

NATIONAL FOUNDATION FOR TRAUMA CARE

"Securing the Future of Trauma Care"

- - THE TRAUMA CENTER CONNECTION - -

Volume VI, Issue II

SPECIAL EDITION

June 2006

In this issue:

- Scoring and Selection Process
- PI & Advisory Committee
- Validation Visits
- Inventory Tool

**FIVE SELECTED
"HIGHLY PREPARED"
HOSPITALS**

Barnes-Jewish Hospital
St. Louis, MO

Children's Hospital and Health Center
San Diego, CA

Miami Valley Hospital
Dayton, OH

New Hanover Regional Medical Center
Wilmington, NC

Suburban Hospital Healthcare System
Bethesda, MD

NFTC RECOGNIZES FIVE "HIGHLY PREPARED" TRAUMA CENTERS

In September 2005, the National Foundation for Trauma care (NFTC) was awarded a grant from the Centers for Disease Control and Prevention (CDC) to conduct a study to assess the ability and preparedness of our nation's Trauma Centers to respond to a large scale disaster. Principal Investigator (PI) Donald Trunkey, MD, FACS, and his co-PI's Dr. Ron Anderson, David Jaffe, and Mark Ackermann convened an expert Advisory Committee to assist in the development of a survey tool, establish scoring methods, and design an on-site validation process for five (5) highly prepared trauma centers. To accomplish these tasks the group used a modified Delphi process in which input was sought from individuals in a confidential manner and synthesized by the NFTC into documents which were approved through a consensus process.

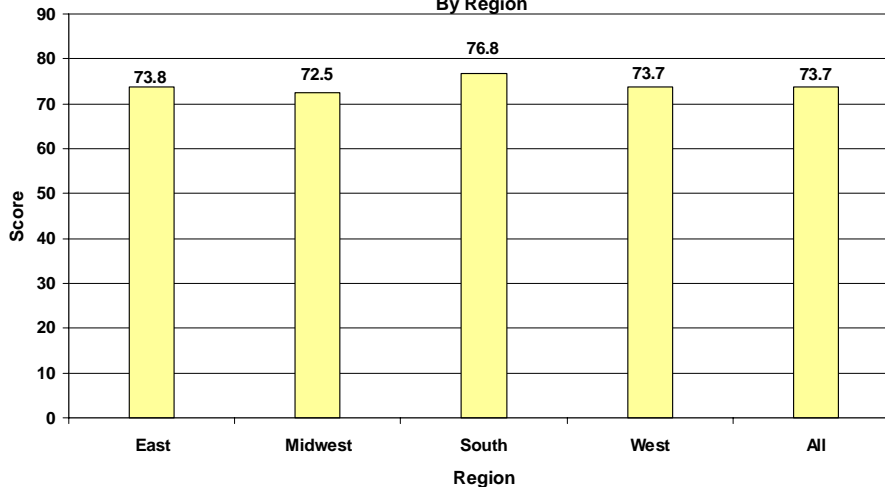
The Trauma Centers that were selected had the highest average scores over 46 questions. The analysis of scores was performed using five (5) different scoring methods. The survey tool covered a broad range of preparedness processes and measures including communications, emergency management planning, resources, vulnerability and security, clinical resources and sustainability. Five hundred and thirty-one (531) questionnaires were mailed in early January to Trauma Medical Directors of American College of Surgeons (ACS) verified or government/foundation designated trauma centers. Over the next several months responses were elicited and entered into a database for analysis using statistical software.

The five most highly prepared Trauma Centers will be awarded \$7,000 for participating in the study which will include undergoing a site visit to validate reported information by a PI or advisory committee member. The validation visitor will meet with, or contact, hospital staff and inter-agency representatives to discuss the plans for a collaborative response should a mass casualty situation occur, including but not limited to chemical, radiological, blast, or other such hazards. The on-site visit will also include a tour of the facility to assess the hospital's decontamination capacity, clinical care and overflow areas, stockpiled resources, and overall plan for responding to a large scale catastrophic event. The validation visitor will also interview staff and key managers, review documents, and examine areas of the hospital to determine its overall preparedness to manage a large scale disaster.

