US Trauma Center Preparedness for a Terrorist Attack in the Community

“A Study of the Impact of a Terrorist Attack on Individual Trauma Centers”

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Terrorist Attacks, Disasters Inevitable

- World wide, blast explosive attacks are the most common terrorist threat
  - 500 bombings and over 4,600 deaths from 2001-2003 (US Department of State, 2004)

- Hospitals and trauma centers are First Receivers of patients
  - Up to 85% receive no prehospital care or decontamination (Briggs, 2005)

- US Trauma Centers are *not* prepared
  - Average preparedness score is 74% (C-)
  - Scores range from 31% (F) to 97% (A)
  - Only 7 trauma centers (4%) scored > 89% (A)
Trauma Rarely Optimally Prepared

- Study project July 2005-September 2006
  - NFTC established a “blue ribbon” Advisory Committee
- 175 of 531 (33%) Level I and II centers responded
  - Average score C-
- Scores ranged from 31% (F) to 97% (A) using simple scoring system
- Level I trauma centers better prepared overall
Mismatch with Study Scores

- Hospitals **self-rate** higher than survey scores:
  - “F” (Poor) ratings were 2X as prevalent
  - “D” (Fair) ratings were 4X more prevalent
  - “C” and “B” (Moderate and Significant) scores were close: 3 to 2% lower than perceived by hospital
  - “A” (Well Prepared) hospital self-ratings 6.6% higher than derived data
Percent of Hospitals In Preparedness Performance Categories From Self Reported Rating and Survey Scoring

Self Reported Performance

- Significant, 40%
- Well, 20%
- Moderate, 35%
- Fair, 5%
- Poor, 1%

41% performed only moderately to poorly.

Scored Performance

- Well, 3%
- Significant, 37%
- Moderate, 38%
- Fair, 20%
- Poor, 2%

60% scored only moderately to poorly.
Well Prepared in Some Areas

- Hazard Vulnerability Assessment done (97%) and Emergency Management Planning (100%)
- Communication with staff and outside agencies
  - Depends on sustained power and fuel re-supply
  - Less able to talk to nearby Military base (65%)
- Designated Emergency Operations Center (EOC)
  - 91% have plans for alternate site
Percent of Hospitals with Guidelines of Care for Different Hazards
Need to Improve in Other Areas

- Can sustain peak operations > 3 days (58%)
- 1st hour surge capacity = 59 staffed beds
- Overall surge capacity = 99 staffed beds

Consider:
- Madrid bombing resulted in 1400 casualties
- London attack injured 900
- Lack exclusive re-supply contracts
  - Medical equipment and supplies (32%)
  - Ventilators (61%)
Percent of Trauma Centers Able to Sustain Days of Self-contained Food/Water and Peak Capacity

![Chart showing the percentage of trauma centers able to sustain different days of self-contained food/water and their peak capacity. The x-axis represents the number of days (1 or Less, 2, 3, 4, 5, 6, 7, 8 to 14, Over 2 Weeks) and the y-axis represents the number of hospitals. The chart includes bars for Food & Water and Peak Capacity.]
More Areas for Improvement

- Decontamination capacity and equipment
  - Average 54 patients per hour
  
  Consider:
  - Up to 85% of injured bypass EMS and scene decontamination (Briggs, 2003)
  - Contamination can shut down trauma center

- Need more Class B suits and training
  - 2006 OSHA minimum for “unknown exposures”
  - Data average = 11 suits, median = 0
  - Initial and ongoing training needs not addressed
Trauma Center Decontamination Capacity
(Average Patients per Hour By Number of Toxic Hazards)
Plans for Mutual Aid and Security

- Need more Mutual Aid Agreements (MAA) or Memorandums of Understanding (MOU)
  - With General hospitals 65%
  - With other Trauma Centers 55%
- > 97% have security plans
  - 26% lack “Perceived Threat” code
  - 34% have not practiced their security plans
Family Care Plans Sustain Staffing

- Plans relieve workers of family concerns
  - 62% offer child care for key staff
- 43% have communication plans with family members
- 31% have family reunification sites
- 25% give authority to pick up children
- 23% permit child’s medical care
Percent of Hospital with Staff Sustainability Plans

- Staggered Staffing For 3-4 Days
- Child Care For Companions Of Injured And Children Of Essential Staff
- Staff Family Care Plan: Authority To Pick Up Children
- Staff Family Care Plan: Location Of Family Members
- Staff Family Care Plan: Communication Plans
- Staff Family Care Plan: Medical Authority
- Staff Family Care Plan: Family Reunification Sites
Funds Inequitable to Hazards

