Editor’s Note

As Director of the Center for Health Professional Training and Emergency Response (CHPTER), I am pleased to present the findings of CHPTER’s 2012 Health Security Leaders Conference held in Charleston, SC on July 16, 2012. More than 50 local, state, and regional experts attended this important event. CHPTER was fortunate to partner with key leaders to examine and strengthen the roles of health care professionals in emergency response.
Executive Summary

On July 16, 2012, The Medical University of South Carolina’s (MUSC) Center for Health Professional Training and Emergency Response (CHPTER) hosted a summit in partnership with the South Carolina Department of Health and Environmental Control (DHEC) and the South Carolina Emergency Management Division (South Carolina EMD). The purpose of the conference was to evaluate and identify key emergency preparedness issues that place South Carolina patients, care providers, and health care systems at risk during a disaster. Conferees included regional experts and emergency preparedness stakeholders (See Appendix A). Conferees provided technical input and guidance to this project. Utilizing a modified Delphi technique, consensus was developed on the content of the white paper prior to the conference. Via anonymous, simple majority voting during the conference, conferees were able to approve a list of priorities and policies that will ensure our region’s patient care providers and facilities are better prepared. A summary of the consensus priorities and policy recommendations include:

Educating Leaders about the Link between Health Security and Homeland Security

The potential for a patient care catastrophe following a disaster in our region, similar to Hurricane Katrina, is real.

A fully capable health system during a disaster should provide lifesaving medical treatment via emergency medical services and related operations and avoid additional disease and injury by providing targeted public health and medical support and products to all people in need within our region. South Carolina does not currently have this capability.

We cannot achieve Homeland Security in South Carolina without first achieving Health Security. Fully preparing our health systems and patient care providers will save lives and help protect our most vulnerable communities during times of disaster.

Addressing the Unfunded Mandate of Patient Surge and Its impact on Emergency Health Systems

The provision of medical care by patient care providers during a disaster is an unfunded mandate that, in the absence of adequate funding, support and training, places patients, patient care providers and health care systems at significant risk.

Adequate funding for planning, coordination and implementation of regional trauma care systems, emergency medical services and specialized burn care facilities will significantly improve the preparedness of our health systems.

Resolution of the problems associated with overcrowding and uncompensated care in emergency departments—the only medical subspecialty required under federal law to provide services to all patients regardless of their ability to pay—is an important step to providing adequate surge capability during a disaster.

Preparing All Patient Care Providers

• Patient care providers are commonly unprepared and poorly trained to handle large numbers of patients, 50–80% of whom bypass first responders and self-transport directly to public facilities. The lack of preparedness of patient care providers represents a significant yet modifiable risk to the health and safety of patients in our region.

• When targeting disaster training to patient care providers, we should consider all potential providers of care during a disaster—including, but not limited to, clinicians, health facility workers, mental health providers, public safety and law enforcement officials, public health officials, private businesses, community volunteers, EMS, HazMat and Fire personnel.

• Because surge capacity without surge capability is valueless, sustained funding and programs to develop patient care provider education and competency-based emergency preparedness training is critical for our regional security.

• All patient care providers in our region should participate in competency-based disaster training.

Fostering Community Based Preparedness Partnerships to Enhance Regional Health Security

• Community-based disaster preparedness partnerships designed to protect lives and preserve health systems is a cost effective way to plan for and deliver medical assets during a disaster.

• Projects that fully integrate non-governmental, public and private health system assets in order to protect patients and foster community resiliency should be supported by federal and state agencies.
A statewide taskforce should be instituted to review and develop policies that will address the problem of the unfunded mandate of emergency, trauma and disaster medical care in our region. Goals of the task force will be:

- Further develop a capabilities-based statewide plan to achieve the improvement of emergency medical response to disasters and mass casualties. The plan should enumerate necessary capabilities, the actions required to achieve those capabilities, responsible parties for the various actions, and the cost.
- Develop a plan to educate policy makers about the link between Homeland Security and Health Security.
- Identify policies that will appropriately fund, develop and improve our region's EMS, FIRE, HazMAT, Emergency Department, Trauma and Burn facilities and other disaster health systems and capabilities.
- Identify policies that will appropriately fund, develop and disseminate competency-based disaster medical training for all patient care providers in our region.
- Identify strategies to utilize existing state resources to develop community based disaster medical response networks that coordinate and integrate public health and clinical health assets.
- Identify opportunities to foster the regionalization of patient-centered emergency care services that help match the availability of resources and need for resources during a disaster.
- Identify strategies that will increase federal disaster preparedness funding to South Carolina.
- Identify policies that will improve the capability of managing and/or caring for burn patients.
Introduction

Hospitals and health care systems across the country must be prepared to respond to disasters. Lessons from recent history illustrate the importance of preparedness for a rapid surge in emergency care for the ill and injured during a mass casualty event. Whether the incident is a natural disaster, an act of terrorism, a transportation accident, or a technological disaster, many lives may be placed in jeopardy. Examples of recent mass casualty incidents in the US include:

- Oklahoma City, Oklahoma bombing, April 1995, 168 deaths and 680 injuries;
- New York City, Washington, DC, September 2001 terrorist attack, 2,977 deaths, thousands of injuries and long-term health effects;
- US, October 2001 anthrax attack, five deaths, 22 cases of anthrax and over 30,000 persons exposed and offered prophylactic treatment;
- West Warwick, Rhode Island nightclub fire, February 2003, 100 deaths and 187 burn injuries;
- Graniteville, South Carolina train wreck and chlorine release, January 2005, nine deaths and 554 injuries;
- Hurricane Katrina, Gulf Coast, August 2005, over 1,800 deaths, hundreds of storm-related injuries and illnesses;
- Virginia Tech shootings, April 2007, 32 deaths, 23 injuries;
- Minneapolis, Minnesota bridge collapse, August 2007, 13 deaths and 145 injuries;
- US, H1N1 pandemic influenza, 2009-2010, estimated 12,000 deaths, 265,000 hospitalizations, 59 million cases;
- Southeastern US, tornado outbreak, April 2011, 348 deaths, estimated 10,000 injuries, and
- Joplin, Missouri tornado, May 2011, 160 deaths, 990 injuries.

During disasters, patients themselves can pose risks to health facilities, patients, and the providers who care for them. During the 1995 Tokyo sarin gas attacks, for example, greater than 80% of patients bypassed first responders and reported directly to hospitals, where staff was exposed to sarin due to inadequate personal protective equipment (PPE) and training.1, 2 Furthermore, emergency preparedness training (EPT) deficits were cited as significant factors contributing to adverse patient outcomes during Hurricane Katrina.3-8 Patient care providers—defined broadly to include clinicians, hospital workers, mental health providers, public safety and law enforcement officials, community volunteers, emergency medical service (EMS), HazMat and fire personnel—must be alert to the possibility that biological, technological, chemical or radiological hazards or terrorist threats may be present when providing care. One poorly trained provider who is not attuned to these threats could limit the effectiveness of healthcare operations during a disaster.

Because most patients on a disaster scene will circumvent emergency medical service (EMS) personnel and transport directly to public facilities, even minor incidents such as motor vehicle accidents can poses unique challenges for health care systems. Many Emergency Departments (ED’s) in the US are over capacity and lack appropriate surge capability that is needed to rapidly triage and treat large numbers of additional injured or ill patients. The capability of our public health facilities to surge, including specialized trauma and burn care, is essential to preparedness. This requires a well-trained health provider workforce that is familiar with emergency procedures and knows what to do in a mass casualty situation.

Many studies have pointed to major problems in each aspect of emergency medical care. There are important national and state policy issues that must be addressed to improve emergency medical care and assure that health providers are adequately trained to meet medical surge demands in response to disasters. Some key issues include:

- Adequate funding for planning, coordination, and implementation of regional trauma care systems, emergency medical services and specialized burn care capabilities.
- Resolution of the problems associated with uncompensated care in emergency departments which are required to provide services to all regardless of their ability to pay, including over-crowding, inappropriate use of emergency departments, and diversion.
- Sustained funding and programs for patient care provider education and competency-based emergency preparedness training.

This project represents a consensus of the key stakeholders who attended a 1-day summit in Charleston, South Carolina on July 16, 2012. More than 50 local, state, and regional security and healthcare experts
attended this important event hosted by the Medical University of South Carolina’s (MUSC) Center for Health Professional Training and Emergency Response (CHPTER; see §Appendix A, Conferees) The conferees were challenged by CHPTER to reflect upon lessons learned during Hurricanes Hugo, Katrina, and other disasters and contemplate the impact of patient surges following our region’s next disaster.

A goal established early by the conferees was to advance emergency preparedness priorities and policies that will help save lives and help ensure the continuity of health systems operations during a disaster. Thus, in Part I of the paper, we evaluate and identify key emergency preparedness issues that place patients and care providers at risk during a disaster. This section also includes a summary of relevant literature highlighting policy and programmatic issues that must be considered to improve health system preparedness for medical surge and disaster response in our region. In Part II, we identify focus areas of improvement and list priorities and policies that will help ensure our region’s patient care providers and facilities are better prepared. These priorities and policies—listed in our executive summary—will be shared with key leaders across the region in hopes to foster health and homeland security for our community.
Part I: The Risks of Surge for Patients, Providers, and Health Systems
Socio-Demographic Risks of the Coastal South

The next major disaster will significantly affect multiple hospitals and healthcare facilities as hundreds to thousands of patients may simultaneously seek care. Patient care providers are commonly unprepared and poorly trained to handle these large numbers of patients, 60–80% of whom will bypass first responders and self-transport directly to public facilities. South Carolina, North Carolina, Georgia, and other coastal states in the Southeast have unique demographic characteristics that amplify the importance of a well trained network of patient care providers. It is known, for example, the resources deployed in the aftermath of Hurricane Katrina largely failed to support the immediate needs of residents in the Gulf region. Many community residents failed to understand the gravity of the evacuation warning, others believing that they could not leave due to transportation and temporary housing costs. Furthermore, many imagined that once evacuated, that they would be subjected to inequities based on race, education, and income. Hospitals and health care facilities along the Gulf Coast were overrun with residents in the days and weeks following the storm.