Of the 177 survey responses, 175 (33% of the centers) were deemed useable for the purpose of identifying the most highly prepared trauma centers and compiling data about hospital preparedness. This response rate was enhanced by follow-up phone calls made by members of the NFTC Board and CDC Advisory Committee encouraging hospitals to complete the survey. Of those Trauma Centers that were contacted by phone but were unable to complete the survey, the most common reason stated was that the Trauma Program staff did not have access to the information (disaster preparedness/management planning) needed to complete the survey tool. The second most common reason for failure to complete the survey was limited staff resources.

The NFTC thanks Senator Arlen Specter (R-PA) and Congressman Curt Weldon (R-PA) for their support for Trauma Centers and systems and for recognizing the need for this study. The ultimate products of this project will include a summary of the five Highly Prepared Trauma Center's policies, practices and preparedness plans as well as five Best Practices of Centers who have developed responses and plans in areas of preparedness not commonly found in our study population.

**Trauma Center Average Preparedness Score
By Region**



CDC Study Data Validation Techniques

As surveys were received from the hospitals responding to the survey "Impact of a Terrorist Attack (in the Community) on Individual Trauma Centers" they were first checked for data completeness, hard to read faxed data, missing pages, etc. When incomplete surveys were identified, the designated contact at the hospital was notified and asked to resubmit. The electronic data entry tool incorporated valid value checks that prevented out of range entries. Each survey's data was dually entered with subsequent cross checking across the duplicate records. Errors were then reconciled and the database reduced to a single record for each hospital. Programmed consistency

checking among related questions (questions with similar or related responses, funding add up, etc.) was conducted.

For hospitals with response inconsistencies, inappropriate numeric responses, and surveys with less than three "missing" responses, the contact person was requested to provide corrected information. Where hospitals were unable to provide corrected information, the response was changed to or left as "missing". Hospitals submitting surveys with large numbers of outliers or missing data were asked to resubmit. Data from those that were unable to resubmit were not included.

Differences Between Responding and Nonresponding Hospitals

An important issue to the PI's and Advisory Committee was to identify differences between survey responders and non-responders. A preliminary review infers that the 175 survey Responders (compared to 356 Nonresponders) were more likely to be Level I Trauma Centers than II and were located either in the East or Midwest. There appears to be no difference in response if the trauma centers were in states with organized trauma care systems.

characteristics were compared for the hospitals that responded to the preparedness survey and those that did not: region, trauma designation level, membership in a state trauma system. No significant response difference existed from hospitals being members in a system (approx. 73%). However, for the responding group, significantly more hospitals (49%) were Level I Trauma Centers compared to nonresponders (40%). Regional differences in numbers of surveys returned respectively from the responder versus nonresponder groups were also significant in the south (11% vs. 16%) and west (22% vs. 17%) regions, but not for east (approx. 36%) or midwest (approx. 31%).

Of 531 recognized Level I and II Trauma Centers, useable results were received from 175 centers. A review of characteristics of "responders versus non-responders was conducted. Three types of

Trauma Center Preparedness - How Do They Differ?

