Bulletin of the American College of Surgeons. See www.facs.org/fellows_info/bulletin/2010/briggs0110.pdf.
2. Fred Tasker and Elinor J. Brecher, "After Medical Treatment for Haiti Quake Victims, Who in U.S. Pays the Bill?" *The Miami Herald*, January 31, 2010, accessed September 27, 2010. See www.miamiherald.com/2010/01/31/1455505/after-medical-treatment-for-haiti.html.
3. New York City Health and Hospitals Corporation. "HHC Mobilizes to Help Haiti." *HHC Today*, January 2010. See www.nyc.gov/html/hhc/html/newsletter/201001-help-haiti.shtml.
4. Rhoda Margesson and Maureen Taft-Morales. *Haiti Earthquake: Crisis and Response*. Congressional Research Service Report for Congress: Prepared for Members and Committees of Congress. Washington, DC: February 2, 2010. See www.fas.org/sgp/crs/row/R41023.pdf.
5. U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. "National Disaster Medical System." Last modified June 14, 2010. See www.phe.gov/Preparedness/responders/ndms/Pages/default.aspx.
6. Rhoda Margesson and Maureen Taft-Morales. *Haiti Earthquake: Crisis and Response*. Congressional Research Service Report for Congress: Prepared for Members and Committees of Congress. Washington, DC: February 2, 2010. See www.fas.org/sgp/crs/row/R41023.pdf.
7. The White House, Office of the Press Secretary. *U.S. Response to Haiti Earthquake Disaster*. Washington, DC: March 10, 2010. See www.america.gov/st/texttransenglish/2010/March/20100311094127xjsnommis0.607246.html.