

Interrupting My Shift: Disaster Preparedness and Response

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Editor's Note: This article is part of a series that describes the many ways that the Department of Health & Human Services (DHHS) interacts with the emergency care system. DHHS includes many divisions that are well known to the health care world including the Center for Medicare & Medicaid Services, the Health Resources and Services Administration, the National Institutes of Health, and the Agency for Healthcare Research & Quality. The goal of the series is to increase the visibility of federal emergency care-related activities within the emergency care community.

Editor's Capsule Summary

What is this article about?

This article provides an introduction and overview of the Hospital Preparedness Program. The Hospital Preparedness Program was created in 2002. As a part of the 2006 Pandemic and All-Hazards Preparedness Act, the authority and responsibility of the program moved to the Office of the Assistant Secretary for Preparedness & Response.

How does this affect our patients?

This article frames disaster and pandemic preparedness as a scaled version of day-to-day operational efficiency and describes 2 key principles of the Hospital Preparedness Program: (1) the development of health care coalitions, and (2) the description of immediate bed availability. By focusing on capacity planning at the level of the population, the program seeks to ensure that the emergency care system will provide high-quality care in day-to-day operations, as well as in times of system strain.

Emergency physicians will always be called on to play key roles in disaster preparedness and response. The Hospital Preparedness Program of the Office of the Assistant Secretary for Preparedness and Response, US Department of Health and Human Services, supports 62 awardees, including each state. A guiding principle for the program is that improved disaster planning will improve daily emergency care and ultimately increase resilience. During its 10-year history, the program has

transitioned from building capacity to building capabilities. Among those capabilities is the development of health care coalitions, engaging all components of the health system, as the foundation for health care systems preparedness. Another capability, medical surge, continues to be a challenge in our increasingly constrained health care system. A new approach to medical surge, immediate bed availability, has the goal of quickly providing higher-level care to more seriously ill patients during a disaster, with no new space, personnel, or equipment. Health care coalitions and immediate bed availability, cornerstones of the Hospital Preparedness Program, provide opportunities to weave threads of preparedness into the daily delivery of care.

WHY THIS IS IMPORTANT TO EMERGENCY PHYSICIANS

Independent of an emergency physician's interest in disaster response, it is a routine part of their day-to-day shifts, inherently linked to what they do. In fact, it is a function of scale: a personal disaster such as a heart attack or stroke or a mass casualty incident such as a bus crash. Whether there is an interest in disaster preparedness or not, it is core to what they do. The consequences of large transportation-related crashes, explosions in nearby plants, and many other types of disasters will continue to be a part of working in the emergency department (ED) in communities throughout the United States. When small or large disasters occur, emergency medicine has always been and will continue to be called on to respond. Most emergency physicians live in the communities they work in, and better preparedness benefits their families and friends. A foundation of the Hospital Preparedness Program is that improved disaster planning will improve day-to-day emergency care and ultimately increase local and regional resilience.

HISTORY AND OVERVIEW

During the last 10 years, the Hospital Preparedness Program has successfully awarded grants that support hospitals, health care organizations, and health care coalitions to prepare for disasters and to improve our nation's health care preparedness. In December 2006, the Pandemic and All-Hazards Preparedness Act (Public Law No. 109-417) created the Office of the Assistant Secretary of Preparedness and Response and provided new authorities for a number of programs, including the Hospital Preparedness Program. By law, the program provides

funding to 62 awardees, including states, territories, and eligible municipalities, to improve surge capacity and enhance community and hospital preparedness for public health emergencies.

EVOLUTION OF THE HOSPITAL PREPAREDNESS PROGRAM: FROM BUILDING CAPACITY TO BUILDING CAPABILITIES

Historically, the Hospital Preparedness Program supported capacity development by funding partners to purchase equipment and provide training focused on hospital preparedness. Starting in 2010, a paradigm shift began taking place within the program as it transitioned its focus from building capacity to building health care preparedness capabilities. The program also transitioned its unit of focus from hospitals to include the entire health care system within communities. This new population-based health delivery model for disaster response integrates preparedness into daily emergency care delivery. In July 2012, the program administered \$352 million in grant funding to support hospitals and health care coalitions by enhancing planning not only within the hospital but also across the community by ensuring that hospitals identify and collaborate with other health care system partners critical to preparedness. These partnerships that support the existing infrastructure for response in the event of a disaster and which may help support day-to-day emergency care are called health care coalitions.