Locally, South Carolina has many minority and other underserved communities. During Hurricane Hugo (1989), for example, 24 counties in South Carolina were declared disaster areas and three of these counties were among the nation’s poorest (per capita income). In addition, 14% of our civilian population is comprised of veterans, who are notably marginalized due to the fact that their housing is often substandard and easily damaged by flooding or foul weather. See Table 1 for South Carolina’s population profile, compared to other coastal states and US averages.

Two recent local events demonstrate how health workers and facilities in South Carolina are vulnerable to disaster events. In 2005, two freight trains collided in Graniteville, South Carolina releasing an estimated 46 tons of chlorine, and precipitating mandatory evacuation orders. Local Graniteville law enforcement, EMS and health officials were readily mobilized, and decontamination units were deployed at local high schools. Unfortunately, eight people died before reaching emergency care. At least 525 people were treated in emergency rooms for chlorine exposure, and 71 were hospitalized at nine hospitals in South Carolina and Georgia. Of the 150 patients whose method of transport was known, 95 (63%) were transported to the hospital in privately owned vehicles. Not surprisingly, in a situation that parallels the 1995 sarin gas attack in Tokyo, small local hospitals, and health care facilities were quickly overrun with patients. Many of the patients were "worried but well" and not needing immediate care. Understandably, the risks, for both sick and well patients (and the health workers who care for them) are increased in this scenario. As the number of patients increase, scant medical resources often are quickly depleted. In addition, larger numbers of patients create chaotic environments, increasing the likelihood that patients and caregivers are exposed to danger. In Tokyo, there were at least seven major hospitals that buffered the surge of patients but Graniteville had only one major hospital. As a result, the incremental burden on this health care facility, for both patients and workers, was amplified.

In a similar case during October of 2003, a canister of ricin was found at a postal facility in Greenville, South Carolina, along with a note threatening the poisoning of water supplies if demands were not met. Ricin is a castor bean toxin that inhibits protein synthesis and can be lethal if injected, inhaled, or imbibed. Although there was not an actual release of ricin, the threat of release of this deadly toxin highlighted the vulnerability of

| TABLE 1 COMPARISON OF COASTAL COMMUNITIES |
|------------------------------|----------------|---------|----------------|----------------|----------------|----------------|
| State                     | Elderly* (%)  | African-American (%) | Caucasian (%) | Minimally Educated** (%) | Disabled (%) | Below poverty (%) |
| South Carolina            | 13.0          | 28.7            | 68.6          | 79.6          | 18.1          | 15.1          |
| Mississippi               | 12.5          | 37.2            | 60.7          | 83.1          | 20.6          | 20.7          |
| Louisiana                 | 12.2          | 31.9            | 65.1          | 81.3          | 19.9          | 18.8          |
| Florida                   | 17.0          | 15.9            | 80.0          | 77.7          | 17.8          | 12.1          |
| Georgia                   | 9.9           | 30              | 65.6          | 75.7          | 15.0          | 14.3          |
| Texas                     | 10.0          | 12.0            | 82.6          | 76.8          | 14.8          | 16.3          |
| North Carolina            | 12.2          | 21.7            | 74.0          | 77.5          | 16.7          | 14.3          |
| Alabama                   | 13.5          | 26.5            | 71.0          | 81.0          | 20.2          | 16.6          |
| US at large               | 12.6          | 12.8            | 80.0          | 75.6          | 16.3          | 13.0          |

*65 years old and older; **High school diploma or less education
a rural community when it comes to handling a bioterrorism threat. In a wide scale terrorist act, small community health facilities would face thousands of patients at one time, severely compromising their ability to handle even the most straightforward health priorities such as patient triage, shelter, food, and water.

**Federal Resources Supporting Health Security**

Terrorist attacks, weapons of mass destruction, the threat of pandemic diseases and the devastating impact of natural disasters fostered growth in federal emergency preparedness funding following 9/11. In October of 2007, President Bush signed Homeland Security Presidential Directive 21 (HSPD-21) which calls for the dissemination of disaster medicine education and training in public health fields. The Office of the Assistant Secretary for Preparedness and Response’s (ASPR’s) Hospital Preparedness Program (HPP) was implemented in 2002. The initial goal of the program was to better prepare hospitals for an act of biological terrorism. This mission was expanded in subsequent years to address preparedness for response to other weapons of mass destruction, including chemical, explosive, and radiological threats, and finally to include all hazards that might result in mass casualties. Since 2002, the HPP has allocated approximately $4.3 billion to the states for use in improving healthcare system preparedness. In 2008, Health and Human Services awarded $398 million to states through the HPP to help hospitals improve “surge capacity.”

South Carolina is particularly at risk for both natural and manmade disasters based on our unique geographic composition. The state received $62.4 million in HPP funding over the last decade. These funds have been invested in high priority capabilities needed for effective emergency response, including:

- State and regional emergency planning for mass casualty incidents;
- Medical surge beds, equipment, and supplies for acute care hospitals;
- Mobile medical surge units including beds, equipment and supplies to support medical surge;
- Planning for alternate care sites;
- Isolation beds, negative air pressure rooms, and infection control measures to contain the spread of infectious diseases;
- Chemical decontamination equipment and supplies;
- Information systems including bed availability tracking, emergency management, health alert, diagnostic decision support, syndromic disease surveillance, and volunteer registry systems;
- Planning for mass fatality management and equipment and supplies for response;
- Medical countermeasures including CHEMPACK chemical antidotes, antiviral and antibiotic medicines for prophylaxis, and treatment of healthcare workers;
- Radios and communication systems for hospital emergency communications;
- Implementation of a volunteer registration system and Medical Reserve Corps (MRC) for eight multi-county regions covering the state;
- Training for healthcare workers on the National Incident Management System (NIMS), weapon of mass destruction awareness, mass casualty management, infection control, behavioral health, crisis care, triage, decontamination, burn life support, care of radiation injuries, pandemic influenza, blast injuries, bioterrorism, smallpox, anthrax, and many other emergency-related topics; and,
- Exercises of response capabilities for mass casualties due to weapons of mass destruction, technological, and natural disasters.

The funding provided through the HPP has been essential for building and sustaining mass casualty response capabilities, but it has not been sufficient for assuring adequacy of all aspects of the emergency medical care system from pre-hospital emergency medical services to emergency departments to specialized trauma and burn care. For example, while the HPP program has succeeded in helping hospitals improve surge capacity—such as increasing hospital beds, providing equipment, medicines and transportation—all 50 states have experienced a significant decline in HPP funding since 2008 due to federal cutbacks. In addition, some critics have argued the HPP has improved hospital surge capacity but has failed to adequately train health professionals (aka provide surge capability) serving the disaster “front line.” The American College of Emergency Physicians (ACEP) has highlighted the lack of disaster training for health professionals as a significant risk for both patient and care providers during a disaster. South Carolina ranked 34th out of 50 states in Disaster Preparedness as part of their 2008 Report Card, partly based on the low percentage (38.8%) of South Carolina nurses who participate in comprehensive disaster training.

The lack of preparedness of patient care providers represents a significant yet modifiable risk to the health and safety of all Americans. During the first hours following Hurricane Katrina, for example, providers at the New
Orleans airport were confronted as many as 2,500 patients seeking care. Nearly 500 patients were cared for inside the airport. Unfortunately, 36 died representing 8–10 deaths per day. A well trained Disaster Medical Assistant Team (DMAT) didn’t arrive to assist airport crews until 41 hours had passed. Federal teams took even longer to assist the 23 hospitals devastated by flooding in New Orleans.27

Recognizing that most health facilities would be isolated from help during the first three days following a large scale disaster, Joint Commission issued regulations in 2008 that require all hospitals that provide “emergency services” to perform yearly disaster drills.28, 29 Unfortunately, The Joint Commission language does not specify which healthcare employees should be trained or what level of performance should be met. As a result, hospitals have been reluctant to develop comprehensive emergency preparedness training programs for employees on their own. Recent comprehensive reviews suggest that current healthcare worker training programs lack clarity, objectivity, competency driven goals, scientific rigor, prospective validation and consistency across medical specialties.30, 31

Summary of Relevant Literature
**Positioning America's Emergency Health Care System to Respond To Acts of Terrorism. Terrorism Response Task Force, the American College of Emergency Physicians (ACEP): 2002.**32

This ACEP task force concluded that “the threat of terrorism through the use of weapons of mass destruction (WMD) continues to be a major issue to states and local communities across the nation. The lack of adequate and appropriate training for medical responders to a nuclear, biological, or chemical terrorist event is so severe that timely and effective patient treatment may be seriously compromised.” This panel also decided “emergency physicians and nurses must be well trained to detect and treat biologic agents.” The following are key recommendations stated in the report:

- Emergency physicians and other clinical care providers are essential to ensuring that hospitals and communities are prepared for disasters and that the nation is prepared to respond to terrorism. They must have primary roles in the medical aspects of disaster planning, emergency medical management, and patient care.
- To save lives in a bioterrorist attack, emergency clinicians must be well trained to detect and treat biologic agents.
- An ACEP task force has identified the core content of a national training program to detect and respond to nuclear, chemical, and biologic agents, under a grant from the US Department of Health and Human Services.
- The nation needs a real-time disease surveillance system linking emergency departments across regions with state public health departments and nationally with the Centers for Disease Control and Prevention to serve as an early warning system for biologic, chemical, and nuclear agents.

