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ORIGINAL ARTICLE

Healthcare ethics: The experience after the Haitian earthquake

Mill Etienne, MD, MPH; Clydette Powell, MD, MPH, FAAP; Dennis Amundson, DO, MS, FACP

Abstract

On January 12, 2010, a 7.0 Richter earthquake devastated Haiti and its public health infrastructure leading to a worldwide humanitarian effort. The United States sent forces to Haiti's assistance including the USNS Comfort, a tertiary care medical center on board a ship. Besides setting a transparent triage and medical regulating system, the leadership on the Comfort instituted a multidisciplinary Healthcare Ethics Committee to assist in delivering the highest level efficient care to the largest number of victims. Allocation of resources was based on time-honored ethics principles, the concept of mass casualty triage in the setting of resource constraints, and constructs developed by the host nation's Ministry of Health. In offering aid in austere circumstances, healthcare practitioners must not only adhere to the basic healthcare ethics principles but also practice respect for communities, cultures, and traditions, as well as demonstrate respect for the sovereignty of the host nation. The principles outlined herein should serve as guidance for future disaster relief missions. This work is in accordance with BUMEDINST 6010.25, Establishment of Healthcare Ethics Committees.

Key words: disaster relief, Haiti, earthquake, Operation Unified Response, humanitarian assistance

The event

At 4:53 PM on January 12, 2010, a Movement Magnitude (Mw) 7.0 earthquake occurred 10 miles southwest of Port-au-Prince (PAP), Haiti (Figure 1). In its aftermath was a complex catastrophe that overwhelmed the governmental and healthcare infrastructure of this impoverished nation. According to local estimates, casualties included more than 200,000 killed, 300,000 injured, and one million left homeless, statistics which categorize this earthquake as the deadliest natural disaster ever recorded in the Western Hemisphere[1] and among the seven deadliest earthquakes worldwide.[1,2]

The vulnerability of the Haitian people goes beyond the ubiquitous use of unreinforced masonry and the absence of building code restrictions: a preponderance of individuals (three million in PAP) living in an urban population contributes to a great degree. Haiti remains one of the poorest countries in the Western Hemisphere. At the time of the 2010 earthquake, this small island was still recovering from the devastating effects of a tropical storm and three major hurricanes from 2008 which contributed to massive economic losses. The lack of a domestic emergency management system, unavailability of a standing military, and nonexistent mutual aid agreements added to the helplessness of the population. In the initial earthquake damage, the country's physical infrastructure dissolved, along with 60 percent of the governmental infrastructure (Figure 2).

The convergence of these vulnerabilities and the severity of the event resulted in devastation. Haiti was left dependent on sizeable external donor aid coupled with extensive international humanitarian assistance. This article describes a tertiary medical center's approach to decision making in a mass casualty humanitarian aid and disaster relief mission through utilization of the basic principles of healthcare ethics, with a focus on respect for communities, cultures, and traditions, as well as respect for the sovereignty of the host nation, and offers guidance for future disaster management.

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14. ABSTRACT

On January 12, 2010, a 7.0 Richter earthquake devastated Haiti and its public health infrastructure leading to a worldwide humanitarian effort. The United States sent forces to Haiti?s assistance including the USNS Comfort, a tertiary care medical center on board a ship. Besides setting a transparent triage and medical regulating system, the leadership on the Comfort instituted a multidisciplinary Healthcare Ethics Committee to assist in delivering the highest level efficient care to the largest number of victims. Allocation of resources was based on time-honored ethics principles, the concept of mass casualty triage in the setting of resource constraints, and constructs developed by the host nation?s Ministry of Health. In offering aid in austere circumstances, healthcare practitioners must not only adhere to the basic healthcare ethics principles but also practice respect for communities cultures, and traditions, as well as demonstrate respect for the sovereignty of the host nation. The principles outlined herein should serve as guidance for future disaster relief missions. This work is in accordance with BUMEDINST 6010.25, Establishment of Healthcare Ethics Committees.

