

Disaster Preparedness 10 Years After 9/11 The Experts Weigh In

A firsthand account of a New York ED on 9/11 and lessons learned from experiences in a Baghdad ED and Hurricane Katrina's aftermath are discussed. Dr. Thomas Scalea provides a trauma update and Dr. Knox Todd comments on pain and palliative care issues, while Drs. Douglas Rund and Rama Rao each address biological and toxicologic emergencies. Among other experts, Drs. Corey Slovis and Alexander Isakov discuss the current state of preparedness and what next steps should be considered.

ED Response Nearest Ground Zero

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New York Downtown Hospital stands 5 blocks from the World Trade Center. On September 11, 2001, the hospital treated 1,500 victims of the attacks. That morning was my ED shift.

We had 10 minutes to prepare. Then an avalanche of humanity hit. Victims came so fast we had no time to write triage tags. Shockingly mutilated and burned patients quickly filled our trauma slots. During the first 2 hours, we treated 350 patients—30 times our normal volume.

For 6 days after 9/11, lower Manhattan remained blacked out. Operating on generators, the hospital not only continued to treat patients but also provided food and medicines to elderly residents trapped in their high-rises. The cafeteria fed staff, visitors, and passersby free of charge for a week. The hospital, in effect, became the only fully functional community support

system in lower Manhattan.

9/11 spurred dramatic changes in the ED and the rest of the hospital. With generous community support we doubled the size of the ED, installed a CT scanner in the department, and built the largest decontamination shower bay in New York. Overflow areas such as the cafeteria were fitted with medical gases and secure power outlets. A dedicated incident command headquarters—fully stocked with communications equipment, disaster manuals, and uniforms—is now set up in our ED conference room. We regularly drill with walkie-talkies and satellite phones. Every year, the hospital sponsors a disaster preparedness symposium in which experts critique recent mass casualty events and debate best practices.

9/11 proved hospitals are indispensable in disasters. Despite all our improvements, however, a threat looms. Over the past decade, our two sister hospitals in lower Manhattan, Cabrini and St. Vincent's, which played key roles on 9/11, have been closed. Across the country, one-third of emergency departments have shut down.

On 9/11, New York Downtown Hospital countered the most vicious attack ever against America with unprecedented spirit and caring. I hate to think next time we might be alone. ■

Post-Katrina Renewal: Academics and Clinical Care

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August 29, 2011, marked the 6-year anniversary of Hurricane Katrina's arrival along the Gulf Coast near New Orleans. This storm has literally reset time in our area, with many residents now referring to events as either "pre-Katrina" or "post-Katrina." Much has been written about the devastation rendered, including the closure of the Charity Hospital, the icon for indigent care in Louisiana. There were many adjustments made while New Orleans recovered. Our school of medicine (the Louisiana State University [LSU] School of Medicine) relocated temporarily to Baton Rouge, our training programs assigned residents to other public hospitals throughout Louisiana that continued to serve our patients, and our staff followed the patients and trainees, providing supervision and clinical services. Much was learned about what to do when a major storm interrupts the clinical, teaching, and research activities of a health sciences center, including the importance of having agreements with other organizations to allow for seamless transitions of these missions.

In November 2006, the Medical Center of Louisiana in New Orleans (previously consisting of Charity Hospital and University Hospital), our flagship teaching hospital in New Orleans, reopened the doors of University Hospital, allowing many of us to return to New Orleans and resume a semblance of our "pre-Katrina" professional lives. The return to University Hospital heralded a time of renewed optimism, allowing the public hospital and its providers to fulfill the original intentions of Jean Louis, the French seaman and boat builder who bequeathed his belongings in 1736 to establish the Charity Hospital to care for the poor of New Orleans.