**R. 61-116. South Carolina Trauma Care Systems, South Carolina Code of Laws.**33

This regulation establishes standards for implementing provisions of §44-61-510 through 44-61-550 of the South Carolina Code of Laws, 1976, as amended, regarding trauma care systems in South Carolina. The scope of this regulation includes definitions of health care providers, certificate requirements, enforcement policies, general facility requirements, patient rights, trauma system plans and many other legal requirements as it relates to trauma care systems in South Carolina.

The state trauma system is regulated through the EMS Division of the Bureau of Health Facilities Regulation within the Deuphyship of Health Regulation of DHEC. A Trauma Advisory Council provides recommendations to DHEC regarding the trauma system for the state. That council consists of volunteers from a variety of stakeholder medical organizations in the state. The system is governed by state regulations adopted by the legislature (R.61-116, South Carolina Trauma Care Systems). Support for the trauma system comes from an annual proviso in the state budget with only a small percentage going to DHEC to fund the administration of the system. Current funding levels do not allow for essential system functions including the required three year cycle for trauma center designation, statewide trauma system process improvement, or complaint investigation. It has been approximately 10 years between the former trauma center re-designations and the re-designation process currently in progress.

The designation of pediatric trauma centers remains a work in progress. Currently the state trauma system, with the exception of MUSC, has not identified which hospitals have additional resources and expertise to care
for injured children. In a mass casualty event, the ability to route injured children to a facility known to possess those resources could improve the care provided to those young victims.

**ACEP Positioning America’s Emergency Health Care System to Respond To Acts of Terrorism (2002).**

ACEP defines a medical disaster as event “when the destructive effects of natural or man-made forces overwhelm the ability of a given area or community to meet the demand for health care.” ACEP follows this statement by stressing the importance of a community-based effort in disaster response that incorporates professionals from multiple fields.

The primary goal of emergency medical services and disaster medical services is the same—to provide “optimal acute healthcare”. The difference, however, is that disaster medical services use limited resources to serve a potentially much larger patient surge than typical emergency medical services are able to handle. Further, ACEP suggests that within this context, the responsibility for effectively coordinating well-integrated response efforts on such a large scale, both inside and outside the hospital, is primarily the responsibility of emergency providers. In order to achieve this goal, ACEP advises: “Where local, regional, and national disaster networks exist, emergency physicians should participate in strengthening them.”

Barriers to disaster response efforts include lack of coordination and funding at a national and state level. ACEP addresses this issue, stating:

> “Effective surge capacity planning integrates facility plans with a regional disaster response program involving other area health care institutions and considers hazard vulnerability assessments (HVAs) and historical natural disaster threats. Funding sources should be available for surge capacity planning, training, research, equipment, supplies, oversight, and process improvement at the local, state, and federal levels.”

Furthermore, ACEP acknowledges the importance of community level disaster preparedness and specifically acknowledges the National Disaster Medical System (NDMS) to help with these efforts.

**American Trauma Society (ATS), Trauma System Agenda for the Future. US Department of Transportation; National Highway Traffic Safety Administration (NHTSA), 2004.**

Referring to disaster preparedness, the ATS highlights the importance of robust emergency medical and trauma systems to assist communities with patient surges as a result of a natural or man-made disaster. ATS also stresses the importance of fully funding trauma systems through the development of advocacy coalitions.

> “States and local communities also must be willing to finance emergency medical services to allow for a “level of readiness” necessary to provide appropriate trauma care services for all injured patients both on a day-to-day basis and in the event of a natural or unconventional disaster.” “Because of the lack of Federal and state funds, development of comprehensive trauma systems is taking place in only a few states. A coalition of health professionals, elected officials, and other special interest groups is essential to correct the problem.”

ATS identifies several key goals for trauma system development in the US:

- Trauma systems will be an integral part of regional and state disaster plans and will integrate with efforts of the public health system to provide disaster preparedness.
- Trauma and EMS systems will be integrated with other resources through the incident command system and will coordinate in advance with other regional resources such as law enforcement and public health.
- There will be targeted education covering all weapons of mass destruction (identification and response) for all providers.
- Hospital-based decontamination will be available in addition to more traditional field decontamination.
- A nationwide network of hospital and community surveillance systems will enable rapid identification of all major health threats, including those related to weapons of mass destruction. EMS electronic data systems will be an integral part of this surveillance system.
- Medical command centers will be an integral part of disaster incident command or incident management systems, to assure the most appropriate medical response.
In three consensus reports released in 2006, the Committee on the Future of Emergency Care in the US Health System discussed ways to improve the 9-1-1 and medical dispatch systems, prehospital EMS, and hospital-based emergency and trauma care networks that serve adults and children. Key recommendations for emergency preparedness were:

- The Department of Homeland Security, the Department of Health and Human Services, the Department of Transportation, and the states should collaborate with the Veterans Health Administration (VHA) to integrate the VHA into civilian disaster planning and management.
- All institutions responsible for the training, continuing education, and credentialing and certification of professionals involved in emergency care (including medicine, nursing, emergency medical services, allied health, public health, and hospital administration) should incorporate disaster preparedness training into their curricula and competency criteria.
- Congress should significantly increase total preparedness funding in fiscal year 2007 for hospital emergency preparedness in the following areas: strengthening and sustaining trauma care systems; enhancing emergency department, trauma center, and inpatient surge capacity; improving emergency medical services’ response to explosives; designing evidence-based training programs; enhancing the availability of decontamination showers, standby intensive care unit capacity, negative pressure rooms, and appropriate personal protective equipment; and conducting international collaborative research on the civilian consequences of conventional weapons terrorism.

National standards have been published by the ACS Committee on Trauma specifying personnel and resource requirements for optimum trauma patient care. Those standards define four levels of trauma care. Level 4 centers provide only basic evaluation and minimal stabilization and are intended to serve areas where no other facilities are available. Level 3 centers provide initial evaluation and stabilization and can provide definitive care for most single system injuries. When a level 3 trauma center identifies a patient as having complex injuries, multiple injuries, or significant comorbid conditions, patients are transported to higher levels of care for definitive treatment. Level 2 trauma centers are capable of providing initial evaluation, stabilization, and definitive care for all but the most complex injuries. Level 1 centers provide care for injuries of all levels of severity. In addition, they provide trauma related education, support for lower level trauma centers in the region they serve, conduct trauma related research, and lead injury prevention efforts.

South Carolina has not designated level 4 trauma centers as the need for such facilities is not present in this state. The ACS criteria, with some revisions, have been used by South Carolina to designate level 1, 2, and 3 trauma centers. Designation is voluntary with hospitals free to choose whether to participate in the system, and in so doing, allow the state to assure availability of necessary expertise and resources.

Based on these state standards, South Carolina has designated a total of 18 trauma centers, with four level one trauma centers, three level two trauma centers and 10 level three trauma centers. Two of these centers, MUSC (Level 1) and Grand Strand Memorial Hospital (level 2) have been verified as meeting the more rigorous standards of the ACS for their designated level. In addition, MUSC is the only designated pediatric trauma center in the state based on recently adopted pediatric trauma center designation criteria for the state (Level 1).

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<th>Hospital</th>
<th>Location</th>
<th>Designation Level</th>
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<td>Greenville Memorial</td>
<td>Greenville, SC</td>
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<tr>
<td>MUSC</td>
<td>Charleston, SC</td>
<td>1</td>
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<tr>
<td>MUSC Children’s Hospital</td>
<td>Charleston, SC</td>
<td>1 (Pediatric)</td>
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<tr>
<td>Palmetto Health Richland</td>
<td>Columbia, SC</td>
<td>1</td>
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<tr>
<td>Spartanburg Regional Hospital System</td>
<td>Spartanburg, SC</td>
<td>1</td>
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<tr>
<td>AnMed health</td>
<td>Anderson, SC</td>
<td>2</td>
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<tr>
<td>Grand Strand Medical Center</td>
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<tr>
<td>McLeod Regional Medical Center</td>
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<tr>
<td>Beaufort Memorial</td>
<td>Beaufort, SC</td>
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<tr>
<td>Roper St.Francis Health</td>
<td>Charleston, SC</td>
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Additionally, several trauma centers in Georgia and North Carolina adjacent to South Carolina’s border serve South Carolina patients and could be utilized in a mass casualty event. *Designation level refers to the designation level assigned by the state in which the hospital is located. Specific criteria may differ from those used in South Carolina.

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<th>Location</th>
<th>Designation Level*</th>
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<tr>
<td>Cleveland Regional Medical Center</td>
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<td>Gaston Memorial Hospital</td>
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<tr>
<td>New Hanover Regional Med. Ctr.</td>
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<td>Georgia Health Sciences System</td>
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<tr>
<td>Memorial Health Univ. Med. Ctr.</td>
<td>Savannah, GA</td>
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One consequence of voluntary participation in the trauma system is a misdistribution of centers with some areas having several centers and other areas of the state lacking any designated trauma centers. In the former case, centers may lack adequate patient volume to maintain proficiency in the systems of care used to manage trauma patients. Thus, in a mass casualty situation, these centers may not be able to adapt easily to increased patient loads. In addition, agencies responding to mass casualty situations will have no assurance of well rehearsed services, resources, and expertise to care for severely injured patients.