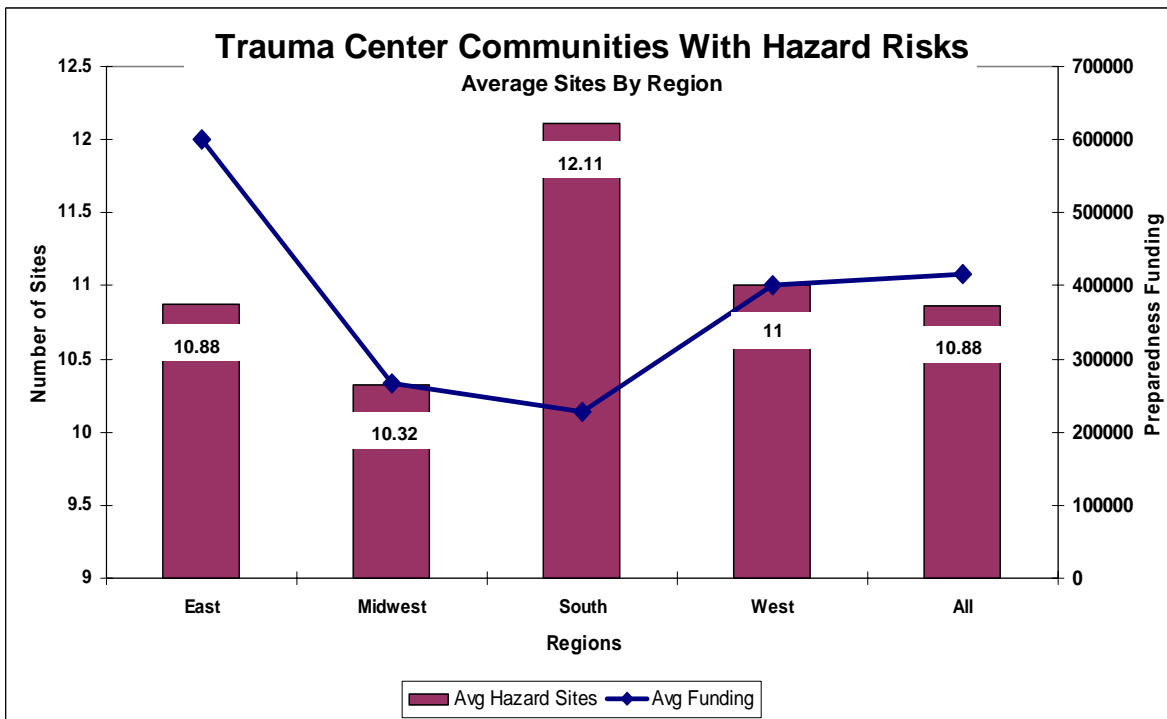
Among the 175 (33%) responders to the questionnaire, there were some significant differences. First, more Level I Trauma Centers, 67% compared to 35%, were in the top 20% while more Level II Trauma Centers were in the bottom 20%.

western areas of the U.S. reported greater funding for bioterrorism preparedness from all sources despite the southern region reporting more risks and hazards. Decontamination capacity differed little by region but was slightly higher for three (3) reported hazards in the Trauma Center's catchment area than for more than three risks/hazards. Despite reporting more funding from all sources, the eastern and western Trauma Centers scored slightly lower in their self-reported preparedness than those in the south and midwest.

A strong correlation was found where hospitals that had endured an actual event of mass scale had higher preparedness scores on average. It is unknown if their strong score was a result of having been exposed to a mass casualty situation or of being in a region where such an event was likely. I.e., did those surviving an event promote better preparedness planning or was it present before the event?

There appears to be no significant difference in preparedness scores if the state has an organized trauma care system. Further review suggested Trauma Centers score better if they are located in those few states where trauma system design has encompassed bioterrorism preparedness such as North Carolina and Florida. This needs further study.

Differences in preparedness funding were examined by source as well as by regions of the country. Trauma Centers in the eastern and



Preparedness Study and Validation Visit Structure

Both the inventory tool and the validation visit report were structured around basic components of “all-hazards” preparedness: Communication and Interagency Cooperation; Emergency Management Planning; Resource Availability and Response; Vulnerability, Threats and Security; Clinical Capacity, Management and Sustainability.

Questions related to Communication focused on interoperability and ready access to contacts in key agencies and organizations, including Non-Governmental Organizations (NGO’s) such as the Red Cross. Particular attention was given to the ability to communicate during power outages and when the Emergency Operations Command center is overwhelmed. Furthermore, hospitals were asked if they were familiar with and capable of communicating with local military bases (if present), Homeland Security or other Intelligence agencies when required.

Emergency Management Planning was a key focus of the inventory to identify how rapidly and efficiently the Trauma Center can mobilize staff to respond to an event and if integration with external agencies is well planned and tested. Both intra- and inter-hospital communications were queried as well as whether the hospital participated in a regional or state system that monitors resource capacity and readiness. The ability to divert patients that do not require Trauma or specialty care, or those who can be transferred, was reviewed. The validation visit will examine overflow areas and address plans for triaging patients who arrive without prehospital notice who could overwhelm the Trauma Center and consume resources needed for those with critical injuries.

Amassing the resources needed to accept a surge of patients, perform decontamination in large numbers, and avoid contamination of critical patient areas and staff, are a significant focus of the inventory and validation process. The volume and location of stored supplies, pharmaceuticals, and materials needed for clinical care are addressed for casualties as well as for

those patients who would commonly seek care for chronic illnesses during a mass casualty event or natural disaster. During the visit, supplies, food, water and other material resources will be evaluated as to their resupply chain to determine if the Trauma Center has a reliable source or will be competing for resources.