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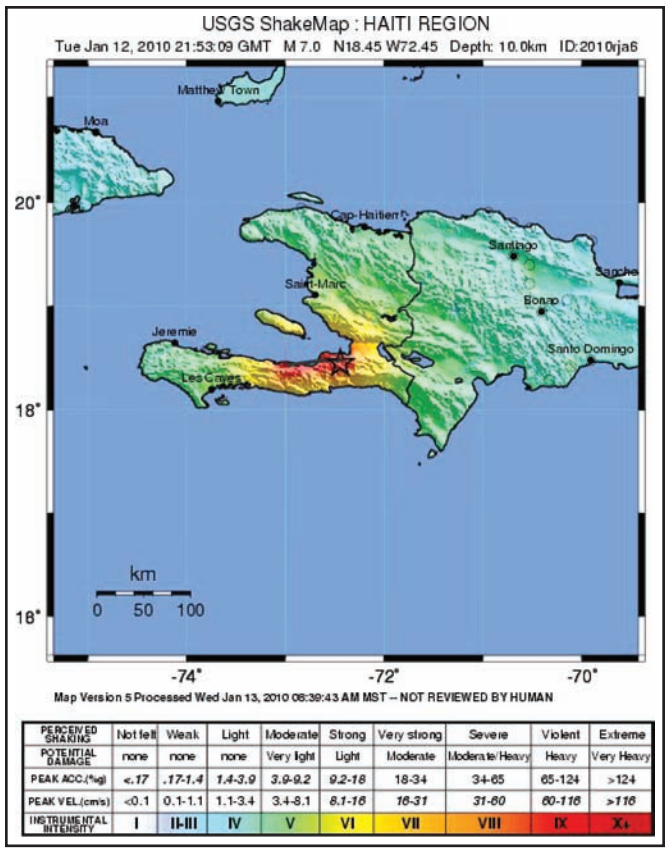

Figure 1. United States geological survey earthquake map of Haiti region on January 12, 2010.

Figure 2. Presidential palace after the earthquake.

Formation and process of the Healthcare Ethics Committee

The devastation of the earthquake in Haiti led to a worldwide humanitarian effort and to the United States (US) Joint Task Force launching Operation Unified Response-Haiti (OUR-H). This mission proved to be the US Navy's largest scale humanitarian mission in its 235-year history. As part of that operation, the USNS Comfort was deployed which has a 1,000-bed hospital, including 80 ICU beds. As the Comfort weighed anchor and set sail for Haiti, the hospital leadership anticipated numerous challenges in integrating a tertiary care center into a crippled chaotic healthcare system. A multidisciplinary Healthcare Ethics Committee (HEC) was established in accordance with Navy Medicine policy, BUMEDINST 6010.25. It consisted of 12 individuals: four physicians, four nurses, one healthcare administrator, an attorney, a chaplain, and one hospital corpsman. Two committee members were of Haitian heritage and fluent in Haitian-Creole and had great familiarity with Haitian culture. In addition, an adjunct committee expert, a social worker volunteer from the American Red Cross, was also of Haitian heritage. The HEC collaborated with the Navy Surgeon General's Ethics Advisory Council and the Navy Medicine HEC Consortium. The committee convened prior to arriving in Haiti and reviewed issues likely to arise throughout the course of the operation. With few established guidelines to follow, providers relied heavily on healthcare ethics decision making to apportion care to patients who rapidly overwhelmed the facility's capacity. The imbalance of patient care needs with the available resources meant the medical staff had to carefully examine the application of the principles of autonomy, beneficence, nonmaleficence, and justice. To assist in more difficult ethics decisions, the HEC added two contextual conditions:

1. Respect for communities, cultures, and traditions

2. Respect for sovereignty of the host nation

The HEC quickly became one of the most frequently consulted services on the hospital ship. Electronic mail dissemination of cases to the HEC facilitated quick discussion. The chair consistently followed up with a summary consensus. Meetings were called whenever controversial cases arose and as requested by healthcare practitioners. The approach required input from Haiti's Ministry of Public Health and Population,

known by its French name, Ministere de la Sante Publique et de la Population (MSPP), for strategic use of resources and disposition of other issues presented.