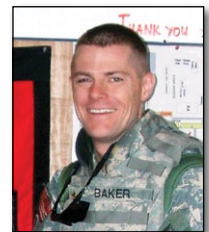
The reaction to adversity provides insight into the strength and character of an institution. Ultimately, the success of an academic medical center's response to a disaster will be reflected in its ability to maintain a be-

lief among its members that the future is bright. One of the explicit missions of our state institution is to provide health care for the citizens of Louisiana. By report, nearly three-quarters of the health care providers in Louisiana have been educated at the LSU Health Sciences Center. Consequently, a surrogate marker for the success of our response to Katrina will be the number of medical students deciding to stay in the state for their training, a reflection of data that report that most house staff are likely to remain near the area where they train. In the first two immediate "post-Katrina" matches, only 45% of our medical school graduates pursued postgraduate medical education in Louisiana, a statistic that had many worried about the long-term consequences of Katrina. However, almost 60% of the students in the last two graduating classes have decided to stay in Louisiana to train, numbers that exceed those from any other graduating class in the last 12 years. News of a new academic medical center that will replace Charity Hospital has reinforced this momentum. In retrospect, it has been the ability to maintain this spirit of enthusiastic renewal that has proved to be our most important response to Hurricane Katrina, more than any amount of money or new construction. Our next generation of physicians in Louisiana will serve as proof of the importance of sustaining optimism when rebounding from such an event and will prove to be one of the brightest legacies of Katrina. ■

Lessons Learned in a Baghdad ED

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During my time serving in "Baghdad ER" as an emergency physician with the US Army, we utilized several techniques in mass casualty situations that expedited triage, patient care, and ED flow. Every trauma patient had a chest x-ray before any other films were taken. Only emergency physicians could direct our x-ray technicians to x-ray something other than a chest, as occasionally surgeons, orthopedists, and other consultants would try to pull the tech to their patient specifically. This simple rule prevented pneumothoraces from being missed and expedited their care.

Endotracheal tubes, chest tubes, and even introducer central line kits were preloaded and ready at a moment's notice. Our nurses would pull syringes with predrawn medications (rapid-sequence intubation medications, antibiotics, pain medications) from the unit refrigerator and would have them taped to their chest when trauma patients were en route. Blood products usually arrived before the patients and could be given less than 5 minutes—sometimes even less than 1 minute—after patients arrived.

These simple ideas may not be feasible in many EDs or trauma centers across the nation, but in a mass casualty situation they could be implemented quickly, even as protocol, to assist patient care. On November 5, 2009, when the shooter in Fort Hood, Texas, gunned down several soldiers, the emergency physicians working in the garrison hospital immediately put their Baghdad experiences to work, saving countless lives in the process. These experiences make those of who have worked through these situations and those around us better prepared to handle chaos whenever it occurs. (*Dr. Baker is the author of Baghdad ER: Fifteen Minutes. For more information, go to www.BaghdadER.com.*) ■

Preparedness Beyond Earthquakes

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Emergency medicine has always been on the front lines of disaster medicine, but the events of September 11, 2001, placed it, along with EMS and the fire department, in the limelight. The increased public and political awareness created by the tragedy increased the impetus for us to “get it right.” Like most things that are complicated and vital but infrequently utilized, our readiness had to be analyzed, practiced, reanalyzed, and then practiced again. It's not that we weren't getting it right before, but after 9/11, there was much greater scrutiny. There were also, thankfully, more resources and broad support for the role of emergency medicine, as well as optimization of the entire process. Our hospital and county's di-

saster planning and readiness got a tremendous boost. Communication and logistical linkages between hospitals in our area and the various prehospital agencies were strengthened. At our facility, the tangible results have included regular interdepartmental meetings; consideration of just about every scenario of internal and external natural, man-made, and terrorist disaster; stockpiling of supplies; development of surge-staffing plans; tabletop and live drills; and the building of decontamination stations outside the department. I've learned from many colleagues that the same has occurred across the country.

A true test of our readiness has yet to occur, which I suppose is fortunate. Fervor was and continues to be high, and though I wish 9/11 had never happened, our reaction to it has resulted in positive change.