EMERGENCE OF HEALTH CARE COALITIONS AS THE FOUNDATION FOR HEALTH CARE SYSTEM PREPAREDNESS

“The whole is greater than the sum of its parts.”—Aristotle

Coalitions serve as the foundation for health care preparedness and are charged with developing the health care preparedness capabilities, which include emergency operations coordination, medical surge, responder safety and health, and volunteer management (Table).

Ideally, a health care coalition includes all components of a community's health system, including alternative care sites, behavioral health, community-based organizations, community health centers, dialysis facilities, emergency management, emergency medical services (EMS), faith-based organizations, hospitals, long-term care facilities, the National Disaster Medical System, nursing homes, primary care providers, private insurers, public health, urgent care facilities, and volunteers. Unlike other geographic units that have been used to organize health care, coalition member organizations identify their own partners and geographic boundaries. Coalitions may choose to organize within a variety of regions or areas, including health care service catchment area, trauma system, EMS region, regional coordinating hospital region, public health region/district, county jurisdiction, Emergency Management Agency region, or other type of functional service region.

The Hospital Preparedness Program's focus on coalition development is the result of lessons learned from experiences, subject matter consensus recommendations, and evidence that collaboration among health care partners improves disaster preparedness and response capabilities. Observed systems improvements are multifactorial, with some arising out of the process of relationship building by reaching out to traditional and nontraditional coalition partners and some attributable to the better working interactions that are realized when a disaster occurs. Coalitions also provide an opportunity to problem solve, share resources, and share capabilities across an entire health care system.¹ This shared responsibility across traditional and nontraditional partners around such issues as medical surge will lead to improved survivability of disaster victims and could assist with solving day-to-day health care system challenges, including ED crowding. The coalitions provide opportunities to weave threads of preparedness into the daily delivery of care.

During the 2012 meningitis outbreak, Michigan's health care coalitions exemplified the contributions and “value added” by coalitions in preparedness and response. In response to rapid increases of complicated meningitis cases, examples of how Michigan's coalitions supported the response included identifying additional staffing resources and identifying regional hospitals with bed availability and with capabilities required to care for these patients, coordinating daily conference calls to distribute evolving patient care guidelines to all facilities, coordinating a request for additional pharmacy support for complex compounding of pharmaceuticals, and providing weekly clinical update Webinars. The interconnectedness provided by the health care coalition offers support to a single event/single facility's “real life” crisis, using regional and state support as needs unfolded.²

“Investments to strengthen health care infrastructure to withstand catastrophic events may seem unrealistic under current fiscal restraints. However, the financial and public health consequences of failing to invest will result in predictable hospital failures in the next disaster. Where possible, investments should be coordinated across multiple institutions, using health care coalitions to ensure resiliency.”³ Disasters require collaboration across the entire health care system, and members of health care coalitions should have awareness of one another's capabilities and needs during a disaster. Building robust health care coalitions provides a critical foundation for solving major challenges in preparedness and response, such as medical surge.

NEW MEDICAL SURGE: IMMEDIATE BED AVAILABILITY

The United States continues to experience ED and hospital crowding, and given the ongoing focus on efficiency and outpatient management of most conditions, the traditional “let's add more beds” solution to surge is not realistic or sustainable. In most areas, there are limited mechanisms to reallocate patients throughout the hospital or the community; thus, the Hospital Preparedness Program's mission to improve surge capacity has been a persistent, daunting challenge. The task for the program is

Table. National healthcare preparedness capabilities and their importance to emergency physicians.