- Top 20% funded better than bottom 20%
- East better funded with average of 11 hazards
  - 925% higher funding than South
    - average >12 hazards
  - 270% higher funding than Midwest and West
    - average (same) 11 hazards
  - South has lowest funding and highest # of regional hazards
- Midwest region totals -$4M spent in preparedness while East reports +$16M surplus
Trauma Center Communities With Hazard Risk Sites and Preparedness Funding By Region

![Diagram showing average number of hazards and preparedness funding by region. Each region—East, Midwest, South, West, and All—has a corresponding bar and line graph. The bars represent the average number of hazard sites, while the lines represent the average funding. The South region has the highest average number of hazard sites (12), followed by the All region (11), West (11), Midwest (10), and East (11). The preparedness funding ranges from 0 to 700,000, with the South region having the highest funding, followed by the All region.](image-url)
Plan for Special Populations

- 31% need to plan for children
- 34% don’t address psychiatric patients
- 43% lack attention to pregnant women
- 46% miss immunocompromised patients
- 47% overlook elderly
- 52% overlook issues of obese persons
Improve Post-Disaster Funding

- Fiscal losses are unacceptably high
  - St. Vincent Catholic Med. Centers, Manhattan, -$3M
  - Harris County, Houston, TX, -$5.7M
  - Parkland Memorial Hospital, Dallas, TX, -$1M

- FEMA payments are difficult to obtain
  - Pays to set up and stand down medical resources
  - Limits staff compensation to overtime only
  - Covers only official “State of Emergency”
  - Excludes out-of-state prescriptions or aftercare
Comparison of Average Preparedness Funding by Region for Hospitals Scoring in Bottom 20% vs. Top 20%
Assure Security and Protect Staff

- Assure perimeter control and safety
  - Place barricades rapidly as part of plan
  - Confine, redirect convergers and medical voyeurs
  - Prepare for snipers and terrorists
    - Hospital as a secondary target
    - “Deputize” non-clinical staff for security
- Legislate “Good Samaritan” immunity for clinical staff (& Mutual Aid providers) working under State of Emergency
Enhance and Streamline Funding

- Fund trauma center preparedness equal to their role as First Receivers and communication hubs in catastrophes
- Streamline Federal and state reimbursement for injury care
  - Facilitate reimbursement for out-of-state patients
  - Provide for long-term aftercare for injured and chronically ill displaced persons
  - Propose a new UB-92 code for preparedness and disaster care
High Scorers Share Practices

- **Highly Prepared Programs**
  - Barnes-Jewish Hospital, St. Louis, MO
  - Children’s Hospital & Health Center, San Diego, CA
  - Miami Valley Hospital, Dayton, OH
  - New Hanover Regional Medical Center, Wilmington, NC
  - Suburban Hospital Healthcare System, Bethesda, MD

- **Best Preparedness Practice centers**
  - Henry Ford Hospital, Detroit, MI
  - Sacred Heart Medical Center, Spokane, WA
  - Trinity Mother Frances Health System, Tyler, TX
  - Wake Med Health & Hospitals, Raleigh, NC
  - William Beaumont Hospital, Royal Oak, MI
Create a Prepared Trauma Network

- Develop a validation process
  - Encompass “All-Hazards”
  - Disseminate NFTC developed tools
  - Engage national professional organizations
  - Encourage adoption by trauma centers as added credentials

- Link trauma centers through Mutual Aid Agreements/Memorandums of Understanding
  - Provide for cross-credentialing and staff identification
  - Assure re-supply and financial responsibility
  - Protect but convey patient information and confidentiality
  - Increase overall capacity and adopt resource status technology
SUMMARY

- Trauma center preparedness is inadequate to the number of hazards and threats.
- Few fiscal incentives are driving optimal preparedness.
  - Risks stem from aiding other trauma centers, including potential malpractice or criminal prosecution.
- Regional and interstate trauma center linkages exist informally but are disconnected from governmental and NCO aid.
  - Trauma center resources may be underutilized while public funds spent on more costly and less timely aid.
SUMMARY

- Trauma centers are already linked through regional, state, interstate and international relationships, including military.
- Skill sets and practices are standardized through ATLS and other national courses.
- Integration into a national response network will be cost effective and assure trauma care is available for everyday events.
- Coordination from a local command and control structure with available resources is critical to success.