“By failing to prepare, you are preparing to fail”

Benjamin Franklin
OBJECTIVES

• Discuss the components of disaster planning
• Review the levels of planning
• Discuss the emergency response and organization needed for mass casualty incidents (MCI)
• Learn about START and jumpSTART triage algorithms
• Understand basic hospital response in MCI
“You got to be careful if you don’t know where you’re going because you might not get there.”

Yogi Berra
PLANNING IS A PROCESS

Defines the aims and purposes, and the strategies and actions necessary to achieve the aims by using available resources and filling gaps.
PLANNING PHASES & OBJECTIVES

- PREVENTION
- MITIGATION
- RESPONSE
- RECOVERY
- EVENT
BASIC COMPONENTS OF EMERGENCY PLANNING

• Risk assessment and vulnerability analysis

• Assessment of existing response system, operative capacity

• Identify partners

• Resource availability
RISK ASSESSMENT

- Contamination
- Secondary hazards
- Damage to infrastructure
- Breakdown in security
- Breakdown in essential services
- Loss of property
- Loss of income

- Injury (mental and physical)
- Disease (mental and physical)
- Dead and missing
- Displaced populations
VULNERABILITIES

- Access to health care
- Access to safe water
- Access to sanitation
- Access to adequate housing
- Access to regular source of income
- Under 5 nutrition rate
- Under 5 mortality rate
- Female literacy rates
- Measles vaccination coverage rate
KEY PLANNING CONCEPTS

- **CLEAR**
  - Simple wording
  - No room for misinterpretation

- **CONCISE**
  - Able to be read quickly

- **COMPLETE**
  - Include all necessary components

- **KNOWN**
  - Distribute the plan
EMERGENCY PLAN:
SPECIFIC COMPONENTS

1. Incident Command
2. Information Management
3. Risk Assessment
4. Objectives and goals
5. Organization
6. Roles and responsibilities
7. Communication and coordination
8. Resources
9. Training
EMERGENCY PLAN: RISK ASSESSMENT

- Threat analysis
  - Natural
  - Man-made
- Risks and vulnerability analysis
- Operative capacity
  - Human resources
  - Infrastructure and equipment
  - Critical supplies
EMERGENCY PLAN:
OBJECTIVES AND GOALS

• Feasibility
• Priorities
• Coverage
• Outcome prediction
EMERGENCY PLAN:
ORGANIZATION

• Emergency Operations Committee (EOC)
• Plan activation
• Hierarchy of authority
• Roles and responsibilities
• Multi-sector participation
• Communication coordination
• Media relations
• Community Involvement
EMERGENCY PLAN: ROLE ASSIGNMENTS

- Who does what?
- When?
- How?
- With what?
EMERGENCY PLAN: TRAINING
EMERGENCY PLAN: TRAINING

- Utilize and test knowledge of basic concepts
- Identify gaps
- Target group
- Simulation
- Repetition
STOCK PILING OF ESSENTIAL RESOURCES
CHALLENGES

• State of social behavior
• Unknown hazards or vulnerabilities
• Response capability
• Lack of resources
• Damage and disruption
• Communication failures
PLANNING LEVELS

NON-GOVERNMENTAL
- FAMILY
- SCHOOLS
- SHELTERS
- CLINICS
- HOSPITALS

GOVERNMENT
- LOCAL
- REGIONAL
- NATIONAL
THE PEDIATRICIAN’S ROLE

• Preparedness and risk reduction
• Disaster response participant
• Specialist input
• Awareness of local emergency plans
• Advocacy
Mass Casualty Management & Triage
MASS CASUALTY MANAGEMENT SYSTEM

- Adequate response to mass casualty incidents (MCI)
- Preparation, response, communication
- Pre-established procedures for:
  - Resource mobilization
  - Field activities
  - Coordinated reception at hospitals
- Based on specific training of responders
- Avoid system and function overlapping
MASS CASUALTY MANAGEMENT SYSTEM