Capability Title	Hospital Preparedness Program Definitions	Importance to Emergency Physicians and Team
Health care system preparedness	Collaborative planning for the health care system is the basis for HCCs.	Coalitions: Emergency medicine is at the front lines of disaster response; emergency physician leadership is essential.
Health care system recovery	Effective and efficient return to normalcy or new standard of normalcy for the provision of health care delivery to the community.	Your ED is able to maintain its capabilities during and after an all-hazards incident. Emergency physicians and staff continue to be paid.
Emergency operations coordination	Command structure must be pre-established and hospital staff and HCC partners must understand and drill their role.	Variability in connectivity of emergency medicine and emergency operations coordination. Through coalitions, connectivity is ensured so that when ED and hospital challenges extend to the ED, there is immediate connectivity. Roles and responsibilities of command and staff per department must be established and executed. This includes if a department transitions from its daily role to its casualty response role.
Fatality management	Does the health care system have a plan in place for managing large numbers of fatalities?	A robust fatality management program will have a plan to assist hospitals and EDs when there is a surge of concerned citizens requesting information about missing family members. Mental and behavioral health partners will assist EDs to provide support for family members of the deceased, incident survivors, and responders.
Information sharing	Communication is key. Are there resources in place to provide early notification?	A common operating picture can provide the emergency physician with information inside his or her own hospital, as well as other hospitals, such as facility operating status (eg, sister hospital may need to evacuate soon so expect to receive patients), critical medical services (can transfer patients to another hospital that has critical care units with staffed beds available), and critical health care delivery status (pharmacy low on morphine).
Medical surge	Decompression or immediate bed availability builds on the daily delivery of care and integrates within health delivery by health systems.	Most of the casualties in large-scale disasters will arrive at the closest hospital, overwhelming the hospital's ability to provide care. Immediate bed availability, using the principles of continuous monitoring, off-loading, and on-loading, will provide space and resources to care for large numbers of critically ill or injured patients.
Responder safety and health	Does the health care organization have the resources to protect the safety and health of health care workers from a variety of hazards during emergencies and disasters?	Ensuring access to personal protective equipment and medical countermeasures for emergency physicians allows them to remain well, allows the ED to continue to take care of patients, and allows the business operations of the emergency medicine practice to continue.
Volunteer management	Hospitals and HCCs must prepare for personnel shortages and therefore must pre-credential any identified volunteers. Are there processes in place to use and manage these people supporting a medical event?	Volunteers can help staff off site (alternate care site) or on site to ensure that patients are distributed across the health care system or coalition and cared for by qualified, credentialed personnel.

HCC, Health care coalition.

to build “medical surge” on top of a rapidly changing national health care system that intends to constrain any additional or unneeded resources. To that end, the program recently focused efforts on the strategic development of a dual-use application that is as effective at improving daily emergency care efficiencies as it is at supporting preparedness efforts. Along with the transition from a capacity focus to a capability focus, as described above,

today’s Hospital Preparedness Program is focusing medical surge initiatives around increasing immediate bed availability. The goal of immediate bed availability is to quickly provide higher-level care to more seriously ill patients during a disaster, with no new space, personnel, or equipment.

Today’s health system has no additional capacity; it is leaner, it has a “just in time” approach to resources, and ED crowding

persists. In the context of those challenges, medical surge remains an important capability, as described in the *National Guidance for Healthcare System Preparedness* published by the Hospital

Preparedness Program, Office of the Assistant Secretary for Preparedness and Response, in January 2012.⁴ With recognition of the need to use a new approach to medical surge within our current health care system, immediate bed availability is the ability of a health care coalition to provide no less than 20% bed availability of staffed members' beds within 4 hours of a disaster. It is built on 3 pillars: continuous monitoring across the health system, off-loading of patients who are at low risk for untoward events through reverse triage, and on-loading of patients from the disaster.

To ensure immediate bed availability in times of crisis, health care coalition partners must continuously monitor acuity of patients and maintain full ability for patient movement. Once a disaster happens, acute care facilities will need to prepare for an influx of new disaster patients (population focused). Through pre-established agreements with health care coalition partners, off-loading of lower-acuity patients begins from hospitals to other, appropriate facilities and care sites, thus making room for higher-acuity patients. These same agreements ensure that receiving facilities are prepared to provide the appropriate level of care (ethically grounded). Immediate bed availability and the continuous round-the-clock monitoring within hospitals and throughout health care systems will improve minute-to-minute awareness of the entire health care system's capacity (evidence informed).