The goal of any trauma system is, not just to save patient lives, but also to assure that injured patients again become productive members of society. To accomplish that goal, a quality trauma system has several linked components. The first is a transportation system to move patients from the scene of injury to hospitals prepared to care for them. In addition, intra-hospital transportation systems are necessary for patients requiring advanced or specialized care. Finally, transportation systems must move patients from acute care settings to other levels of care such as rehabilitation centers, long term acute care facilities, and skilled nursing facilities. These systems require trained personnel familiar with management of the severely injured patient as well as appropriate equipment that may be required to provide needed stabilization during transport. Currently there are a number of aeromedical services based in South Carolina, as well as North Carolina, which provide helicopter transport of injured patients from the scene of injury to designated centers in South Carolina. The state has, in place, defined protocols for appropriate use of these aeromedical services for trauma patient transport.

Whereas South Carolina has a reasonable system to designate trauma centers for provision of care to the acutely inured, resources for care once acute care is no longer needed are lacking. This impacts trauma centers as well as patients. Because underfunded patients are unable to move out of the hospital to rehabilitation centers or long term care facilities, large numbers of hospital beds, particularly in the level I trauma centers, are occupied by patients who, otherwise, would no longer be occupying acute care beds. This impacts the ability of these centers to adapt to the sudden increases in patient volume that might accompany a mass casualty event.

**Hospital Staffing and Surge Capacity During a Disaster Event, National Association of Public Hospitals and Health Systems (NAPHHS), 2007.**

NAPHHS discusses several potential barriers faced during an emergency event including inadequate hospital surge capacity. Surge capacity refers to a facility’s ability to meet the demand of increased patient care during a large public health emergency. This not only refers to the ability to provide hospital beds and treatment supplies, but also adequate numbers of healthcare staff. Figure 1 is derived from an NPHHI survey distributed in 2006–2007 and displays the shortage of healthcare personnel and reveals a huge deficit of registered nurses as well as a marginal deficit of physicians.
Further complicating this shortage of healthcare personnel is that staff may decrease during an emergency event due to deliberate absenteeism—including up to 40% absenteeism during a flu pandemic. Reasons for this absenteeism include personal safety or to insure safety of family members. NAPHHS suggests incentives to increase staffing by providing increased compensation, necessary treatment and/or housing for family of hospital staff and paid time off. Lastly, this article discusses the need for disaster training of healthcare staff. This training is limited by the lack of a standard disaster preparedness curriculum as well as the difficulty of delivery of training due to workforce shortages.

### Figure 1 Percent of Public Hospital Officials Reporting Workforce Shortage, by Job Category, NAPHHS Emergency Preparedness Survey, 2006-2007

<table>
<thead>
<tr>
<th>Job Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians</td>
<td>30%</td>
</tr>
<tr>
<td>PAs</td>
<td>25%</td>
</tr>
<tr>
<td>Nurse Practitioners</td>
<td>38%</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>77%</td>
</tr>
<tr>
<td>Licensed Practical Nurses</td>
<td>35%</td>
</tr>
<tr>
<td>Certified Nursing Assistants</td>
<td>28%</td>
</tr>
<tr>
<td>Respiratory Therapists</td>
<td>45%</td>
</tr>
<tr>
<td>Social Workers</td>
<td>27%</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>40%</td>
</tr>
<tr>
<td>Medical Technicians</td>
<td>37%</td>
</tr>
</tbody>
</table>

Future of Emergency Care: Hospital-Based Emergency Care—At the Breaking Point, from the Institute of Medicine, 2007.

IOM’s Committee on the Future of Emergency Care in the US Health System was established in 2003 to explore the challenges, limitations and strengths of the US emergency care system. The committee had a vision for the future of the US emergency care system and recommended strategies for achieving this vision. The committee came up with a series of recommendations pertaining to disaster preparedness.

In the realm of disaster preparedness the committee noted the major challenges facing the US emergency care system. Surge capacity is a challenge in which many hospitals are operating at or near full capacity, and such hospitals would not have the capability to handle a mass casualty event. Another challenge is the deficient training of emergency staff in disaster preparedness. The 2003 Centers for Disease Control and Prevention survey regarding disaster related training (Figure 2) suggests that clinicians nationwide are trained at a rate that far exceeds training in South Carolina. Protection of the hospital and staff is also a concern as the committee found that personal protective equipment and training are currently inadequate. Also, the report described many institutions that lack or have minimal negative pressure and decontamination rooms. Finally
the committee addressed the federal funding for hospital preparedness. Although preparedness funding was significantly raised after September 11, 2001, funding is still very limited.

![Bar Chart](image)

**Figure 2:** Percentage of US hospitals with staff trained in disaster response. NP = nurse practitioner; PA = physician assistant.¹


Key points of this GAO report include:

- From 2002 to 2007, the federal government has awarded the states approximately $2.2 billion to help meet disaster preparedness goals and be able to cope with a patient surge during such an event.
- GAO identifies the four main parts of being ready to deal with a medical surge during a disaster as: “(1) increasing hospital capacity, (2) identifying alternate care sites, (3) registering medical volunteers, and (4) planning for altering established standards of care.”
- Out of the 20 states surveyed, most had made progress in the first three of these objectives, but many lacked policy or action dealing with the fourth.
- Regarding hospital preparedness program funding by state (2002–2007), SC has experienced variations in funding from 2002 to 2007 (Table 1).

<table>
<thead>
<tr>
<th>Federal Fiscal Year</th>
<th>South Carolina Funding</th>
<th>National Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>1,804,227</td>
<td>2,273,386</td>
</tr>
<tr>
<td>2003</td>
<td>7,146,769</td>
<td>9,007,205</td>
</tr>
<tr>
<td>2004</td>
<td>7,146,769</td>
<td>9,007,205</td>
</tr>
<tr>
<td>2005</td>
<td>6,789,755</td>
<td>8,682,303</td>
</tr>
<tr>
<td>2006</td>
<td>6,632,258</td>
<td>8,463,266</td>
</tr>
<tr>
<td>2007</td>
<td>5,978,140</td>
<td>7,543,762</td>
</tr>
</tbody>
</table>

The ACEP evaluated all 50 states’ emergency medical systems in 2009. South Carolina received an ‘F’ in the category Public Health and Injury Prevention and Access to Emergency Care, having the fourth highest rate of infant mortality in the nation and a higher-than-average rate of traffic fatalities, (24.0 per 100,000 people with 50 percent related to alcohol). ACEP recommended focusing on emergency medical and trauma system development to improve this grade. (Table 2)

<table>
<thead>
<tr>
<th>TABLE 2 NATIONAL RANKINGS (OF 50 STATES) AND ACEP GRADE OF PROGRAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Ranking</td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td>Access to emergency care</td>
</tr>
<tr>
<td>Quality &amp; patient safety environment</td>
</tr>
<tr>
<td>Medical liability environment</td>
</tr>
<tr>
<td>Public health &amp; injury prevention</td>
</tr>
<tr>
<td>Disaster preparedness</td>
</tr>
<tr>
<td>Overall</td>
</tr>
</tbody>
</table>

South Carolina’s grade for Disaster Preparedness was average (‘C’, 34th of 50 states). South Carolina receives relatively low levels of federal funding ($6.91 per capita) when compared to other states (average $13.82, range $6.24 to $160.57, per capita). The report considered the low percentage (38.8%) of South Carolina nurses who participate in comprehensive disaster training as a significant risk factor to patients and patient care providers (Table 3). This is compared to our neighbors in North Carolina and Georgia, where 39.5% and 43.9% nurses reported comprehensive disaster training. North Carolina and Georgia ranked 20th and 22nd, respectively, in Disaster Preparedness on the ACEP Report Card. The state was commended for having written plans for special needs patients, as well as a written plan to supply dialysis for patients during a disaster. In addition, South Carolina has a state-based Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) program and civil liability protections for health workers during a disaster event.

<table>
<thead>
<tr>
<th>TABLE 3 ACEP REPORT CARD: SOUTH CAROLINA COMPARISON TO NATIONAL AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009 ACEP Report Card; Injury Prevention and Disaster Preparedness Subcategories</td>
</tr>
<tr>
<td>Traffic Fatalities per 100K population</td>
</tr>
<tr>
<td>Alcohol Related Motor Vehicle Fatalities</td>
</tr>
<tr>
<td>Per Capital federal disaster preparedness funds</td>
</tr>
<tr>
<td>Hospital Bed Surge Capacity per 1M population</td>
</tr>
<tr>
<td>Burn Unit Beds per 1M population</td>
</tr>
<tr>
<td>ICU beds per 1M population</td>
</tr>
<tr>
<td>Number of drills and exercises conducted involving hospital personnel, equipment or facilities</td>
</tr>
<tr>
<td>Percent of RN's that received any disaster training</td>
</tr>
</tbody>
</table>

Crisis Standards of Care, LLR- SC Board of Medical Examiners, May 2010.41

At its May, 2010 meeting the South Carolina Board of Medical Examiners approved the following motion:

- Crisis Standards of Care in SC are defined legally as generally what the average intelligent practitioner would do under the same or similar circumstances.

The South Carolina Board of Medical Examiners endorses the need for the South Carolina Pan Flu Ethics Task Force published guidelines, by title, as acceptable crisis procedures in public health emergencies such as pandemic influenza. The Board supports legislation to codify these recommendations.


The NTDB 2011 report is based on 722,824 admission records from 697 facilities across the US in 2010. The purpose of the NTDB is to influence the standard of care for injured persons through informing the medical community, the public, and decision makers. The NTDB utilizes the Injury Severity Score (ISS) as a numerical system to stratify the severity of patients injured by trauma (Figure 4). The ISS ranges from 1 to 75 with an
increased risk of death with an increased score. Injuries scoring from 1–8 are minor, 9–15 moderate, 16–24 severe, and a value greater than 24 is very severe. Trends in trauma incidents by age tend to peak 14–29 years-of-age. Selected mechanisms of injury statistics show that falls and motor vehicle collisions have the highest incidence rates. Motor vehicle collisions account for 29% of the NTDB cases with a dramatic rise between 15 and 33 years-of-age. There is a second peak between 40 and 60 years-of-age due to an increase in falls.

