

# Disaster Management and the Surgeon: A Practical Look

---

Jeffrey Hammond MD, MPH

Chief, Trauma/Surgical Critical Care

Robert Wood Johnson Medical School

New Brunswick, NJ

hammond@umdnj.edu



# Disaster: Definition

---

- Mass Casualty Incident vs. Disaster
  - Disaster: overwhelm resources of institution or community
- Paradigm shift: Philosophy of care no longer focuses on the individual
- It is too late to plan a response once a disaster has occurred
  - Best you can hope for: controlled chaos



# Disaster: Axioms

---

- ❑ We live in an age of terrorism
- ❑ The likelihood of a disaster is now more of a probability
- ❑ While a “conventional” disaster is still most likely, every disaster now has a WMD potential
- ❑ Healthcare providers are busy and have little time for “optional” training
- ❑ Healthcare providers and institutions are recalcitrant to spend money for disaster medical training



# Why Surgeons Should Be Involved

---

- Q: This isn't a surgical problem, is it?
  - Ans: It is now.
- Q: Why should I care?
  - Ans: Who do you want to make decisions that will affect you and your community?
- Q: What will trauma surgeons bring to the table?



# “All-Hazards”:

## Questions You Need to Address

---

- What are the *credible* threats that my facility must respond to?
- Who needs to be involved in this response, both inside and outside my facility?
- What response services must my facility provide?
- What is the “big picture” response system, and where does my facility fit in?
- How do we “practice?”
- How do we assess my facility’s state of readiness?
- Who is in charge, and of what?



# What Surgeons Will Contribute

---

- Disaster experience
- Aggressiveness
- Daring
- Flexibility
- Courage
- Decisiveness
- Attention to detail
- Attitude



# What Are the Issues?

---

- Detection and Surveillance
- Access and Triage
- Training and Education
  - Public and Professional
- Communication
- Facility Issues
  - Security
  - Supply and Resupply
- Personal Protection
- Post-Disaster
  - CISM



# Triage

---

- Goal: identify minority of critically injured casualties requiring immediate treatment
- 2° goal: prevent overwhelming primary receiving hospitals with minor injuries (overtriage)
- Frykberg and Tepas, 1988 J.Trauma
  - Review of 14 bombings
  - Inverse relationship between triage discrimination and critical mortality

# Triage: Definitions

## NATO War Surgery Handbook - 1988

Category	Definition	Examples
Expectant	Death expected even if unlimited resources	GSW head Profound shock Large burns + injuries
Urgent	Will result in death unless urgently Rx'd	Tension PTX Cardiac tamponade
Immediate	Life threatening but can survive if Rx'd	Open Fx's Vascular inj + ischemia
Delayed	Injuries will tolerate a reasonable delay	Abdom inj (-) hemorrhage Vascular inj w/o ischemia
Minimal/ Ambulatory	Minor, superficial wounds; can be treated w/o GA	Burns < 15% TBSA Superficial lacerations



# Triage: Methodology

---

- Goal: triage accuracy
- 1° triage: Institute near scene of disaster
- Reinforce initial sorting at a second designated triage area
- Triage areas should be separated from the hospital providing definitive care



# Casualty Collection Site

---

- ❑ Safe from hazards
- ❑ Upwind and Uphill from contaminated environment
- ❑ Protected from climatic conditions
- ❑ Easy visibility for victims
- ❑ Convenient exit routes for evacuation



