

Disaster Response: A Nurse's Perspective

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Medical Disaster

When the destructive effects of natural or manmade forces overwhelm one's ability to properly allocate existing resources



Differentiation of Casualty Events

- Multiple Patient Incident
 - Less than 10 casualties
 - Easily managed by local resources



Differentiation of Casualty Events

- Multiple Casualty Event
 - Usually around 100 or fewer casualties
 - Able to manage the number of casualties with local resources which may be stressed, but not overwhelmed



Differentiation of Casualty Events

- Mass Casualty Event
 - The numbers, severity, and diversity of injuries significantly overwhelm the local medical resources.



Levels of Disasters



- Level I
 - Readily managed using local resources
- Level II
 - Require help from adjacent jurisdictions
- Level III
 - Require use of state and/or federal resources

Types of Disasters

- Disasters are either:
 - Natural
 - Manmade
- Examples of natural:
 - Hurricanes
 - Floods
 - Tornadoes
- Examples of manmade
 - Terrorism
 - Nuclear Meltdowns
 - Chemical Explosions
 - Building Collapse



Hyatt Regency Skywalks

July 17, 1981



114 total fatalities (111 DRT)
200+ triaged injuries
Uncounted "walking wounded"
Around 2,500 estimated in lobby



- ACS Guidelines
 - Hospital Disaster Plan
 - Part of Community Planning
 - Participate in Disaster Response Exercises



Trauma Centers in Disaster Management

"...the resources and infrastructure of trauma centers and trauma systems are especially suited for logistical demands and rapid decision making required by large casualty burdens following both natural and manmade disasters."

ACS Ad Hoc Committee on Disaster and Mass Casualty Management, June 2003

Trauma Centers in Disaster Management

- Paradigm Change
 - Care is prioritized to optimize the use of critical resources.
 - Triage is the first step in the process.
 - Do the greatest good for the greatest number



Disaster Epidemiology

Patterns of Hospital Use

- 50-80% of acute casualties arrive at medical facilities within 90 minutes following an event
- Other hospitals outside the area usually receive few or no casualties
- Less-injured leave the scene under their own power
- Closest hospitals are overwhelmed

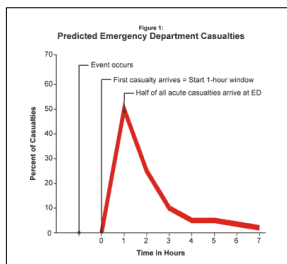
Disaster Epidemiology

Patterns of Hospital Use (cont.)

- Arrival is uncoordinated
- Normal medical needs continue
- It takes 3-6 hours for casualties to be treated in the ED, whether they are admitted or released
- Incident is over before State or Federal resources are available



Mass Casualties Predictor



Predicting Triage Severity

- 1/3 of acute casualties are critical
 - Black (dead/expectant)
 - Red (immediate care-admitted)
 - Yellow (delayed care-admitted)
- 2/3 of acute casualties are treated and released from the ED
 - Yellow (delayed care-released)
 - Green (minor)

Injuries and Mass Trauma Events

- Severe Injuries
 - Fractures
 - Burns
 - Lacerations
 - Crush Injuries
- Most Common Injuries
 - Eye Injuries
 - Sprains and Strains
 - Minor Wounds
 - Eardrum Damage



The Health Care Facility Disaster Management

Hospital Resources

- Outpatient Surgery
- GI Lab
- Educators
- Trauma Services
- Risk Management
- Continuum of Care/Utilization Review
- Clinical Nurse Specialists/Advance Practice Nurses



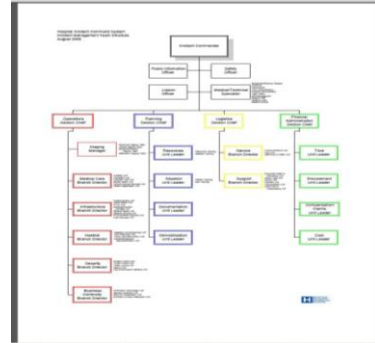
The Health Care Facility Disaster Management