Role of the MSPP

Regular communication with the MSPP proved to be of paramount importance in delivering the highest level of care to the greatest number of people. The MSPP had the most comprehensive grasp of the country's health status and healthcare needs. Their regular guidance aided staff in focusing their relief effort. As an example, our healthcare team was discouraged from offering surgical and complex treatment options that could not be sustained in Haiti after the disaster relief response ends. The sovereignty of the host nation served as a guide for the Comfort and should serve as a guide for future missions. Some exceptions were made to the MSPP guidance. Two burn victims, for instance, required treatment in a tertiary burn unit, which was not available on the Comfort or elsewhere in the region. After careful evaluation by two intensivists, medical evacuation to the United States was considered, as the patients were likely to have a good prognosis with appropriate interventions. The MSPP agreed and provided logistics for transfer to burn centers in the United States.

The HEC also incorporated the concepts of dignity in death and appropriate disposition of deceased bodies. The HEC considered this question carefully prior to arriving in PAP and worked closely with Haiti's MSPP to assure culturally sensitive disposition. It was agreed that all bodies would be transferred to the Government of Haiti's mortuary services, unless a family requested the body, and in these cases, arrangements were individualized. With the assistance of MSPP, our chaplain services provided culturally appropriate memorial services at the request of the family; all people on board were invited to attend.

Illustrative case

MT, a 23-year-old Haitian woman with insulin-dependent diabetes mellitus, sustained a significant crush injury in her pelvis on January 12, 2010. She was extracted on January 13 and received her initial care in a local clinic. On January 18, she was transported to a local hospital for fever and anemia. She received two units of packed red blood cells (PRBCs), broad spectrum antibiotics, and intravenous insulin therapy. On January 21, she was noted to have purulent vaginal discharge. Arrangements were made for her transfer to the Comfort for suspected pelvic abscess, complicating a vertical shear pelvic fracture with left iliac crest avulsion. On arrival to the ship on January 24, she was noted to have fever and feculent vaginal discharge. Her white blood cell count was 12,100 cells per cubic centimeter, hemoglobin was 4.6 g/dL, electrolytes were notable for glucose of 352 mg/dL, and urine HCG was negative. Plain film X-ray, noted above, confirmed a complex shear injury and soft tissue air (Figure 3).

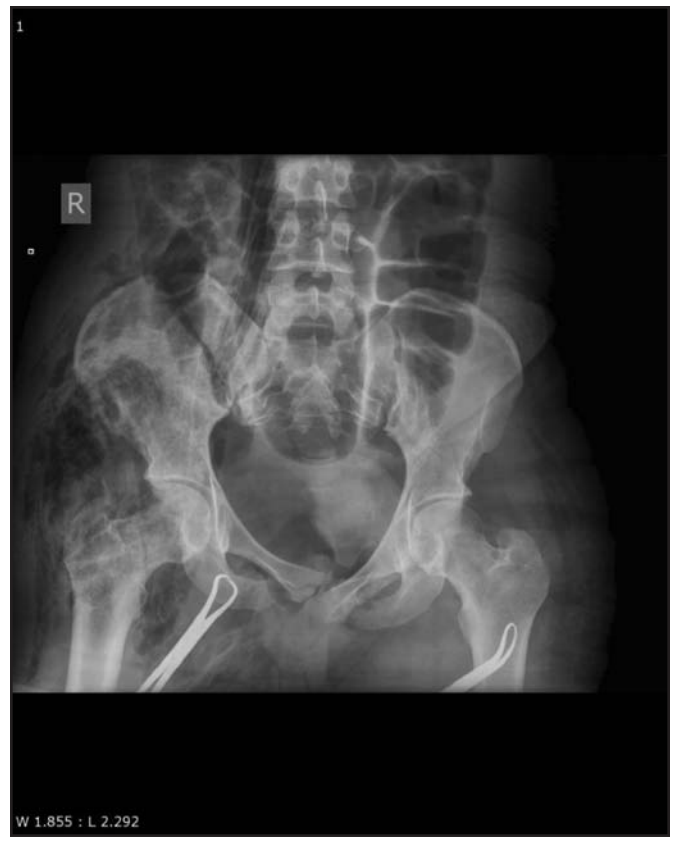

Figure 3. Roentgenogram of pelvis.