In California, earthquakes are the disaster situation we're most likely to face. In fact, several large earthquakes in California prior to 2001—notably, in Loma Prieta in 1989 and Northridge in 1994—had previously focused attention on local and statewide disaster preparedness beyond the affected areas. 9/11, however, produced change on a much broader and more profound scale. That change has made us better prepared for our California quakes and all disasters. ■

What's New in Trauma Since September 11, 2001

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The concept of damage control was originally articulated in the early 1990s, when crack cocaine first came into America. The finances of its distribution created real war on urban American streets, resulting in gravely injured patients in need of lifesaving treatment. Described as a surgical technique, damage control involved limiting initial surgical care to the treatment of immediate life-threatening injuries.¹ Adjunctive mea-

asures for hemostasis, such as angiographic embolization, were utilized, and patients were then taken to the ICU for stabilization. Small bowel or colonic anastomosis, placement of feeding tubes, and other measures to care for problems that were not immediately life-threatening were deferred until later.

However, damage control is far more than a surgical technique. Since September 11, 2001, the principles of damage control have become central to the care of badly injured patients. Originally developed for the treatment of abdominal injury, these principles are now widely used with all body sites, including the chest. The same principles are used for multiply injured patients with bony injury. Damage control orthopedics is a technique in which closed long bone fractures can be temporized with external fixation.² Definitive therapy with intramedullary nailing is deferred until the patient is physiologically more stable.

The philosophy of damage control is now also being applied to resuscitation. In previous years, large-volume crystalloid resuscitation was used to first normalize blood pressure and then augment cardiac performance post resuscitation. Transfusions were generally given late. Administration of plasma or platelets was deferred and used to treat coagulopathy. Significant edema was a common development, and frequently it was necessary to leave the abdomen open postoperatively. Abdominal wall closure would be delayed, often for 6 months.

Damage control resuscitation is a philosophy in which crystalloid use is minimized. Patients are allowed to remain hypotensive until hemostasis is achieved.³ In addition, blood is used far earlier in the resuscitative scheme. Plasma and platelets are used much earlier and are given in a ratio of 1:1:1 relative to red cells.⁴⁻⁶ This strategy is aimed at preventing coagulopathy, as opposed to treating it. Moreover, limiting crystalloid results in less edema and an increased likelihood of achieving primary fascial closure during the initial hospitalization. ■

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Pain and Palliative Care for the Mass Casualty Event

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Sadly, in the past decade, we have experienced all too many mass casualty events, and emergency providers have learned valuable lessons from each. In the areas of pain and palliative care, our specialty has developed much more technical and clinical expertise in the 10 years since September 11, 2001, and emergency physicians are entering advanced-training fellowships in both pain and palliative care with increasing frequency. To these specialties, we bring our systems-oriented approach to disaster management, and while our efforts are targeted to maximize the number of lives saved, we understand that a coordinated disaster response must also minimize the suffering of those with pain, including those who will inevitably die.

We can reliably predict that in some future mass casualty event, our resources will be overwhelmed. Our prior planning must anticipate the difficult decisions to be made with regard to allocation of scarce resources. We must also recognize that standards of care that are acceptable in calmer times will require modification in a mass casualty event. As a relatively minor example of alterations in standards of care to be expected after disasters, consider the displacement of populations receiving chronic opioid or methadone maintenance therapy after Hurricane Katrina. In this context, emergency physicians caring for the Katrina diaspora shelved our typical practice of limited opioid prescribing, in the realization that traditional treatment networks and doctor-patient relationships had been transiently altered by the disaster.

In the Katrina example, the capacity of our existing system of controls for opioid prescribing was merely stretched, rather than fundamentally restructured. Future mass casualty events with victims numbering in the thousands or tens of thousands will predictably overwhelm our stockpiles and resources. In addition to those patients classified as “unsalvageable” due to critical injuries, vulnerable members of the communities we serve (including the frail elderly and those with chronic life-limiting illnesses—who are heavily dependent on an established health care delivery system) are unlikely to survive. Optimal care should be guided by protocols that fundamentally change clinical standards—for example, establishing higher thresholds for the use of limited resources, having laypersons provide patient care, and withholding or withdrawing life-sustaining technology. Palliative care planning to allow the aggressive management of physical symptoms and relief of suffering for those with limited prognoses must be transparent. Public involvement in planning is essential to ensure that palliative treatment of pain and symptoms is viewed as evidence-based and humanitarian rather than as abandonment, or worse, euthanasia. ■

Toxicologic Disaster: Are We Prepared?