Vulnerabilities and hospital security were queried both within the facility and its perimeter. The hospital’s ability to lock down its entrances to avoid inadvertent contamination as well as to protect staff and property as a secondary terrorist target were reviewed. These were correlated to the numbers of hazards reported in the initial survey. During the validation visit, there will be a focus on the preparedness for hazards specific to the region and the interagency plans to assist the Trauma Center should there be an event involving those specific hazards.

Clinical resources that are mobilized in the event of a mass casualty incident as well as their sustainability were reviewed. There is some evidence that this aspect of preparedness may not be realistic as a few Trauma Centers reported being capable of operating for greater than 30 days without outside assistance. It is clear from recent disasters of mass scale that interruptions in the supply chain can make even a week without resupply a dangerous, if not hellish, experience.

Overall, the range of preparedness self-reported by our 175 Level I and II Trauma Centers offers some reassurance. Those proximal to toxic hazards are clearly more likely to be in communication with the military in their region. There were 10 Trauma Centers that scored highly in five (5) disparate scoring systems and the five chosen as Highly Prepared for the purpose of this study, scored in the highest ranges in every scoring model. That these Trauma Centers are willing to undergo a Validation Visit of some complexity upon relatively short notice and share their practices and experiences with the rest of those in the nation and their governmental agencies bodes well for Trauma Center preparedness for the next natural or human-caused event of mass scale.

Regional Funding Varies Widely: The response to NFTC’s inventory shows Trauma Center funding varied significantly by region and by source such as local public health departments. The largest amounts from any agency or source were from HRSA and those amounts were mostly concentrated in the eastern regions of the nation, despite the south and west reporting the most natural threats and terrorist targets such as military assets and hazardous materials storage facilities.

Regional Funding Amounts and Sources by Governmental Agency				
Gov’t Preparedness Funding Source	REGION			
	East (n=62)	Midwest (n=52)	South (n=18)	West (n=35)
Local Public Health	\$ 527,000	\$ 671,000	\$ -	\$ -
Regional Public Health	\$ 10,000	\$ -	\$ -	\$ -
State Public Health	\$ 2,832,647	\$ 282,470	\$ 40,000	\$ 281,318
Regional EMS	\$ -	\$ 17,000	\$ 51,129	\$ -
State EMS	\$ 25,000	\$ -	\$ 100,000	\$ 538,908
Federal Agency CDC	\$ 858,816	\$ 168,070	\$ 4,000	\$ 101,179
Federal Agency HRSA	\$ 22,767,491	\$ 9,415,368	\$ 3,142,832	\$ 10,244,039
Federal Agency Homeland Security	\$ 2,478,367	\$ 1,471,817	\$ 400,000	\$ 1,774,249
Federal Agency	\$ 5,529,488	\$ 1,764,669	\$ 20,000	\$ 24,000
Other	\$ 2,562,455	\$ 50,000	\$ 338,000	\$ 1,088,200
Total*	\$ 37,876,264	\$ 13,840,394	\$ 4,095,961	\$ 14,051,893
Average	\$ 601,211	\$ 266,161	\$ 227,553	\$ 401,483
Hospital Spending On Preparedness	\$ 20,566,303	\$ 17,977,445	\$ 4,033,069	\$ 11,278,850

* East region column does not sum to Total as one hospital did not break down total funding by source.

NFTC PI's and CDC Grant Advisory Committee - Leaders in Trauma and Disaster Management/Preparedness

A critical strength of the NFTC approach to the "Study of the Impact of a Terrorist Attack (in the Community) on Individual Trauma Centers" is the qualifications of the Principal and Co-Investigators, as well as those of the distinguished Advisory Committee who are considered experts in trauma as well as disaster response and preparedness.