The patient was placed in the ICU and given broad spectrum antibiotics and two units of PRBCs. Consultants from orthopedics, general surgery, and gynecology acknowledged the enormity of any possible resection (including hemipelvectomy) and the resources required for her support. They concluded that this was

a mortal event and recommended no operative procedures. The HEC was consulted. Discussions with MT resulted in a joint decision for antibiotics, fluids, nutrition, and insulin therapy. Her antibiotic regimen was changed to daily ceftriaxone, and she was begun on scheduled- and sliding-scale subcutaneous insulin. A Do Not Resuscitate (DNR) order was issued. After 3 days of observation with relative stability, she was transferred to a local Haitian facility able to provide hospice care. She opted for an intravenous morphine drip as her sole medication. She expired on February 6, 2010.

Scope of healthcare ethics cases

Of more than 1,000 admissions on the Comfort during OURH, 773 Haitian nationals were admitted. Within 24 hours after anchoring the ship, 81 patients were being managed on the wards and ICUs, and by the following week, the census reached its maximum of 411 patients, with the Comfort staff and crew also caring for the escorts of these patients. More than 250 patients presented with significantly infected or ischemic limbs, considered at serious risk of losing their lives or limbs. They all received careful evaluation to minimize unnecessary amputations. Limb salvage medical management was offered when appropriate. This resulted in 37 patients receiving primary amputation (five upper extremity and 32 lower extremity). When patients refused amputation, surgeons respected their autonomy, and they received maximal limb salvage therapy, including wound care and intravenous antibiotics. Informed consent was optimized by having the hospital's interpreter service translate consent forms into French and Haitian-Creole, as well as by using an interpreter service consisting of 152 military and American Red Cross volunteers.

This disaster event evolved rapidly, and the need quickly overwhelmed our staff and resources, including in the ICU (Figure 4). A graded alteration in ICU standards ensued with registered nurse-to-patient ratios approaching 1 to 7. When bed and staffing had maximized and need was still increasing, mass casualty triage strategies were employed. Both short- and long-term expectations were put forth to patients or surrogate decision makers in a very clear and realistic manner. When there was no surrogate, an objective scoring system was used to estimate patient outcome/mortality. The Sequential Organ Failure Score set at markers to predict 80 percent mortality was obtained on day 1 and day 5. Scores above the 80 percent mortality mark influenced allocation of resources, but did not affect ICU stay and did not affect bedside and comfort care measures. During the first week of the event, only one intensivist made these decisions (DA). After other staff arrived, a consensus was required. All