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Since September 11, 2011, the nation’s ability to respond to chemical, biological, radiologic, and nuclear events (CBRNEs) has been enhanced by the expanded public health role of the CDC, guidelines, and several FDA product approvals. Despite these advances, recurrent nationwide drug shortages and the closures of EDs and poison control centers pose grave challenges to the effective management of mass casualty events.

In the decade following 9/11, several antidotes and therapies to treat the effects of CBRNEs were approved by the FDA: Prussian blue for the treatment of cesium-137 or thallium poisoning, two cyanide poisoning antidotes (hydroxocobalamin and recently, repackaging of sodium thiosulfate and sodium nitrite), pyridostigmine bromide for exposure to nerve agents in military

personnel, and reactive skin decontamination lotion for military personnel.

In addition, the FDA issued pediatric guidelines for prophylaxis against biologicals and radioiodines.¹

The CDC enhanced the capacity to perform syndromic surveillance and better identify natural or covert CBRNEs. It also created the Select Agent Program (www.selectagents.gov) to aid legitimate facilities in the securing, monitoring, and handling of toxic agents. In addition, the CDC expanded the Strategic National Stockpile (www.cdc.gov/phpr/stockpile/stockpile.htm), which was deployed on 9/11, and increased its ability to distribute push packages of routine medications, antidotes, and prophylactics during a disaster.

Unfortunately, while these promising developments occurred, the closures of EDs and poison control centers limit our ability to rapidly identify, alert, and treat threatened populations. In ordinary times, poison control centers help to safely manage tens of thousands of patients in their homes, rather than in overcrowded EDs. Although toxicologic information is now more readily available to the public via the Internet than it was 10 years ago, the correct interpretation and appropriate application of that information still depends largely on the expertise available only in poison control centers. It is unclear whether fewer centers will be capable of successfully handling mass casualty CBRNEs.

Also, many EDs are being pushed past surge capacity on a frequent—if not daily—basis: a disaster-equivalent of conditions outstripping resources. In a CBRNE, a facility that is damaged, contaminated, or in a high-risk zone may be rendered unavailable, thereby further stressing the remaining EDs. Chronic drug shortages exacerbate these deficiencies. These collective circumstances forebode catastrophic dysfunction during a CBRNE.

Finally, the ideal management of any CBRNE is prevention. Early identification, containment and, if necessary, evacuation are critical. Unlike hurricanes and many other natural disasters, CBRNEs do not generally allow for predictable lead times. Evacuation presents formidable challenges, as does distribution of prophylactics such as potassium iodide. In marginalized communities with fewer resources, the challenges would be even greater.

The events of 9/11 prompted valuable advances and

billions of dollars in preparedness funding, but we must attend to our current capacity to care for the general public on an average day if we expect to meet the needs of a toxicologic disaster. ■

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BioWatch

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In July 2003, the Department of Homeland Security, the Environmental Protection Agency, and the CDC introduced the BioWatch program—a federal monitoring system intended to speed detection of specific biological agents that could be released in aerosolized form during a biological attack. There are currently 500 BioWatch air-sampling devices deployed in 31 major US cities, with air samples being tested daily for five different bioterror agents.^{1,2}

The core purpose of BioWatch is “to hasten the public health response to a covert bioattack.”³ This would allow rapid distribution of lifesaving medical countermeasures such as antibiotics or vaccinations. These sensors have also been used in several indoor locations during events of national significance, for example, the Super Bowl. This nationwide surveillance system uses aerosol collectors to capture airborne particles onto removable dry filters that are transported daily to Laboratory Response Network laboratories.⁴ In 2005, the same technology was deployed on an expanded level, known as Generation 2 BioWatch. Generation 2 BioWatch can report detection within 10 to 36 hours from time of sampling.³ BioWatch sensors are intended to work with the existing system of environmental monitoring, medical surveillance activi-

ties, and public health response.