Principal Investigator

Donald Trunkey, MD, FACS, Professor of Surgery at Oregon Health Sciences University, has extensive experience both in trauma research and disaster management. He was a founding member of the Department of Homeland Security. His prominent background includes Chairmanships of numerous professional organizations and committees including serving as President of the American Association for the Surgery of Trauma; Chair of ACS' Verification Subcommittee, Education Committee, National Committee on Trauma; Chair of the American Burn Association Committee for Organization and Delivery of Burn Care; State of California Disaster Advisory Committee for the Office of EMS, and many other organizations. He has published 149 journal articles, 193 textbook chapters, and 20 books on the subject of trauma and surgery. His research interests include management of shock, trauma care systems and delivery of trauma care. During his lengthy medical career, he served in the US Army, with the rank of Colonel, and was on active duty during Operation Desert Shield/Storm. His awards, honors and public service activities are too numerous to cover in this brief biography. What is evident is Dr. Trunkey's compelling interest in the connection between trauma centers and systems and the preparation and response to events of mass scale from all hazards.

Co-Investigators

Mark Ackermann, Sr., BA, MS, is Chief Administrative Officer and System-wide Director of Preparedness for the Saint Vincent Catholic Medical Centers of New York. Mr. Ackermann's leadership and planning skills were pivotal to the rapid and efficient response of his Level I Trauma Center in both World Trade Center terrorist attacks. Since 9/11/2001 he has served on numerous committees and task forces related to Homeland Security, including the DHHS Bioterrorism Task Force and the NY State Governor's Council on Bioterrorism among others, and serves as Chair of the NFTC Terror Response Committee.

Ron Anderson, RPH, MD, FACP, President and CEO of Parkland Memorial Hospital and Professor of Internal Medicine at UT Southwestern Medical Center, is a practicing physician who simultaneously leads a major trauma center. Among Dr. Anderson's numerous accomplishments and honors is his role in co-founding of the National Association of Public Hospitals and Health Systems (NAPH). He is deeply interested in disaster preparedness, and acted rapidly to create a sanctuary for victims of Hurricane Katrina within hours of the event. He continually keeps Parkland's trauma mission front and center in its constellation of centers of excellence. He holds numerous offices and has received the highest of honors for his public service and commitment to public health and healthcare leadership.

David Jaffe, BBA, MPA, is CEO of one of the nation's most recognized and celebrated trauma centers, Harborview in Seattle, WA. Mr. Jaffe's accomplishments include service on more than 11 Boards of Directors of non-profits, both State and national. His interests in both trauma and EMS are exemplary as are his skills in advocating solutions to trauma care funding and system development.

The Grant Advisory Committee members are

Peter Angood, MD, FACS

VP, Chief Patient Safety Officer
Joint Commission on Accreditation of Healthcare Organizations (JCAHO)

Erik Auf der Heide MD, MPH, FACEP

Agency for Toxic Substances & Disease Registry
U.S. Dept. Health & Human Services

Linda Bourque PhD

Professor, Community Health Sciences
UCLA School of Public Health

Susan Briggs MD, MPH, FACS

Trauma Surgeon
Massachusetts General Hospital

Jeffrey Hammond MD, MPH

Trauma Director
Robert Wood Johnson Medical Center

Jorie Klein RN, MA

Dir. Trauma & Disaster Programs
Parkland Hospital & Health System

Vivian Lane RN, MSN

Bioterrorism Consultant
Hartford Hospital

Chris Martin RN, MSN

Admin. Dir., Emergency Services
Harborview Medical Center

Norman E. McSwain Jr. MD, FACS

Professor of Surgery, Tulane University
Trauma Director, Charity Hospital

Avery Nathens MD, PhD, MPH, FACS

Assoc. Professor, University of Washington
Dir. of SCC & Acute Care Sect. of Harborview IP Center

Jim Pettyjohn BA, BSN, RN

State Trauma System Manager
Health Systems Emergency Preparedness Coordinator, NM Dept. of Health

Stuart Reynolds MD, FACS

Medical Director
Montana Hospital Bioterrorism Preparedness Program

Sharon Rhyne MHA MBA

Hospital & Trauma Specialist, North Carolina Office of EMS
Dept. of Health & Human Services

Mark Smith MD, FACS

Dir. Emergency Medicine, Washington Center Hospital
Professor Emergency Medicine, Georgetown University

Be sure to update your contact information with the NFTC to ensure receipt of all communications and materials.

NATIONAL FOUNDATION FOR TRAUMA CARE

650 E. Montana Ave., Suite A, Las Cruces, NM 88001

(505) 525-9511 phone (505) 647-9600 fax

www.traumafoundation.org