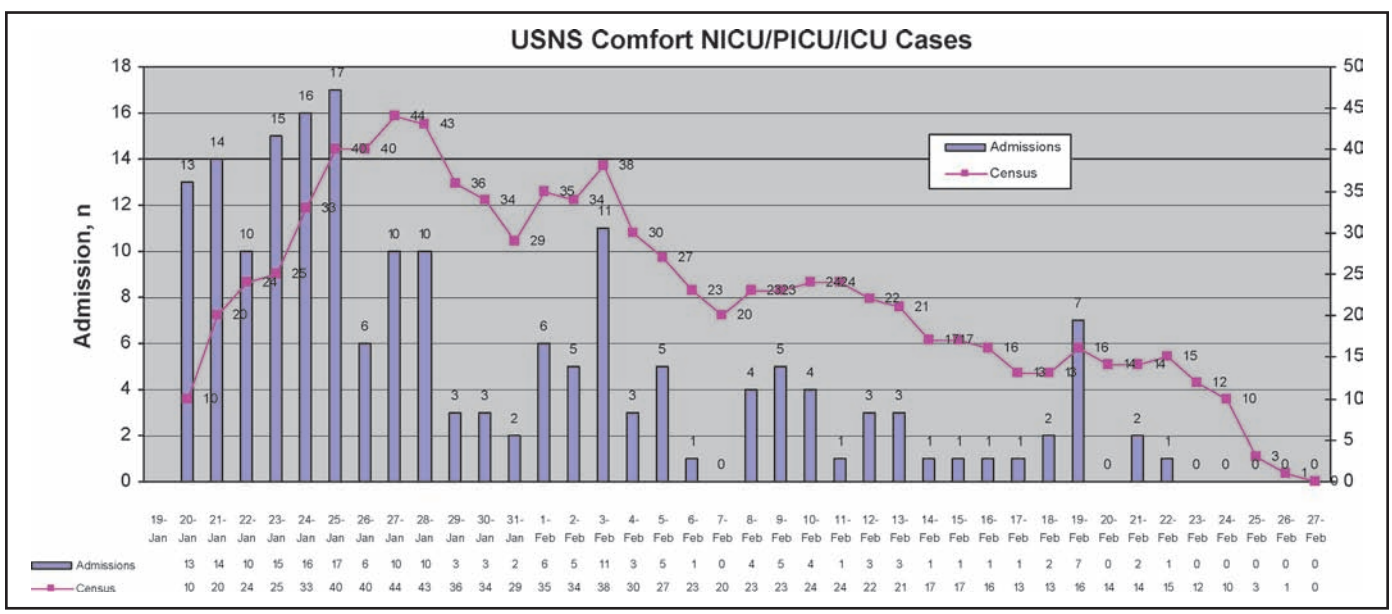

Figure 4. ICU admissions and ICU census by day.

contentious cases were referred to the HEC for review. The HEC was quickly incorporated into the ICU decision tree and was particularly helpful in reasonable goal setting and in expectation management.

The HEC was often called to assist in end-of-life issues and typically had independent discussions with the families regarding decisions. After these discussions, many families opted for DNR and/or Do Not Intubate (DNI) status, and some requested only comfort care. When families opted to have "everything done," the staff performed the clinical duties and provided services using the principle of justice, assuring that vital resources were not diverted to patients who had little to no chance of survival. Throughout the course of OURH, there were 29 deaths on the Comfort.

Transition from disaster relief to humanitarian assistance

As the mission progressed, several clinical issues had to be readdressed. For example, elective surgical cases, previously not an option, could be performed; criteria for blood transfusions were liberalized; criteria for hemodialysis were redefined; and the hospital commenced placement of percutaneous endoscopic gastrostomies (PEGs). There were 24 dialysis treatments (on 10 patients), with 75 percent of the indications being acute renal failure presumed secondary to rhabdomyolysis. Early in the mission, it was understood that given the nature of the disaster relief mission, PEGs would not be placed. However, when a 25-year-old patient with severe traumatic brain injury (TBI) gradually moved from coma to a vegetative state and settled into a minimally conscious state 1 month into her medical course, she started repeatedly pulling out her nasogastric tube and had difficult IV access. When the HEC was called to consult, the committee evaluated the patient and raised the question of feeding the patient with a PEG. After initial objections from the medical staff, the HEC consulted with the MSPP, and the MSPP requested the use of PEGs. This decision generalized to all patients with moderate to severe brain injury, and four patients subsequently had PEGs placed. These cases are important, as they depict the transition of treatment from a mass casualty disaster relief model with limited resources to a humanitarian assistance model where adequate resources are obtainable.

Public health aspects of disaster ethics

The challenges of ethical decision making with regard to patients affected by natural disasters have been reported in the medical literature[3]; however, for the most parts, these studies largely refer to public health decision making.[4,5] The need to place individual patient-care decisions within a greater context of public health utilitarianism in the setting of postearthquake Haiti, where a decimated public health infrastructure could not support ongoing individual healthcare following discharge, faced the staff of the USNS Comfort; staff had to take into account the conditions and health services to which their patients would return. Moreover, they were held accountable to the Haitian MSPP's stipulation that patients would not require a future level of care greater than local health systems could offer or sustain.