Generation 3 BioWatch is currently in development and has been referred to as a “lab-in-a-box.”²³ Generation 3 would have the ability to automatically collect outdoor air samples, analyze them, and provide near-real-time electronic delivery of the data.³ In 2005, BioWatch costs per year were approximately \$13,672,096. This figure includes “labor costs, site upgrades, supplies, travel, training, and other operation and maintenance costs.”²⁵ Most agree that this cost is justified if the probability of a bioterrorism incident remains high while the benefits of BioWatch continue to improve. ■

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Surge Capacity: The Final Frontier

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We have done many things since September 11, 2001. Our residents and faculty are now very familiar with the rash of smallpox versus that of varicella. We know all about the hemorrhagic mediastinitis of anthrax, the paralysis of botulism, and the early symptoms of epidemic plague. We have our yearly updates on radiation illness, know to check the absolute lymphocyte count, and are aware that early neurologic symptoms likely portend a nonsurvivor in a triage scenario. We

have had our disaster drills at the hospital, at the airport, and in the city. Our different EMS services now talk to one another and know to work together in providing mutual aid; our radios are all linked via a regional command center. Our ambulance crews have kits containing atropine and 2-PAM along with extra valium. Our hospital has a disaster coordinator, a disaster committee, and even mass outdoor decontamination showers that provide some privacy and can be heated during winter. It would seem that although one can never really be ready, we are at least more prepared for a disaster or another attack on our country. It is the lack of control, though, that really worries me.

We in emergency medicine have no real control over inpatient beds. During a busy shift, though lack of beds upstairs is problematic, it is rarely disastrous. But what about after a horrific natural disaster or terrorist attack? We have seen many communities respond heroically to tornadoes, floods, and hurricanes, but we have also seen tragedies when our hospitals and public services fail—such as New Orleans post-Katrina. Those of us in larger urban centers may not do as well as some more suburban or rural communities.

Surge capacity is essential as the initial wave of horribly injured—and the hundreds or thousands of not-so-injured—seek evaluation or care. Yet with our health care system so overburdened during periods of stability, what will happen during the two phases post disaster? I believe the initial call to activation will make us all proud. Doctors, nurses, EMS personnel, and volunteer health care personnel from the community will all be doing their best to treat the most seriously ill and injured. But without real surge capacity, with so many EDs and hospitals closing, will we be able to weather the days, weeks, and possibly months of so many more patients expecting and needing care? My hope is that we can; my fear is that those EDs and health care systems that are on the edge will not. Surge capacity means more EDs with empty stretchers rather than beds filled with inpatients; surge capacity means that our hospitals can’t have 100% occupancy during the week. One disaster should not be greeted with another. Having every ED be a safety net during our now long-running health care “crisis” may not allow us to be a real safety net when it is needed the most. ■

Ready or Not: The State of EM's Preparedness

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As the anniversary of the September 11, 2001, tragedy is upon us, front-line physicians may pause to reflect on our specialty's state of preparedness 10 years later to manage an act of bioterrorism or a mass casualty event. Over a decade ago, COL Edward Eitzen, Jr, MD, a colleague and Commander of the US Army Medical Research Institute of Infectious Diseases, wrote: "a main defense against the massive casualties, panic and disruption that biological agents such as anthrax, plague, smallpox, tularemia, or botulinum toxins can produce will be the astute emergency clinician, with a high index of suspicion, who spots a suggestive clinical or epidemiological pattern in victims early on and sounds the alarm."¹

Education of the clinician is considered critical to facilitating a timely public health response capable of both minimizing the impact of a bioterror act and decreasing mortality. Our educational and specialty leaders responded. In a survey of emergency medicine residencies conducted in 2005, 98% of emergency medicine residencies reported offering formal training in bioterrorism, as compared with only 53% in 1998.² A federally funded all-hazards training program, National Disaster Life Support (www.ndlsf.org), emerged to better prepare health care professionals and emergency response personnel for mass casualty events. By 2006, the program reported having educated more than 60,000 persons in 44 states.³ These efforts and others leave us more aware and better educated about bioterrorism and mass casu-

ality events 10 years later.