Of the 146,953 pediatric admission records in the NTDB 2011 Pediatric Report:
- 33% of facilities did not have a pediatric ward,
- 66% of facilities did not have an pediatric ICU, and
- 72% of severe injury pediatric patients required transfer to another hospital.

Regional variation of trauma in the US shows that the trauma is both more frequent and more severe in the southern region. Nearly 35% of trauma cases (37% of pediatric cases) occur in the south (Figure 3). Southern states have the highest percent of cases (8.4% adult and 6.7% pediatric cases) with ISS scores >24 (Figure 4).

![Figure 3 Incidence of Trauma by Region](image)

![Figure 4. Incidence of Trauma Acuity via Injury Severity Score (ISS), by Region, Pediatric Cases](image)
Motor vehicle crashes are the leading killer of children, teens, and young adults (ages 5 to 34) and among the top ten causes of death for all ages. Over 30,000 people are killed in crashes each year in the US. In 2005, in addition to the impact on victims’ families and friends, crash deaths resulted in $41 billion nationally in medical and work loss cost (Figure 5).

Surge Capacity: CHPTER and the South Carolina Healthcare Worker Preparedness. The MUSC Center for Health Professional Training and Emergency Response (CHPTER) is a ground-breaking community project, serving as South Carolina’s first collaborative emergency preparedness training center for patient care providers. CHPTER’s mission is to develop regional coalitions of hospital, public health, private, governmental and NGO emergency preparedness stakeholders in order to consolidate and improve existing EPT resources and ensure that patient care providers are prepared to save lives during a disaster (Table 4).

This project describes the result of CHPTER’s 2010 survey of South Carolina’s ED Medical Directors that assess the level of emergency preparedness and EPT needs—including hours, resources, obstacles and barriers—for our state’s ED care providers. Of the 41 ED Directors contacted, 21 (51%) completed the survey. EDs were well-represented: rural (41%), urban (29%), and suburban (29%) communities were included. Although both teaching and non-teaching hospitals were included, most facilities (78%) were non-teaching.

All respondents agreed that increased EPT opportunities would be valuable to their health facility and could potentially save health worker lives (Table 5). Most ED Directors agreed that at least 1 in 5 ED workers would fail to execute their expected roles during a disaster. Table 6 depicts the number of hours of EPT a person currently receives per professional role, and Table 7 depicts the perceived barriers considered most significant to EPT (the most significant barriers were time and financial constraints). In conclusion, SC ED Directors report that the SC ED workforce is insufficiently trained, support the notion that EPT can save both patient and healthcare provider lives and encourage additional resources to support EPT programs in our region.

Figure 5. Cost of Crash Deaths: Children 0-14; Teens 15-19; Young Adults 20-34, Adults 35-64, Older Adults, 65+
**TABLE 5 VALUE AND UTILITY OF EPT**

*Increased emergency preparedness training opportunities would:*  

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>Agree (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be valuable to their hospital and/or health facility</td>
<td>100</td>
</tr>
<tr>
<td>Save health worker lives</td>
<td>94</td>
</tr>
<tr>
<td>Save patient lives</td>
<td>100</td>
</tr>
</tbody>
</table>

**TABLE 6 ANNUAL EPT HOURS BY ED JOB TYPE**

<table>
<thead>
<tr>
<th>ED Job Type</th>
<th>% with &lt;2 h</th>
<th>% with 3–8 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses</td>
<td>25 (5/20)</td>
<td>50 (10/20)</td>
</tr>
<tr>
<td>Physicians Assistant</td>
<td>50 (6/12)</td>
<td>25 (3/12)</td>
</tr>
<tr>
<td>Physicians</td>
<td>40 (8/20)</td>
<td>35 (7/20)</td>
</tr>
<tr>
<td>Ancillary/administrative staff</td>
<td>35 (7/20)</td>
<td>35 (7/20)</td>
</tr>
<tr>
<td>Techs/nursing assistants</td>
<td>37 (7/19)</td>
<td>37 (7/19)</td>
</tr>
</tbody>
</table>

**TABLE 7 BARRIERS TO EPT**

<table>
<thead>
<tr>
<th>Barrier</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of time constraints</td>
<td>21</td>
<td>6.929</td>
<td>2.1580</td>
</tr>
<tr>
<td>Impact of financial barriers</td>
<td>21</td>
<td>5.905</td>
<td>2.6059</td>
</tr>
<tr>
<td>Lack of instructors</td>
<td>20</td>
<td>5.300</td>
<td>2.5152</td>
</tr>
<tr>
<td>Poor quality of curriculum content</td>
<td>18</td>
<td>5.278</td>
<td>2.1090</td>
</tr>
<tr>
<td>Unclear standards for training</td>
<td>18</td>
<td>5.222</td>
<td>2.4146</td>
</tr>
<tr>
<td>Lack of course/curriculum</td>
<td>20</td>
<td>5.200</td>
<td>2.2618</td>
</tr>
<tr>
<td>Lack of interest from staff</td>
<td>21</td>
<td>5.190</td>
<td>2.3795</td>
</tr>
<tr>
<td>Unclear needs for training</td>
<td>20</td>
<td>5.100</td>
<td>2.2919</td>
</tr>
</tbody>
</table>

*Likert Scale 1 = Lowest Barrier, 10 = Highest Barrier*
How Prepared Are We? Preliminary Results from the Center for Health Professional Training and Emergency Response’s (CHPTER) regional workforce assessment of disaster patient care providers.

In an era of declining federal funding for EPT, the importance of state and local initiatives to provide EPT has increased. Unfortunately, few US regions have performed workforce assessments of their patient care providers to measure levels of preparedness, record training preferences and assess EPT needs. This project detailed the results of CHPTER’s regional preparedness workforce assessment of patient care providers in North and South Carolina.

Table 8 depicts the Patient Care Provider Demographics and EPT Assessment from 398 patient care providers. Most respondents agreed that increased EPT opportunities for patient care providers would save both patient and providers lives. The most significant obstacles to EPT training were time constraints and financial barriers experienced by patient care providers. Also, 79 (20%) ranked time constraints as the “greatest barrier” and 68 (18%) ranked financial barriers as the “greatest barrier” (score of 10 on a 1–10 Likert scale). Table 9 depicts provider preferences for EPT.

### Table 8: Patient Care Provider Demographics and EPT Assessment

<table>
<thead>
<tr>
<th>Variable</th>
<th>Data</th>
<th>Respondents (n=398)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age group (n=397)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 years-of-age or younger</td>
<td>48</td>
<td>12.1</td>
</tr>
<tr>
<td>26–40 years-of-age</td>
<td>193</td>
<td>48.6</td>
</tr>
<tr>
<td>41–55 years-of-age</td>
<td>105</td>
<td>26.4</td>
</tr>
<tr>
<td>56+ years-of-age</td>
<td>51</td>
<td>12.8</td>
</tr>
<tr>
<td>Occupation (n=391)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician</td>
<td>201</td>
<td>51.4</td>
</tr>
<tr>
<td>Nurse</td>
<td>56</td>
<td>14.3</td>
</tr>
<tr>
<td>Mental Health</td>
<td>16</td>
<td>4.1</td>
</tr>
<tr>
<td>Emergency Management</td>
<td>15</td>
<td>3.8</td>
</tr>
<tr>
<td>Healthcare Administration</td>
<td>9</td>
<td>2.3</td>
</tr>
<tr>
<td>Public Health</td>
<td>4</td>
<td>1.0</td>
</tr>
<tr>
<td>Volunteer/Community Agency</td>
<td>3</td>
<td>0.8</td>
</tr>
<tr>
<td>Law Enforcement</td>
<td>3</td>
<td>0.8</td>
</tr>
<tr>
<td>Physician Assistant</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>Medical Assistant/Technician</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Private/Self-Employed</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Engineer</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Other</td>
<td>77</td>
<td>19.7</td>
</tr>
<tr>
<td>Workplace Type (n=387)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public/Government</td>
<td>61</td>
<td>15.8</td>
</tr>
<tr>
<td>Non Profit/NGO</td>
<td>72</td>
<td>18.6</td>
</tr>
<tr>
<td>Private/Corporate</td>
<td>74</td>
<td>19.1</td>
</tr>
<tr>
<td>Home Operated Business</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>College/University Hospital</td>
<td>138</td>
<td>35.7</td>
</tr>
<tr>
<td>Other</td>
<td>41</td>
<td>10.6</td>
</tr>
<tr>
<td>Work Experience (n=398)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Still in training/student: 0 years</td>
<td>81</td>
<td>20.4</td>
</tr>
<tr>
<td>1–2 years</td>
<td>51</td>
<td>12.8</td>
</tr>
<tr>
<td>3–5 years</td>
<td>53</td>
<td>13.3</td>
</tr>
<tr>
<td>6–10 years</td>
<td>45</td>
<td>11.3</td>
</tr>
<tr>
<td>11–20 years</td>
<td>65</td>
<td>16.3</td>
</tr>
<tr>
<td>&gt;21 years</td>
<td>103</td>
<td>25.9</td>
</tr>
<tr>
<td>Disaster Experience</td>
<td>None: No Formal Training</td>
<td>100</td>
</tr>
</tbody>
</table>
### TABLE 8 PATIENT CARE PROVIDER DEMOGRAPHICS AND EPT ASSESSMENT