Non-Hospital Resources

- Clinics
- FQHC's
- LTAC's
- Rehab
- Urgent Care Centers
- Doctor's Offices

HOSPITAL INCIDENT COMMAND SYSTEM Organizational Chart



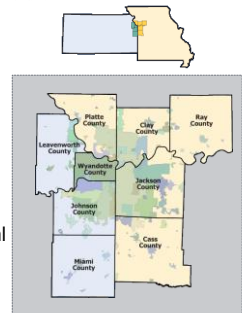
The Community in Disaster Management

- Pre-hospital Resources
 - Local Fire/EMS
 - Volunteer EMS/Fire
- Community Resources
 - Emergency Management (city or county)
 - City/County Government
 - Law Enforcement
 - CERT Teams



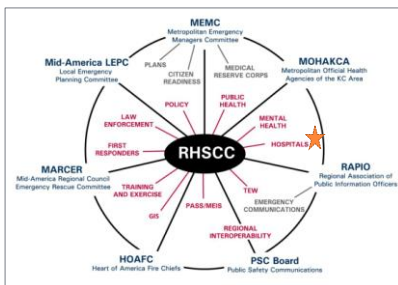
Mid-America Regional Council

- Association of local governments and Metropolitan Planning Organization for the Greater Kansas City area
- Advances regional progress through leadership, planning and action
- Governed by a board of 33 local elected officials
- Serving 1.9 million people in nine counties and 120 cities



Regional Homeland Security Coordinating Committee

- Hospital Subcommittee



Planning in the Kansas City Region

- Hospital MOU
 - Memorandum of understanding between all Kansas City area hospitals on both sides of the state line
- Hospital Trailers/Equipment
- Burn Caches to Trauma Centers
- Representation on other committees



RN Deployment to St. Louis



- 35 Nurses from the Kansas City area hospitals went to St. Louis under MOU during St. Louis power outages in July 2006

Enhanced Capabilities

- Baseline equipment upgrades
- Seven bomb and arson units
- Four special tactical units
- Eight enhanced haz-mat teams
- Special trailers
- Six technical-rescue teams



Information and Communication



- Interoperability – RAMBIS (Regional Area Multi-Band Integrated System)
- Regional Badging System
- Emergency Operations Center Enhancements – Web-EOC
- EMSsystem
- Geographic Information Systems (GIS)
- Asset Protection Response System (APRS)
- KC Regional Terrorism Early Warning Interagency Analysis Center

Case Studies of Disasters

Alfred P. Murrah Federal Building
Oklahoma City, OK April 19, 1995



Murrah Building

• Background

○ Timeline of a Terrorist

- Sept 13, 1994 – Plot begins
- Sept 30, 1994 – Ammonium nitrate bought
- Oct 18, 1994 – More ammonium nitrate
- Oct 21, 1994 – Nitromethane racing fuel
- Dec 16, 1994 – Recon of Murrah building
- April 14, 1995 – Getaway car purchased
- April 17, 1995 – Ryder truck rented
- April 19, 1995 – 2nd anniversary of Waco



Murrah Building

• The Truck Bomb

- The Ryder truck contained about 5,000 lbs of ammonium nitrate, nitromethane, and diesel fuel



Murrah Building

- April 19, 1995 at 9:02 a.m. an explosion ripped through the Murrah Federal Building
- 324 buildings were damaged or destroyed
- Glass shattered in 258 nearby buildings
- 86 cars were burned or destroyed



Murrah Building



- 168 people were killed, 19 of them children, hundreds were injured
- Broken glass accounted for 5% of the casualties
- One of the fatalities was a nurse from the hospital who rushed to the scene and was hit by falling debris

Murrah Building

- Most of the injuries occurred from secondary and tertiary mechanisms
- The fatalities were all found in the rubble of the collapsed building
- Hospitals were completely overwhelmed