Yet every front-line emergency medicine physician knows that his or her ability to serve patients well is very much determined by the state of the "system." This last decade has seen a large provision of federal dollars to the states to better prepare for medical surge in response to a mass casualty event. From 2002 to 2007, \$2.2 billion was awarded to the states by the Department of Health and Human Services Assistant Secretary for Preparedness and Response Hospital Preparedness Program.⁴ Yet on the front line, the capacity to manage a large influx of patients as a consequence of a terror event seems in question. In 2004, an attack on commuter trains in Madrid killed 177 and injured 2,000. Almost 1,000 persons were treated in 15 hospitals. One hospital alone received 270 patients in less than 3 hours.⁵ A 2008 survey of level 1 trauma centers in seven US cities revealed that none of the hospitals in the survey had enough emergency care capacity to manage an attack the magnitude of the one in Madrid.⁵ Twenty of the 34 surveyed EDs were already working at or over capacity. The threat of these events is real. Conventional explosives are forecast to remain the most often-used instruments of destruction in terrorist attacks. Trauma system funding in many states is thin, and the current economic challenges will only increase pressure on funds available for preparedness.

So, what is a front-line emergency medicine physician to do? While we serve as advocates for our patients, let's also strive to do our part as advocates for the care of our communities. The gaps in our ability to effectively manage mass-casualty events are evident every day in our struggle to manage our daily patient flow. Let's not tire of our unique ability to convert the raw experience of a busy shift in an overcrowded ED into advocacy for health care reform, trauma system funding, preparedness initiatives, etc. How well we are able to care for our patients every day is a matter of professional dedication and patient-physician trust. How these abilities translate into management of a catastrophic mass casualty event is a matter of community and national security. Let's make our message heard, because one day we will again be tested, ready or not. ■

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Drilling for Emergency Preparedness

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Since 2001, emergency preparedness at the University of Iowa Hospitals and Clinics has expanded from small-event drills involving only the ED to biannual half-day disaster exercises involving more than 100 designated participants representing every department of the hospital.

In 2004, we implemented the hospital emergency incident command system (HICS) into our hospital-wide disaster plan. We now have a full-time emergency preparedness coordinator. Our emergency preparedness working group has grown into a 30-member subcommittee that meets monthly for 90 minutes.

We frequently devise scenarios related to our hazard vulnerability analysis. Our exercises have included these scenarios: multiple-casualty surge; rapid mass vaccination for a pandemic; pandemic influenza outbreak (including screening of visitors and outpatients); terrorist explosion at a football stadium; tornado resulting in extensive structural damage and a need to evacuate patients down stairwells; chemical spill and mobile methamphetamine lab explosion requiring HAZMAT decontamination; surge of patients related to two infectious outbreaks during an annual cross-state week-long bike ride; loss of medical gases on a holiday Sunday with a surge of patients with respiratory distress from potentially noxious gas plume; and a surge of 500 patients from a distant nuclear terrorism blast, handled in collaboration with the National Disaster Medical System and Radiation Injury

Treatment Network.

Our efforts have resulted in an expanded breadth and detail of preparedness; we have implemented procedures to optimize yearly staff influenza immunizations, trained HICS participants and their alternates, and authored a bioemergency plan. We have activated HICS for actual disasters: a tornado in 2006, a regional flood in 2008, and a severe winter blizzard in 2011.

Now we are focusing on pediatric preparedness in disasters, and we include children in each exercise scenario. Our progress has resulted from the commitment and imagination of many individuals from all hierarchical levels at this institution who work to make things happen. ■

Enough Is Not Enough

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Without doubt, we are more conscious than ever of the importance and relevance of all-hazards assessments, planning, and preparation. Further, events throughout the world and in the United States have emphasized that the initial response to any disaster (ie, the first 72 hours or more) is largely a local phenomenon. So, too, must be the planning.

One sustained effort to improve local planning has come from the CDC's Division of Injury Response. They have engaged multiple cities in recent years, bringing together unlikely partners in emergency management, responders of all sorts, and community leaders to learn from worldwide experiences, particularly those involving terrorism events. From this, planning strategies have emerged. Similarly, demonstration projects in several communities have elevated awareness and preparedness.

Unfortunately, financial resources to improve emergency medical preparedness have been largely allocated to other aspects of homeland security. In fact, anemic streams of funding to emergency medical causes provided the greatest impetus to the 2002 formation of Ad-

vocates for EMS, which now provides a Washington, DC, lobbying effort on behalf of multiple EMS-related associations to help ensure that EMS issues get the federal attention they deserve.