<table>
<thead>
<tr>
<th>Variable</th>
<th>Data</th>
<th>Respondents (n=398)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n=396)</td>
<td>Data</td>
<td>N</td>
</tr>
<tr>
<td>Annual Training Required</td>
<td>Minimal: Some Formal Training</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>Moderate: Some Experience</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Significant: Advanced Training and/or Experience</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Not Applicable</td>
<td>29</td>
</tr>
<tr>
<td>Annual Training Required</td>
<td>0 hours</td>
<td>149</td>
</tr>
<tr>
<td>(n=379)</td>
<td>1-2</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>3-8</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>9-16</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>17-25</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>&gt; 26</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Not Applicable</td>
<td>29</td>
</tr>
<tr>
<td>Annual Training Performed</td>
<td>0 hours</td>
<td>92</td>
</tr>
<tr>
<td>(n=371)</td>
<td>1-2</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>3-8</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>9-16</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>17-25</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>26+</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>Not applicable</td>
<td>12</td>
</tr>
</tbody>
</table>

### TABLE 9 PATIENT CARE PROVIDER EPT CONTENT PREFERENCES

<table>
<thead>
<tr>
<th>EPT Content Category</th>
<th>Data</th>
<th>Survey Respondents (n=387)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Length</td>
<td>1-3 hours</td>
<td>101</td>
</tr>
<tr>
<td>(n=384)</td>
<td>1 day</td>
<td>190</td>
</tr>
<tr>
<td></td>
<td>2-3 days</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>5-7 days</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>&gt; 7 days</td>
<td>4</td>
</tr>
<tr>
<td>Audience</td>
<td>Focus on hospital providers</td>
<td>48</td>
</tr>
<tr>
<td>(n=385)</td>
<td>Focus on all patient providers</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>Combination of both</td>
<td>254</td>
</tr>
<tr>
<td>Delivery</td>
<td>Classroom lectures</td>
<td>96</td>
</tr>
<tr>
<td>(n=375)</td>
<td>Online material</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Combination of both</td>
<td>258</td>
</tr>
<tr>
<td>Methods</td>
<td>Activity focused</td>
<td>94</td>
</tr>
<tr>
<td>(n=371)</td>
<td>Didactic focused (lectures)</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Combination of both</td>
<td>261</td>
</tr>
<tr>
<td>Grading</td>
<td>Grade my performance</td>
<td>42</td>
</tr>
<tr>
<td>(n=353)</td>
<td>Grade my knowledge</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Grade both</td>
<td>276</td>
</tr>
<tr>
<td>Technology</td>
<td>Medical Simulation not helpful</td>
<td>35</td>
</tr>
<tr>
<td>(n=339)</td>
<td>Medical Simulation helpful</td>
<td>304</td>
</tr>
<tr>
<td>Content</td>
<td>Disaster case-specific training</td>
<td>49</td>
</tr>
<tr>
<td>(n=285)</td>
<td>All hazards training</td>
<td>17</td>
</tr>
</tbody>
</table>
In conclusion, nearly all patient care providers who responded to the survey desired increased EPT opportunities. Time, financial constraints and the fact that employers generally do not require EPT, are the primary obstacles to increased EPT in our region. Opportunities for increased EPT in our region include developing short (<1 day) courses that combine performance assessments with a scenario-based environment. An appropriate follow up to this workforce study would include a feasibility study to see if a one day, performance based EPT curriculum is cost-effective when disseminated to healthcare facilities and other patient care providers in our region.


Key findings of FEMA’s March 2012 National Preparedness Report (NRP) include:

- Significant improvements in core capabilities have been achieved following 9/11, particularly in cross-cutting, common capabilities and those capabilities that support incident response and information sharing across all levels of government.
  - States and community partners have used significant federal grant investments to support areas of national strength.
  - Efforts to address identified preparedness gaps from real-world incidents—such as the 9/11 attacks and Hurricane Katrina—have yielded meaningful improvements.
  - Despite some progress, integrating vulnerable populations—the disabled, children, pregnant women, older adults, and people with chronic medical conditions—into preparedness activities requires more national attention.
  - While whole community partners have established many programs that support national preparedness, measures and metrics often do not exist to gauge performance and progress over time.

A specific section in the NRP relates to public health and medical services. The key findings are:

- Federal coordination of medical countermeasure efforts across agencies—from research and development through utilization—has greatly improved since 2001.
- A focus on hospital medical surge planning and capabilities has improved hospital preparedness nationwide. Greater emphasis is being placed on community approaches that involve healthcare coalitions, which include a variety of healthcare organizations, public health, mental and behavioral health, and emergency management to enhance medical surge.
- The nation has built a highly responsive public health capability for managing incidents, but recent reductions in public health funding and personnel have impacted these capabilities.
- EMS capabilities are critical to managing medical emergencies. Continuing to integrate EMS into planning and preparedness initiatives is an area of national focus.
- The nation has developed an array of federal and volunteer medical assets to supplement state, local, tribal, and territorial capabilities.

Also in this report, FEMA presents the self-assessments of core capability levels submitted by all 56 US states and territories in 2011. The following chart is a summarization of those results as it relates to public health and medical services (Figure 6).
In 1986, Congress enacted the Emergency Medical Treatment and Active Labor Act (EMTALA) to combat the problem among hospital emergency departments of ‘patient dumping’, the transferring of under or uninsured patients prior to treatment. EMTALA mandates that a Medicare-participating hospital with a dedicated ED must perform a Medical Screening Exam (MSE) on all patients. Therefore, MSE’s must be performed on all patients who present to an ED, regardless of their ability to pay. Emergency physicians on average provide $138,300 of EMTALA-related charity care each year, and one-third of emergency physicians provide more than 30 hours of EMTALA-related care each week.

Following a disaster, it will not be possible to provide an MSE to all patients. This places ED providers at risk of federal penalties or lawsuits and will compromise patient care operations during a disaster. To complicate matters, the Interpretive Guidelines for EMTALA state triage is not equivalent to an MSE. Triage merely determines the ‘order’ in which patients will be seen, not the presence or absence of an emergency medical condition.”

Hospitals and health facilities seeking relief from the burdensome requirements of EMTALA are required to seek a waiver during a disaster. There are 4 prerequisites to receive this waiver:

- The President has declared an emergency or disaster under the Stafford Act or the National Emergencies Act,
- The Secretary of HHS has declared a Public Health Emergency (PHE) under Section 319 of the Public Health Service Act,
- The Secretary of HHS has invoked his/her authority under Section 1135 of the Social Security Act and authorized CMS to waive sanctions for certain EMTALA violations that arise as a result of the circumstances of the emergency, and
- The hospital in the affected area has implemented its hospital disaster protocol.

During August 2005, following Hurricane Katrina, some hospitals were successful in receiving an EMTALA waiver. Unfortunately, current law only allows the waiver to be effective for 72 hours. Many health facilities were inundated with patients several days following the allowed waiver.
ACEP reports that overcrowding in the ED can be detrimental to patient care. The physical structure and operations of an ED are often incompatible with an environment conducive to inpatient medical services. This is particularly true of mental health patients who often require one-on-one supervision and can be disruptive and threatening to staff and other patients. For these reasons, ACEP recommends creating an efficient transfer process for patients who are boarding in the ED. ACEP supports Joint Commission’s proposed definition of boarding: “the practice of holding patients in the emergency department or a temporary location for four hours or more after the decision to admit or transfer has been made.”

Several hurdles currently exist in getting patients from the ED to an appropriate clinical setting. Joint Commission currently “requires the hospital to coordinate with community resources to help expedite the transfer of patients with psychiatric and/or substance abuse emergencies.” ACEP identifies a lack of personnel, facilities, and available community services as potential barriers to this revision. Regarding mental health patients, the lack of inpatient psychiatric beds and the extensive paper work for mental health transfers is unnecessarily burdensome.

ACS 2012 State Legislative Priorities, 2012

A summary of the ACS 2012 legislative priorities includes:

- Medical Liability Reform: ACS supports the Medical Injury Compensation Reform Act (MICRA) passed in California in 1975 as the gold stand for states to adopt comprehensive legal reform.
- Quality/Patient Safety: ACS supports injury prevention programs, such as stricter helmet laws, all-terrain vehicle standards, and concussion education/prevention.
- Workforce/Surgical Practice:
  - Uniform Emergency Volunteer Health Practitioners Act (UEVHPA): ACS supports passage of UEVHPA which allows emergency services providers to respond to disasters in multiple states without actually having disaster licensing in each of those states. Currently, only Arkansas, Colorado, District of Columbia, Illinois, Indiana, Kentucky, Louisiana, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, Tennessee, and Utah have passed UEVHPA.
  - Trauma System Funding and Development: The lack of trauma and emergency department specialists and related medical services negatively impacts the quality of trauma care in the US, placing patient lives at risk. ACS supports relieving trauma/ED system funding shortages by increasing taxes, fines and other fees.

Vulnerable Populations and Health Hazard Risk Assessment Data, DHEC Office of Public Health Preparedness, 2012

This resource was created to assess the vulnerability of SC communities. The total state population was 4,625,364 according to the 2012 census. Vulnerable populations are broadly defined by the CDC and FEMA based on characteristics such as age, medical issues and disabilities, economic disadvantages, language and literacy barriers, and social isolation. Some relevant statistics for South Carolina include:

- 23.4% of the population are under 18 years-of-age,
- 13.7% of the population are 65 years-of-age and older
- 13.7% of the population has one or more disabilities, including difficulty with hearing, vision, cognition, mobility, self-care or independent living,
- 17.1% of the population lives in poverty,
- 24.4% of the population are under age 18,
- 10.8% of adults are unemployed,
- 23.3% of adults 18 to 64 years-of-age and 10.4% of children under 18 years-of-age have no health insurance,
- 6.2% of people live in homes where a language other than English is the primary language,
- 15% of adults lack basic literacy skills, and
- 7.1% of households have no vehicle for transportation.