# START

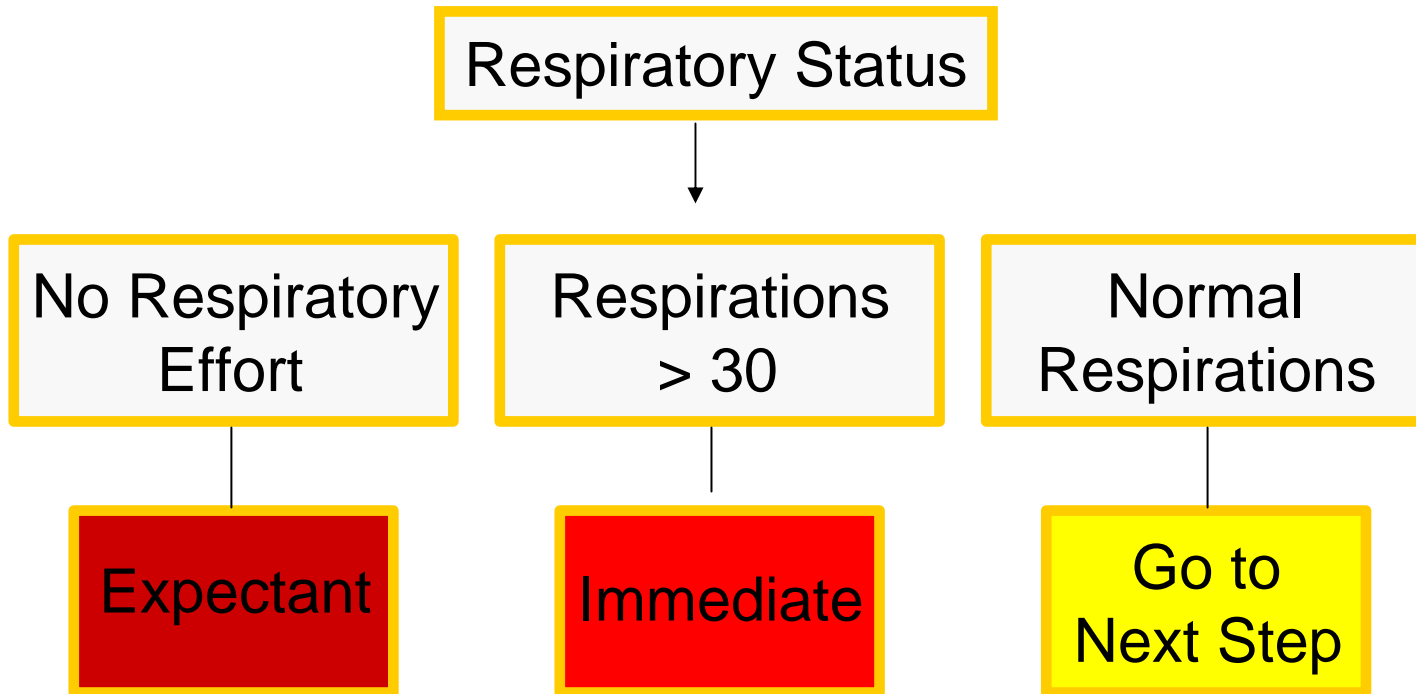
## (Simple Triage and Rapid Transport)

---

- ❑ Taught to EMS for Prehospital Mass Casualty Incidents (MCI)
- ❑ Looks at 3 Parameters:
  - Neurological
  - Respiratory
  - Perfusion
- ❑ Advantage: Triage numbers of Casualties quickly
- ❑ Disadvantages: Not reliable

# START - Respiratory Status

---





# Triage: The Tag System

---

- **Priority 1** (Red)
  - Patients are salvageable and critically ill
- **Priority 2** (Yellow)
  - Live 24 hours w/o care
- **Priority 3** (Green)
  - Live w/o care
- **Priority 4** (Black)
  - “Expectant” or Deceased



# Hospital Incident Command System

---

- Hospital Goal During a Disaster:
  - Protect the Facility
  - React to Community Needs
  - Continue to Provide Services
  - Safety
- HICS: Provide comprehensive resource management strategy
  - Evolved from California fire experience of 1970's
- Can be viewed as a day-to-day tool



# HICS: Command Structure

---

- Command: Sets Objectives
  - Chain of Command, Public Information
- Planning: Develops Action Plan
  - Workforce, Training and Drills, Info Sys
- Operations: Conducts Tactical Operations
  - Triage, Detection, PH Infrastructure, Mental Health
- Logistics: Provides Support
  - Decon/HAZMAT and PPE, Communications, Facility Issues, Inventory
- Financial: Provides Accounting and Procurement
  - Procurement Unit, Funding, Accounting