The Achilles heel of many preparedness initiatives is in coordinated communications planning and implementation. When tornadoes carved a swath through North Carolina this past spring, communications between jurisdictions, from the field to hospitals and between hospitals, proved to be among the greatest challenges. Interoperable systems to facilitate communication remain nonexistent in many areas of our country. In other locations, systems may exist, but they are not used as part of the daily routine. Thus, they are an unfamiliar asset to the people who might need such communication first. EMS communications systems architects continue to wait for added broadband frequency spectrum availability in what is known as the D block. S.911, a bill now being considered by the US Senate, would make more of the broadband frequency spectrum available for emergency responders and provide funding for research and development. It is much needed.

We remain plagued by our inability to incorporate our plans for the extraordinary into the routine. Surge capacity is a nice notion. But we often prove that our EDs are nearly maxed out. We have developed caches of equipment, supplies, and pharmaceuticals, and we can mobilize entire hospitals on few days' notice. One way in which communication has improved since Hurricane Katrina is the manner in which federal response and recovery efforts can be summoned. Local and state planners now have a consistent path to follow. However, as the CDC experiences usually demonstrate, we may still be challenged to initially respond with coordinated expediency in a manner that maximizes our abilities to attenuate avoidable death and disability.

In the same way that it is impossible to staff our EDs or EMS systems for maximum potential daily census or call volume, it seems impossible to develop the sort of surge capacity necessary to account for every conceivable eventuality. Yet such is the goal. Now, when the line has been drawn, we are much more attuned to when and how to get more help, even if it will take some time in coming. Are we more prepared than we were 10 years ago? Without doubt. However, enough is not enough. ■

Disaster Preparedness and EMS Certification

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The events of September 11, 2001, are indelible in our minds. As we pause to honor all who perished in the horrible events 10 years ago, it is with knowledge that the world has been forever changed. We have learned difficult lessons regarding disaster preparedness that have permanently changed the landscape of training and response. We are indebted to those committed individuals who responded that day with a commitment that never wavered, just as it does not waver today. Public safety and EMS personnel continually train and maintain readiness to respond to events of any magnitude. Physician leadership and involvement in EMS medical direction and disaster response is a critical and essential component.

On September 24, 2010, EMS became the sixth subspecialty in emergency medicine. By unanimous vote, the American Board of Medical Specialties recognized the existence of a unique body of knowledge different from that of other recognized specialties, a scientific basis for practice, dedicated journals and textbooks, and sufficient numbers of training programs and physicians dedicating their practice to EMS medicine. Becoming a subspecialty culminates a 30-year effort and will have long-reaching effects on practice.

Disaster preparedness and response have always been an integral part of EMS physician practice. It represents one of the larger sections of original EMS fellowship curriculum¹ and remains so today. Now that EMS is a recognized subspecialty, the Accreditation Council for Graduate Medical Education will begin accrediting fellowship programs, which will lead to further training standardization and even more consistent training in disaster response. The number of residents seeking fellowships will increase; previously, inability to certify was a deterrent to interest in such training.

A recent EMS physician job analysis confirms that the vast majority include disaster preparedness and response in their practice. Specialists will be increasingly at the

forefront of disaster response, providing oversight and outcomes-based research advancing the scientific basis of practice. Training and certification will be recognized by regulators who will likely require medical direction by such specialists in the future. We will all, no doubt, benefit from greater subspecialty physician presence in disaster preparedness and response. ■

Reference

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Micro-Level Response

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It has been 10 years since the attacks of September 11, 2001. While 10 years is perhaps a short time in the objective sense, it is a period that has changed all of our sensibilities, and not always for the best. It has also been a time that has schooled us in the art and science of disaster response. We have had one spectacular failure (New Orleans) and one spectacular success (Galveston, Texas). We have also learned that despite our best planning, things can go horribly wrong (Fukushima, Japan). While the macro-level response is important, we must not lose sight of the micro-level response; we are dealing with individual patients and lives, and even in the midst of a crisis we must not become desensitized to this. These 10 years have also increased our nation's focus on emergency medicine and EMS as a critical part of disaster response. This issue of *Emergency Medicine* reflects our important role in this system. ■