These statistics indicate that many people in South Carolina are especially vulnerable to health risks in time of disaster. Vulnerability was furthered measured with the Social Vulnerability Index (SoVI) from the University of South Carolina’s Hazards and Vulnerability Research Institute. The SoVI index synthesizes 31 socioeconomic variables, which contribute to reduction in a community’s ability to prepare for, respond to, and recover from
hazards. According to the SoVI, a higher score indicates less vulnerability to disaster, while a lower score suggests an area particularly vulnerable to disasters.

The counties in South Carolina with the highest SoVI scores are McCormick (3.95344), Bamberg (3.49608), Williamsburg (2.14441), Marlboro (1.35657), and Jasper (1.29664), while those with the lowest SoVI scores are Lexington (-3.43817), Dorchester (-3.36792), York (-3.29679), Berkeley (-3.23595), and Greenville (-2.47467). Williamsburg, Bamberg, and McCormick counties have SoVI scores in the top 20% of US counties, meaning they are among the most vulnerable in the nation. York, Greenville, Saluda, Lexington, Berkeley, and Dorchester counties have SoVI scores in the bottom 20% of US counties, meaning that they are some of the least vulnerable to disaster in the US.


Regionalization has been recently defined by the National Quality Forum (NQF) as an established network of resources that delivers specific care (e.g., protocols, definitive procedures, specialty services) to a defined population of patients or within a defined geography. Regionalization requires a proactive approach to planning and cooperation primarily to ensure that patients have timely access to the appropriate level of care (including critical care) based on their needs. It is critical for regionalized emergency care to address system load and capacity issues (e.g., mass casualty, EMS capacities, ED/ICU diversion).

Overarching themes for the development of measures and measure concepts within regionalized emergency medical care systems include:

1. Regionalization of emergency care is a method of matching resources to patient needs in a timely fashion with the goal of improving patient-oriented care outcomes and population health. Regionalization does not equal “centralization” of care; it may involve moving care resources to patients or patients to care facilities, depending on the needs of the patient and the system’s capabilities.
2. The effective delivery of regionalized emergency medical care requires ongoing measurement and monitoring of system capabilities and capacity to ensure that the appropriate resources and workforce (including appropriate specialty care) are available.
3. The regionalization of emergency medical care has strong potential to assist with improving health security and health provider preparedness during a disaster as it requires continual assessment of the capability, capacity, and accessibility of medical services (as well as the patient care providers who deliver these services).
4. The best measure of Regionalized Emergency Medical Care Systems (REMCS) is the ‘episodes of care model,’ defined as the process of delivering regionalized care to positively impact patients and the patient experience. Measurement of regionalized emergency care systems should strive to measure the effectiveness, cost-effectiveness, and efficiency of the system as a whole, as well as individual system components. Measures used to judge the effectiveness of a system should include patient-oriented outcomes, patient-centered processes of care, and community-centered outcomes. Desired outcomes should consider patient preferences and experiences, and REMCS models should assure that the systems are accountable to the patient as well as to the healthcare system.
5. System evaluation should promote transparency and shared accountability for the system’s successes and failures across units of service within the system.
6. The development of REMCS is an ongoing process with flexible and adaptive structural and process elements. Valid system-level measures should detect and recognize improvement (or lack thereof) due to changes to a system’s component parts and the communication and coordination between them.
7. Regionalized emergency care systems should exist for the public good and should fully integrate with each other in a transparent, shared model with a common oversight structure (taking into consideration federal, state, and local regulations) regardless of geopolitical boundaries in order to provide optimal care for a population. Incentives should be aligned such that a successful system yields positive outcomes and appropriate compensation for each agency, organization, and facility within the system.
8. REMCS measurement should be data driven. Data on REMCS structures, processes, and outcomes, as well as on the populations that the systems serve, should be collected, shared, and utilized to validate evidence-based REMCS measures and measure gaps.
Part II: Summary of Conference Discussion

Summary of Conference Discussion

On July 16, 2012, MUSC’s CHPTER hosted a summit in partnership with the South Carolina Department of Health and Environmental Control (DHEC), the State Law Enforcement Division (SLED) and the SC Emergency Management Division (SC EMD). The purpose of the conference was to evaluate and identify key emergency preparedness issues that place South Carolina patients, care providers and health care systems at risk during a disaster. Conferees included some of the region’s top experts and emergency preparedness stakeholders (See §Appendix A). Conferees provided technical input and guidance to this project. Utilizing a modified Delphi technique, consensus was developed on the content of the white paper prior to the conference. Via anonymous, simple majority voting during the conference, conferees were able to approve a list of priorities and policies that will help ensure our region’s patient care providers and facilities are better prepared. In this section, the priorities and policy recommendation are presented via four focus areas:

- Educating Leaders about the Link between Health Security and Homeland Security
- Addressing the Unfunded Mandate of Patient Surge and its impact on Emergency Health Systems
- Preparing All Patient Care Providers
- Fostering Community Based Preparedness Partnerships to Enhance Regional Health Security

On the day of the conference, conferees had an opportunity to discuss and review 23 policies and priority statements identified by participants prior to the conference. Each statement was read in open forum during the conference and immediately voted on utilizing handheld electronic voting devices that could interact with the slide presentation. Those policies and priority statements receiving less than 67% of the vote were discussed in open forum. In an attempt to reach consensus, amendments and suggestions to policies and priorities were considered.

Overall conferees approved 21 of 23 policies and priority statements. (See §III) For the majority of statements, broad consensus was achieved with little difficulty. Conferees differed in their opinion of the wording of statement 3d, “All patient care providers in our region should participate in at least 8 hours of competency-based disaster training per year.” 65% of conferees supported this statement. Of those who opposed, some felt it would be difficult to require 8 hours of training per year without adequate funding to accompany the requirement. A clarification was made to conferees regarding the wording of the statement, specifically the use of the word “should” instead of “shall.” It was suggested that the statement was not intended to require training, but rather to suggest a goal for patient care providers to achieve in order to be considered competent in clinical disaster preparedness.

Conferees discussed metrics regarding the quality of training versus the quantity of training and what this training may look like, including how the training might be broken up over the course of a year. Discussion focused around difficulties with implementation due to the need to train providers across multiple health care roles, as suggested in recent statewide surveys and reinforced by policy statement 3c. With the input of the attendees, 3d was amended to, “All patient care providers in our region should participate in at least 8 hours of competency-based disaster training per year.” While there was some subsequent debate over the use of the words “competency based” training, with suggested amendments such as replacing it with “active learning” or “objectives achieved,” it was ultimately left in as “competency based” and supported by 80% of attendees.

Conferees debated statement 5a, “A statewide taskforce appointed by the Governor and the State Assembly should be instituted to review and develop policies that will address the problem of the unfunded mandate of emergency, trauma and disaster medical care in our region.” Conferees agreed that there is not a guiding coalition or safe harbor for collective discussion amongst the many groups involved in disaster preparedness at the state level and the proposed task force would go far to establishing such a coalition. The contention for question 5a revolved mainly around who would appoint the taskforce and how it would be developed. After some discussion, the statement was amended by removing anything about who would appoint the task force, “A statewide task force should be instituted to review and develop policies that will address the problem of the unfunded mandate of emergency, trauma, and disaster medical care in our region.” 82% of the conferees supported this statement.

Conferees also discussed statement 5b, “Identify strategies that will double South Carolina’s per capita share of federal disaster preparedness funding to meet the national average ($6.91 per capita versus national average $13.82, FY 2007)” Some suggested that SC’s average might reflect lower risk than other states such
as New York and, therefore, would constitute and an appropriate ratio. Others quickly pointed out that states
with lower disaster risk do better per capita than does South Carolina. Conferees supported the need for
increased funding, but disagreed about the need to establish a specific benchmark for funding. Further
discussion revolved around amending the statement to say that more funding should be sought, but that a
more open-ended approach at this point would be more appropriate. The group agreed (93%) with the
amended statement: “Identify strategies that will increase federal disaster preparedness funding to South
Carolina.”

Statement 5c was also discussed, “Identify policies that will increase the number of burn unit beds to meet the
national average. (1.6 per 1M of population versus the national average, 6.0 per 1M of population, 2008).” As
with statement 5a, some conferees were concerned with the establishment of a benchmark in this statement,
rather than a more general approach. Other conferees were concerned about diverting scarce resources for
burn acute care at the expense of more pressing disaster medical system needs. Based on a regional gap
analysis, it was noted that South Carolina lacks the capability of handling burns for an extended period of time
until they can be transferred to a burn unit. This may be especially important with large patient surges in which
transportation may be delayed. Another conferee suggested an amendment that stressed the importance of
increasing capability of managing burn care without giving specific parameters. Moreover, 93% of conferees
approved the following statement, “Identify policies that will improve the capability of managing and/or caring
for burn patients.”