# HICS - Operations

---

- Develops from bottom up
- Goal: keep organization simple and streamlined
  - avoid overextending span of control
- Established Divisions
  - Divide the incident geographically
  - By convention, labeled by letters of alphabet
    - Within a building, designated by floor numbers
- Groups describe functional areas of operation
  - Are not assigned to any specific division



# HICS - Logistics

---

- Plan for How Long?
- HCW Access
- Credentialing
- Lockout and Lockdown
- Food/Water
- Quarantine
  - ?? Offsite facility for contaminated patients
- Bed reporting
- Surge Capacity
- Mortuary Issues



# Freelancing → Don't

---

- ❑ Acting Independently outside of an Organizational Structure.
- ❑ Mass Conversion
- ❑ Strips Resources from present Organizations
- ❑ Medical and Liability Issues
- ❑ Line of Duty Death
  - Oklahoma Bombing - Rebecca Anderson - RN
  - WTC - EMS personnel freelanced – Killed/Injured when towers collapsed. Difficulty in finding out who was lost.
- ❑ Stay Where You are Until Called Upon to Help



# Disaster Drills Prior to 9/11

---

- Viewed as a JCAHO mandated formality
- Going through the motions
- Generally single institution, often single department
- Announced; and cancelled if inconvenient
- Key personnel exempted
  - Surgeons rarely represented on Disaster Committee



# Disaster Drills Today

---

- Multidepartmental, multi-institutional
  - JCAHO requires one exercise/year
- Include Hazmat component
- Limited table top exercise
- Inconvenience accepted
- Unannounced
- Taken seriously
- JCAHO and AHA provide templates
  - Future: COT guidelines



# Creating a Disaster Plan

---

- Planning
  - How many plans are operational? Who is in control?
  - What is the general knowledge? Are they practiced enough?
  - Designated areas for minimally injured and volunteers
- Communication
  - Can field triage communicate with command post?
  - Inter-hospital? With family members? With media?
  - Designated media area? How is information released?
- Security
  - Does security change with the nature of the disaster?
  - How are personnel identified?



# Stress

---

- General Stress
  - A normal condition of life
- Cumulative Stress
  - Unresolved, becomes negative
- Critical Incident Stress
  - Normal response to an abnormal event, but may be painful
- Post-traumatic Stress Disorder
  - Caused by unresolved Critical Incident Stress



# Factors Contributing to Worker Stress in Disasters

---

- ❑ Long work hours
- ❑ Time pressures
- ❑ Multiple or conflicting priorities
- ❑ Exposure to traumatic or grotesque events
- ❑ Unclear duration of event or deployment
- ❑ Fear of death, injury, illness
- ❑ Role conflict
- ❑ Reaction/response of those being helped



# CISM

---

- A comprehensive, systematic, peer-based and multi-tactic approach to managing traumatic stress
- Tactics:
  - Debriefing, Defusing, Demobilizations
  - One-on-one support
  - Pre-event preparation and post-event follow-up



# Ten Golden Rules for Urban Mass Casualty Management

---

- 1) **Try to follow day-to-day routines**
  - therefore, incorporate MCI terms and procedures into daily routines
- 2) **Do what will save more lives in the long term**
  - balance immediate needs with probability of survival
- 3) **Quickly establish a centralized *easy-to-identify* command post and incident commander**
- 4) **Communicate succinctly in a Clear Zone**
  - free from surrounding noise; allows a strong radio or phone signal



# 10 Golden Rules – cont'd

---


- **5) Remember that fewer knowledgeable rescuers do better than many volunteers**
  - **corollary to #1**
- **6) Emphasize centralized controlled evacuation**
  - **BLS: first aid and transport**
  - **ALS: secondary triage and accompany critical patients**
- **7) Triage and evacuate all patients to the usual receiving facilities**
  - **send to trauma centers even if numbers are large**



# Golden Rules – cont'd

---

- **8) Log events chronologically and centralize the media**
  - Use the media to notify public and dispel unnecessary fears; make requests of public
- **9) Always prepare to provide post-incident care for rescuers and victims**
  - both immediate and subsequent debriefings
- **10) Train and test all potential rescuers**
- **[11] from JSH: Analyze the events and learn from others' experience and mistakes**