Improving the capacity of a hospital to take on higher-acuity patients during a disaster by off-loading patients requires consideration of disaster disposition protocols, rapid bed turnover, rapid transfer or discharge of lower-acuity patients to coalition partners or home, and deferral of elective surgeries and procedures (operationally tenable). By creating and demonstrating these solutions for immediate bed availability, coalitions can "show the way" for both emergency physicians and hospital administrators to decrease crowding and increase hospital throughput.

REAL WORLD EXPERIENCES

On May 27, 2011, an EF-5 tornado destroyed St John's Regional Medical Center (Mercy Hospital Joplin) in Joplin, MO, forcing the hospital team to immediately evacuate patients to Freeman Health System. Communication channels were nonexistent, so the Mercy medical team had no way of notifying the Freeman team (operating completely on generator power) to expect this surge of patients. In this situation, Mercy evacuated 183 patients, including 24 from the ED, 10 labor and delivery, and 1 surgical, through debris-filled hallways and stairwells, with limited internal communication channels. The medical team working during that shift discussed an influx of nursing support from multiple departments within the hospital, a critical shift from daily practice to a crisis response as a team.

On April 15, 2013, 2 bombs exploded at the finish line of the Boston Marathon, wounding more than 260 and killing 3

people. "The explosions took place at 2:50 P.M., twelve seconds apart. Medical personnel manning the runners' first-aid tent swiftly converted it into a mass-casualty triage unit. Emergency medical teams mobilized en masse from around the city, resuscitated the injured, and somehow dispersed them to eight different hospitals in minutes, despite chaos and snarled traffic."⁵ This citywide coordination was a result of long-term planning, a shared understanding of responsibility, and a well-executed use of medical volunteers who supported previous events.

Both the tornado and the bombings illustrate the interdependence of hospitals in a shared region. The influence of these events required an entire community's health care system to respond; "going it alone" was not a choice. These responses highlight why it is so critical to weave a thread of preparedness into daily delivery of care and reinforce the need for health care coalitions to have all-hazards capabilities.

The scenarios that took place in Joplin and Boston illustrate the importance of the 8 capabilities developed by the Hospital Preparedness Program for health care coalition preparedness and response, as summarized in the [Table](#).

WHAT NEXT

Emergency physicians already play a critical role in the current health care preparedness program; it is essential to ensure that this role evolves and supports the evolution toward health care coalition development. At the federal level, the Hospital Preparedness Program director is an emergency physician, and the emergency medical community has been a key supporter of the effort to develop health care coalitions. There is ongoing opportunity for engagement with health care coalitions. Emergency physicians aspire to provide the best care for the people they serve, whether during a routine shift or when disaster strikes. The Hospital Preparedness Program aspires to improve preparedness and response to those disasters. The commonalities of purpose and synergies between emergency physicians and the program can strengthen our nation's ability to respond in times of greatest need.

For more information, please e-mail Traci Pole at HSEB@hhs.gov. For more information on the National Healthcare Coalition Resource Center, please visit www.healthcarecoalitions.org.

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REFERENCES

1. Courtney B, Toner E, Waldhorn R, et al. Healthcare coalitions: the new foundation for national healthcare preparedness and response for catastrophic health emergencies. *Biosecurity Bioterrorism*. 2009;7:153-163.
2. Hunt RC, Atas JG, Scott LJ, et al. When needs exceed resources: healthcare coalitions response to the meningitis outbreak [Webinar]. Robert Wood Johnson Urgent Matters Web site. Available at: <http://urgentmatters.org/318851>. Accessed April 30, 2013.
3. Powell T, Hanfling D, Gostin LO. Emergency preparedness and public health: the lessons of Hurricane Sandy. *JAMA*. 2012;308:2569-2570.
4. HHS/ASPR: healthcare preparedness capabilities: national guidance for healthcare system preparedness. 2012. Available at: <http://www.phe.gov/preparedness/planning/hpp/pages>. Accessed September 30, 2013.
5. Savader A. Why Boston's Hospitals were ready. *New Yorker*. April 17, 2013. Available at: <http://www.newyorker.com/online/blogs/newsdesk/2013/04/why-bostons-hospitals-were-ready.html>. Accessed September 30, 2013.