Part III: Next Steps

Recommendations of the 2012 Health Security Leaders Conference hosted by CHPTER

In this section, we present these priorities and policy recommendation via four focus areas:

- Educating Leaders about the Link between Health Security and Homeland Security
- Addressing the Unfunded Mandate of Patient Surge and its impact on Emergency Health Systems
- Preparing All Patient Care Providers
- Fostering Community Based Preparedness Partnerships to Enhance Regional Health Security

Educating Leaders about the Link between Health Security and Homeland Security

Disasters have the potential to devastate entire communities. Unfortunately, patient care providers are
commonly unprepared and poorly trained to handle large numbers of patients, 50-80% of whom bypass first
responders and self-transport to public facilities. The 2011 Japanese tsunami and the subsequent radiologic
emergency in Northern Japan resulted in over 10,000 deaths. In the aftermath of the earthquake, thousands of
patients—both sick patients and the ‘worried well’—quickly depleted local health care resources creating
unexpected chaos and negatively impacting patient care. Similarly, during the first hours following Hurricane
Katrina, patient care providers at Charity Hospital and other local facilities were inundated with patients. A
handful of providers at the New Orleans airport were confronted with as many as 2,500 patients seeking care.
Nearly 500 patients were cared for inside the airport. Unfortunately, 36 died representing 8–10 deaths per
day.27 Retrospective reviews of Hurricane Katrina suggest that lack of provider training unnecessarily increased
adverse patient outcomes.3-8

We expect the next major disaster in South Carolina to significantly affect care providers who may be faced
with hundreds to thousands of patients simultaneously seeking care. We know our coastal regions are
particularly at risk for both natural and man-made disasters based on large commercial seaports, other zones
vulnerable to flooding and hurricanes, airports, tourist attractions, military bases and the Middleton Place
Summerville Seismic Zone (MPSSZ), the eastern US’s most active seismic zone. We also know South
Carolina has many underserved communities (the elderly, veterans, minorities, the disabled and rural area
residents) that can experience devastation following a disaster. We believe the potential for a patient care
catastrophe following a disaster in our region is significant.

If we are to foster medical emergency preparedness and health security in our region, a key first step is to
educate our leaders and policy makers about the inherent risks of our vulnerable health system. Key
messages and priorities indentified by the conferees include:

- 1a. The potential for a patient care catastrophe following a disaster in our region, similar to Hurricane
   Katrina, is real.
- 1b. A fully capable health system during a disaster should provide lifesaving medical treatment via
   emergency medical services and related operations and avoid additional disease and injury by
providing targeted public health and medical support and products to all people in need within our region. South Carolina does not currently have this capability.

- 1c. We cannot achieve Homeland Security in South Carolina without first achieving Health Security. Fully preparing our health systems and patient care providers will save lives and help protect our most vulnerable communities during times of disaster.

Addressing the Unfunded Mandate of Patient Surge and its impact on Emergency Health Systems

ED overcrowding is a national health care emergency with broad implications for patients and providers. Several studies have detailed the adverse outcomes that occur in hospitals when crowding is high and nursing/patient ratios are low. Recently, a handful of studies have linked length of stay and crowding in the ED to adverse patient outcomes such as sepsis, stroke, acute coronary syndrome, pneumonia, and acute pain, increased medical errors, patient mortality, and lawsuits; and, increased ambulance diversion, medical costs, and patients leaving the ED without treatment (LWOT).

Emergency Medicine is the only medical subspecialty required under federal law to provide services to all patients regardless of their ability to pay. For those ED’s that operate as trauma centers, many continue to provide trauma care at a significant financial loss. Emergency physicians on average provide $138,300 of uncompensated care each year, and one-third of emergency physicians provide more than 30 hours of uncompensated care each week.

Patient risks associated with ED overcrowding are greatly enhanced during a disaster. Simple decisions about patient triage become very complex when beds are occupied or staff members are overwhelmed. Patient care providers must care for both the patients they have and the patients arriving (many of them in their private vehicle). Many of the ‘worried well’ patients who seek medical care after a disaster require little emergency medicine attention but demand care and, as result, require significant attention to counsel and calm. Even a small surge of 10–12 patients can require significant attention from the medical staff and constitute a clinical disaster. During these times, sicker patients can be missed, toxic or exposed patients can contaminate the facility and the security of the hospital can be breeched by those intentionally seeking to harm others. To complicate matters, in the absence of a federal EMTALA disaster waiver, hospitals will be confronted with the daunting task of performing a full medical screening exam for each patient, or risks significant fines and litigation.

At a time when the demands to provider trauma and emergency-related care are increasing, funding for trauma and emergency related care of diminishing. South Carolina’s per capita share of FY 2007 federal disaster preparedness $6.91 versus national average $13.82. State funding for trauma and emergency care and related services have reached a critical low.

A key first step to address the unfunded mandate of disaster medical care in South Carolina is presenting the relevant priorities and key messages on this topic. Conferees identified the following key messages and priorities:

- 2a. The provision of medical care by patient care providers during a disaster is an unfunded mandate that, in the absence of adequate funding, support and training, places patients, patient care providers and health care systems at significant risk.
- 2b. Adequate funding for planning, coordination and implementation of regional trauma care systems, emergency medical services and specialized burn care facilities will significantly improve the preparedness of our health systems.
- 2c. Resolution of the problems associated with overcrowding and uncompensated care in emergency departments—the only medical subspecialty required under federal law to provide services to all patients regardless of their ability to pay—is an important step to providing adequate surge capability during a disaster.

Preparing All Patient Care Providers

Providing comprehensive disaster medical training to patient care providers is important to the future success of US disaster operations. Several studies cite the lack of preparedness of patient care providers as a significant yet easily modifiable risk to the health and safety of all patients.

US medical schools have been slow to develop stand-alone disaster training curricula and few health systems have defined and implemented disaster core competencies on their own. In addition, very few emergency preparedness training programs consider the broader population of patient care providers (for
example, volunteers) when developing and administering training. Overall, training programs available to health providers in the US programs lack clarity, objectivity, competency-driven goals, scientific rigor, prospective validation, and consistency across medical and professional specialties.

As discovered via statewide surveys in 2011 and 2012, 52% of South Carolina patient care providers participate in less than 2 hours emergency preparedness per year and 40% of employers require no annual disaster training. Most ED Directors and patient care providers in our region encourage additional resources to support disaster training programs in our region. Due to limitations of time and money, opportunities for improved patient care provider preparedness in our region include developing short (<1 day) courses that combine performance assessments with a scenario-based training environment.

Recognizing that our patient care providers are insufficiently trained, conferees identified the following key priorities:

- 3a. Patient care providers are commonly unprepared and poorly trained to handle large numbers of patients, 50–80% of whom bypass first responders and self-transport directly to public facilities. The lack of preparedness of patient care providers represents a significant yet modifiable risk to the health and safety of patients in our region.
- 3b. When targeting disaster training to patient care providers, we should consider all potential providers of care during a disaster— including, but not limited to, clinicians, health facility workers, mental health providers, public safety and law enforcement officials, public health officials, private businesses, community volunteers, EMS, HazMat and Fire personnel.
- 3c. Because surge capacity without surge capability is valueless, sustained funding and programs to develop patient care provider education and competency-based emergency preparedness training is critical for our regional security.
- 3d. All patient care providers in our region should participate in competency-based disaster training.

Fostering Community-Based Preparedness Partnerships to Enhance Regional Security

In the era of declining budgets for emergency preparedness, effective coordination between volunteer groups, non-governmental organizations (NGO’s), public agencies, and public and private health facilities is essential to achieving health security. Cost cutting projects that incorporate Community-Based Disaster Preparedness (CBDP) techniques have been highlighted as a key feature of National Incident Management System (NIMS) and the National Response Framework (NRF). Linking CBDP programs via a regionalization of emergency medical care has strong potential to assist with improving health security and health provider preparedness during a disaster.

Several organizations in South Carolina are currently working to deliver community-based disaster medical care. These include the American Red Cross, the National Volunteer Organizations Active in Disaster (NVOAD), the Medical Reserve Corps (MRC), the Emergency System for the Advance Registration of Volunteer Health Professionals (ESAR-VHP), Community Emergency Response Teams (CERT) and CHPTER. Many of the partners in these groups operate with very small budgets and have found their ability to foster health security limited in the absence of formal funding commitment from federal or state agencies. Recognizing that fostering health security will require an investment from a vast assortment of community assets, conferees identified the following key priorities:

- 4a. Community-based disaster preparedness partnerships designed to protect lives and preserve health systems is a cost effective way to plan for and deliver medical assets during a disaster.
- 4b. Projects that fully integrate non-governmental, public and private health system assets in order to protect patients and foster community resiliency should be supported by federal and state agencies.

Policy Recommendations of the 2012 Health Security Leaders Conference hosted CHPTER

In this final section, we present the policy recommendations of the conferees:

- 5a. A statewide taskforce should be instituted to review and develop policies that will address the problem of the unfunded mandate of emergency, trauma and disaster medical care in our region. Goals of the task force will be:
  - 5a(1). Further develop a capabilities-based statewide plan to achieve the improvement of emergency medical response to disasters and mass casualties. The plan should enumerate
necessary capabilities, the actions required to achieve those capabilities, responsible parties for the various actions, and the cost.

- 5a(2). Develop a plan to educate policy makers about the link between Homeland Security and Health Security.
- 5a(3). Identify policies that will appropriately fund, develop, and improve our region’s EMS, FIRE, HazMAT, Emergency Department, Trauma and Burn facilities and other disaster health systems and capabilities.
- 5a(4). Identify policies that will appropriately fund, develop, and disseminate competency-based disaster medical training for all patient care providers in our region.
- 5a(5). Identify strategies to utilize existing state resources to develop community based disaster medical response networks that coordinate and integrate public health and clinical health assets.
- 5a(6). Identify opportunities to foster the regionalization of patient-centered emergency care services that help match the availability of resources and need for resources during a disaster.
- 5a(7). Identify strategies that will increase federal disaster preparedness funding to South Carolina.
- 5a(8). Identify policies that will improve the capability of managing and/or caring for burn patients.


Appendix A. Health Security Leaders Conference Participants

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