# What Have I Learned from Miami 1980 and WTC 2001?

---

- Flexibility
- Communication is the second casualty
- Secure your lines of re-supply
  - Be ready for a prolonged event
- Prepare your disaster plan for the contingency that you are *part* of the disaster
  - Be self-contained
  - Protect your people
- Rumor control
  - ? Use in-house TV channel
- Address staff psychological needs (CISM)



# What We Are Doing in NJ

---

- Current Situation: Home Rule
  - 550 municipalities, 550 BoH
  - 115 Local Health Units
- OEM
  - State police focus
- Domestic Preparedness TF
- MEDPREP
  - Medical Emergency and Disaster Prevention and Response Expert Panel



# MEDPREP

---

- Hospital/Medical Focus
- Original N =21
  - Trauma, Emergency Medicine, Infectious Disease, Prehospital, State Police, Nursing
  - Membership expanded to include local health officials
- Advisory to the Sec'y of Health and Governor
  - Report: Issues, Capabilities, Targets, Action Plan
- All-Hazards
- Incident Command approach
- Evolved into the NJ Health Emergency Preparedness and Response Network



# NJ and WMD: DoHSS Action Plan

---

- ❑ Create Office of Public Health Preparedness
- ❑ Re-establish BT Advisory Committee
- ❑ Initiate Regional Planning and Coordination
- ❑ More Effective 24/7 Notification
- ❑ Plan for National Pharma Stockpile Deployment
  - Develop plan for med-surg supplies
- ❑ Increase Statewide Surveillance
- ❑ Build Lab Surge Capacity
- ❑ Enhance Health Alert Network
  - LINCIS, Internet, the “Communicator”