Murrah Building

- Rescue efforts were hindered by the pile of unstable rubble
- Rescue efforts called off after 16 days with 2 bodies not recovered



Murrah Building

- Lessons Learned
 - There had been warnings that a white supremacist group was planning an attack on government buildings
 - No measures had been taken to protect federal buildings
 - Hospitals were not prepared to care for all of the injured and did not know how to document the care they gave to get federal reimbursement

Greensburg, KS May 4, 2007



Greensburg, KS



- May 4, 2007
 - The National Weather Service issued a tornado warning at 9:17 p.m.
 - NWS stated the tornado was large and extremely dangerous
 - The tornado was moving toward Greensburg at 25 mph

Greensburg, KS



- The EF5 tornado struck Greensburg at 9:45 p.m.
- 95% of the town was completely destroyed, including the hospital
- The Emergency Manager for Kiowa Co. was out of town at a conference

Greensburg, KS

- 11 people were killed
- 100 injured
- No utilities, no water, no medical care
- Nearest hospital was 30 miles away in Pratt
- Town was evacuated
- The Bar H Tavern was turned into a temporary morgue



Greensburg, KS



- Kiowa County Memorial Hospital had 30 people trapped inside
- 163 animals were found alive and wandering the streets

Greensburg, KS



- KS National Guard set up their mobile hospital (EMEDS) on May 14, 2007
- Stayed in place as the primary medical facility until new hospital opened

Greensburg Today

- Kiowa County Memorial Hospital opened March 12, 2010
- 15-bed Critical Access hospital
- Built as a “Green” hospital



Lessons Learned

- PRACTICE your evacuation plans
- Take tornado warnings seriously
- People will congregate anywhere there is light



Shake and Quake Exercise

- Examples of:
 - NDMS (National Disaster Medical System)
 - Acute Care Center
 - Regional Resources
 - Trailers
 - WebEOC
 - Patient Tracking

Disaster Paradigm

- D = Detection
- I = Incident Command
- S = Safety and Security
- A = Assess Hazards
- S = Support
- T = Triage and Treatment
- E = Evacuation
- R = Recovery



Research in Mass Casualty Events

- Important information for allocating health and emergency resources
- Preventing injuries in future events



Research Goals

- Assess magnitude of injury attributable to or exacerbated by the event
- Provide data for developing strategies
- Provide data for assessing public health support
- Determine what health and social services were lacking

Examples of Research Studies

- Environmental, personal, and behavioral risk factors associated with event-related fatal and non-fatal injuries
- Epidemiologic study of environmental and behavioral factors associated with injury
- Rapid assessment of fatal and nonfatal injuries among immediate victims
- Rapid assessment of the psychological impact of mass trauma

Personal Preparedness

- Ready in 3 Family Safety Guide
 - Create a Plan
 - Prepare a kit for home, car and work
 - Listen for Information



1. Create a Plan

- The entire family should know and understand the plan.
- Talk about how you will reach each other in different emergencies.
- Think about making an out-of-town family member or friend a contact.



1. Create a Plan

- Plan for two situations, staying home or leaving.
- Prepare a shelter at home.
- Know where to go if you have to leave.



2. Prepare a Kit

- Prepare a kit for home, car, and work.
- Your kit should include enough water and canned or dried food for three days, and
- Battery-powered radio
- Flashlight
- Extra batteries for radio and flashlight
- Prescription medicine
- First-aid kit



2. Prepare a Kit



- Car supplies should include a gallon of water, and
- Several cans of food and a manual can opener
- Sleeping bag or extra blankets
- Extra money
- First-aid supplies

3. Listen for Information

- Listen for information about what to do and where to go during an actual emergency.
- It is important to stay calm in an emergency.



3. Listen for Information



- Get as much information as possible from whatever resources are available including a battery-powered radio.
- City, county, and state officials have developed emergency plans. During an emergency, it is important to follow their instructions and advice.

Summary

Web Sites:
www.ready.gov
www.cdc.gov
www.fema.gov
www.jointcommission.org
www.ahrq.gov



Questions?



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