Such limitations must be understood in the context of Haiti's public health metrics. The epidemiologic profile of Haiti reflects the inequity of healthcare seen in other developing countries with many predictable areas of vulnerability, particularly of women and children. Recent data from the World Health Organization and The United Nations Children's Fund (UNICEF)[6] indicate that Haiti's low social indicators are coupled with high maternal mortality ratios (630 per 100,000 live births), under-five mortality rates of 72 per 1,000, and infant mortality rates of 54-60 per 1000.[6,7] Immunization coverage of DPT3 (Diphtheria, Pertussis, Tetanus), vaccine-preventable diseases, is estimated to be only 53 percent.[6] The fact that we managed six patients with tetanus in just 4 weeks is strong evidence that Haiti's immunization program has need for improvement. To provide first-world standards of care but then to discharge patients into a two-thirds world context created concern in the minds of our medical staff. Overlaying this reality were host nation cultural practices and societal expectations, which differed from first-world practitioners with respect to quality of care, optimal health outcomes, and survival.

The increased incidence of new amputees in Haiti provides a case in point. Many recent publications have

chronicled anecdotal reports, but less has been written about the larger Haitian context.[8] Although an individual may survive amputation surgery, he/she may not survive socially. The disability poses a great risk of secondary morbidity and mortality in the struggle for survival on the streets of Haiti. The patient is more likely to become malnourished, maltreated, and infected, to sustain further injury, and to face discrimination within the resource-stretched healthcare system, as well as to encounter difficulties in procuring gainful employment. Patients and medical teams faced the dilemma of an amputation to save a life, yet the likelihood of later social and perhaps other harm for the reasons mentioned earlier. The ethics posed by amputation led our staff to realize that amputations might be creating a short-term solution with long-term consequences for Haiti.

In contrast were patients with fewer surgical options, such as those who had experienced severe TBI or spinal cord trauma with subsequent paraplegia and tetraplegia. Identification of a well-regarded NGO health facility that specialized in care of this kind was within a short helicopter distance from the ship. The fact that their medical staff had demonstrated a focus and a commitment for chronic care helped to ease the discomfort that patients would be thrust back into Haiti with significant physical and cognitive limitations. In a few instances, however, where the prognosis for partial or even full recovery was clearly favorable, patients were transported to the United States after both the MSPP and an independent Medical Review Board approved the transfer.

The medical and surgical treatment of unaccompanied children also posed a public health ethics challenge. Informed consent, parental consent for minors, and proper discharge planning were either not feasible or posed a dilemma in cases where children were either separated from their parents or orphaned because of earthquake-related mortality. In all instances, not knowing the parental status of these children, we initially classified them as "displaced" until a comprehensive family reunification effort was jointly made between the ship's reunification program known as the "care line," UNICEF, and other NGOs. Both the medical staff and the HEC were concerned about some children who might have been "restaveks," victims of human trafficking who are forced into physical labor or sex. Such cases were considered and investigated.

Conclusions

For responders on the USNS Comfort during OUR-H, a multidisciplinary HEC, including members knowledgeable in the language, history, and culture of the host nation, provided invaluable guidance. The HEC's regular communication with Haiti's MSPP reinforced the tenet that regular communication and consultation with the host nation's Ministry of Health is a key element to a successful humanitarian medical mission. The HEC on the Comfort was one of the most frequently consulted services, and owing to the critical role played by this committee, it should be anticipated and incorporated in the planning cycle for all disaster medicine missions.

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Mill Etienne, MD, MPH, CPH, Department of Neurology, National Naval Medical Center, Bethesda, Maryland; Assistant Professor of Neurology, Uniformed Services University of Health Sciences, Bethesda, Maryland; Neurologist and Chief-Healthcare Ethics

Committee on board USNS Comfort (T-AH 20) for Operation Unified Response-Haiti, LCDR, USN.

Clydette Powell, MD, MPH, FAAP, Medical Officer, Bureau for Global Health, US Agency for International Development, Washington, District of Columbia; Associate Professor of Pediatrics, George Washington University, Washington, District of Columbia; Pediatric Neurologist on board USNS Comfort (T-AH-20) for Operation Unified Response-Haiti.

Dennis Amundson, DO, MS, FACP, Critical Care Physician, Naval Medical Center, San Diego, California; Associate Professor of Internal Medicine, Uniformed Services University of Health Sciences, Bethesda, Maryland; Intensivist on board USNS Comfort (T-AH 20) for Operation Unified Response-Haiti, CAPT, USN.

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