# MEDPREP Trauma/Burns Subcommittee

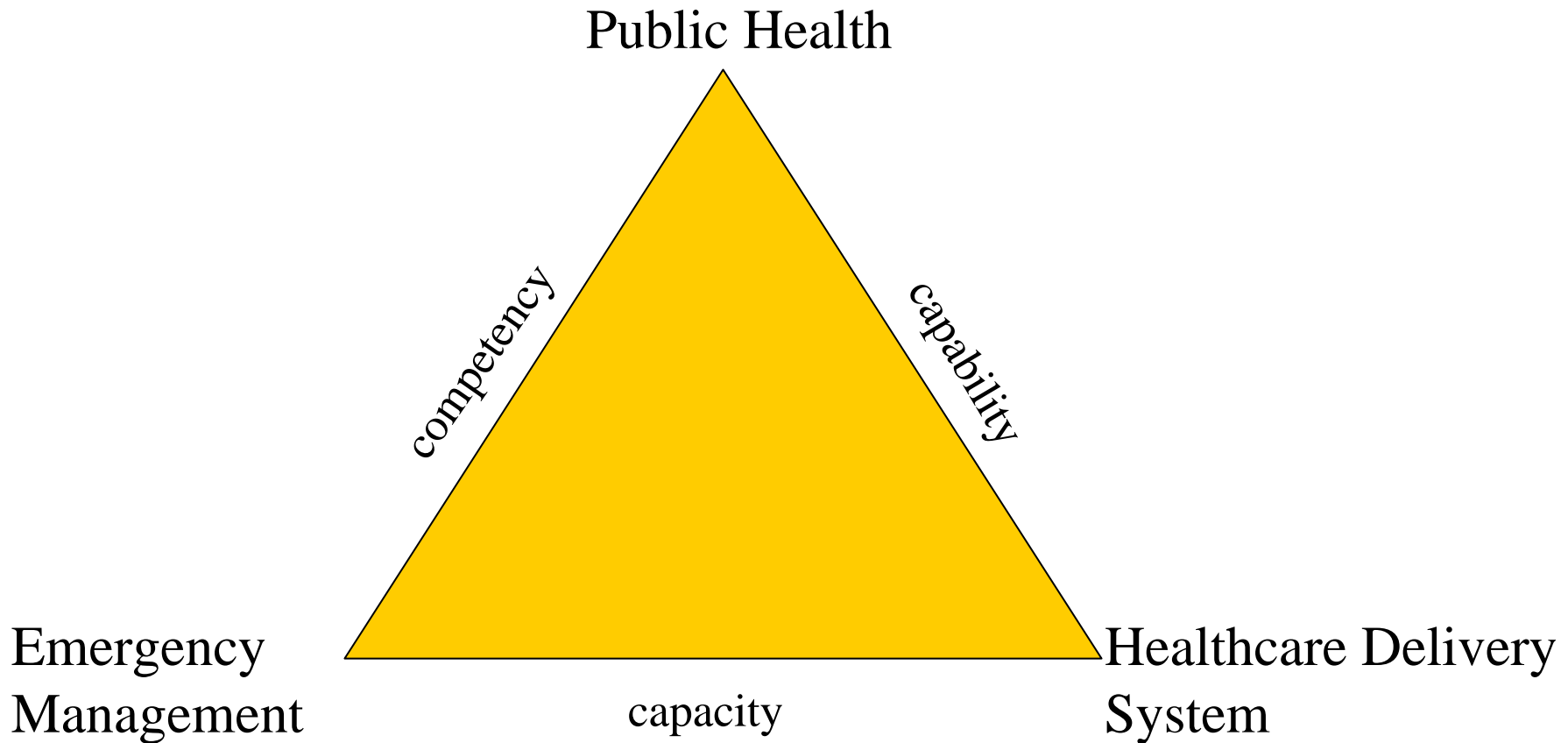
---

## □ Charges/Priorities:

- Recommendations for State stockpile
  - Include recommendations for blood banking system
- State burn response plan
- Develop policy for 800mHz radio communication
- Recommendations for credentialing guidelines
  - Corollary to personnel and vehicle identification
- Revision of “Trauma Triage & Transport” course

# Health Emergency Preparedness and Response Triad

Theme: Prepare....Respond....Recover....Mitigate





# NJ Plan: Regionalization

---

- Division of state into geographic sub-areas
- Backbone: Medical Coordination Centers (MCC)
  - Means for intra- and inter-regional coordination
  - Mirrors trauma center distribution and needs based designation
- Current projects with surgeon involvement
  - EMS training with advanced mannequins
  - Strategic state stockpile
  - State burn treatment development
  - Credentialing issues
  - Expansion of 880mHz radio network



# What Can Surgeons Do?

---

Review and revise your disaster plan

- Redundant communications
- Advise on inventory
- NBC component
- CISM
- Assist your county OEM
- Advise your municipal LEPC
- Join a DMAT, USAR, or CISM team
- Learn lessons from past disasters



# Key Websites

- CDC/BT

- [www.bt.cdc.gov](http://www.bt.cdc.gov)

- Civilian Biodefense

- [www.hopkins-biodefense.org](http://www.hopkins-biodefense.org)

- HEICS

- [www.cahwnet.gov](http://www.cahwnet.gov)

- NDMS/DMAT

- [www.ndms.dhhs.gov](http://www.ndms.dhhs.gov)



# Core References

---

- Franz D, et al. Clinical Recognition and Management of Patients Exposed to Biological Warfare Agents. JAMA 1997; 278: 399-411
- Frykberg E, Tepas JJ. Terrorist Bombings: Lessons Learned from Belfast to Beirut. Ann Surg 1988; 208: 569-76
- Inglesby T, et al. A Plague on your City: Observations from TOPOFF. CID 2001; 32: 436-45
- Jacobs L, et al. The Role of a Trauma Center in Disaster Management. J. Trauma 1983; 23:697-701
- Klein J, Weigelt J. Disaster Management: Lessons Learned. SCNA 1991; 71:257-66
- Slater M, Trunkey DD. Terrorism in America: An Evolving Threat. Arch Surg 1997; 132:1059-661



# Attitude

---

- “If you know neither the enemy nor yourself, you will succumb in every battle.”
  - Sun Tzu, axiom 18 (490 BC)
  
- “Failure to Plan is Planning to Fail.”
  - Art Cooper MD (ACS COT 4/02)