Multi-sector rescue chain
INCIDENT COMMAND SYSTEM

- List of needed positions with specific tasks
- Create tasks Check Lists for each person/position
- Each person may need to undertake more than one task
TASK ASSIGNMENTS

• Command Post – on-site
• Search and Rescue – on-site
• Triage – on-site
• Treatment Areas – on-site Advanced Medical Post
• Transportation / Evacuation
• Hospital – Triage and Treatment Areas
SCENE ASSESSMENT

• Is the scene safe and can a Command Post be established?
• Do we have Personal Protective Equipment (PPE)?
• Are there available supplies for an Advanced Medical Post?
• How many patients need to be evacuated?
• What other resources are necessary?
• Has the Emergency Medical Service been notified?
ORGANIZATION AT THE DISASTER SITE

Access
- Strictly restricted
- Restricted / reserved

Patient flow

Transport resource flow
("conveyor belt" management)

FIELD MASS CASUALTY MANAGEMENT
RESCUE AND SECURITY ON-SCENE

• Most physicians are not trained for on-scene rescue... Let the experts do it!

• Risks for the rescuer
  – Structural instability/ collapse
  – Fire, carbon monoxide, cyanide
  – Dirty, chemical (neurotoxic) bombs, radiation
  – Blood exposure

• IMPORTANT: Time to advanced medical care
  – “Golden hour” vs. “The 10 platinum minutes”
TRIAGE AND STABILIZATION

IMPACT ZONE

Search Rescue Triage

COMMAND POST

Triage
First aid; Stabilization Evacuation

Traffic control
Regulation of evacuation

Emergency Department

HOSPITAL DISASTER RESPONSE PLAN

Triage

HOSPITAL ORGANIZATION

MULTI-SECTOR RESCUE CHAIN
TRIAGE IN MCI: GOALS

Establish Treatment Priority

Determine Evacuation Priority

On-going Reassessment
TRIAGE

• Needs resources
• Necessity of categorization to ensure the greatest good to the greatest number
• Ensures most efficient use of limited resources
• Quick and limited assessment of victims
• Determine priority of treatment for survivable injuries
• Primary triage concerned only with clinical condition regardless of age
TRIAGE

- Emotional and psychological stress can be confused with medical disease
- START (Simple Triage and Rapid Treatment): focus on objective signs in patients > 8 yrs
- Psychologically affected casualties triaged as “minimal”
- Unique issues with children
## START TRIAGE

**Classification categories**

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>&quot;minimal&quot;: &quot;Walking wounded.&quot; Victims who can relocate on their own (able to relocate when indicated)</td>
</tr>
<tr>
<td>Yellow</td>
<td>&quot;delayed&quot;: Injured who are not able to relocate on their own</td>
</tr>
<tr>
<td>Red</td>
<td>&quot;immediate&quot;: Injured who can be helped by immediate transportation</td>
</tr>
<tr>
<td>Black</td>
<td>&quot;expectant&quot;: Cannot be helped</td>
</tr>
</tbody>
</table>
START Triage

Respiratory Status

- No respiratory efforts: Expectant
- Abnormal breathing: Immediate
- Normal breathing: Move to next step

<10 RR >30
Airway support
Perfusion Status

- No radial pulse: Immediate
- Capillary Refill >2 secs: Immediate
- Radial pulse present*: Move to next step

*Or Capillary Refill < 2 secs
START Triage

Neurologic Status

- Unconscious
  - Immediate
- Altered level of consciousness
  - Immediate
- Obeys commands
  - Delayed
## Triage Categories

<table>
<thead>
<tr>
<th>Patient Status</th>
<th>START</th>
<th>Military / International</th>
<th>Color Code</th>
<th>Priority</th>
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</thead>
<tbody>
<tr>
<td>Immediate</td>
<td>Critical / Immediate</td>
<td>Immediate</td>
<td>Red</td>
<td>1</td>
</tr>
<tr>
<td>Delayed</td>
<td>Urgent / Delayed</td>
<td>Delayed</td>
<td>Yellow</td>
<td>2</td>
</tr>
<tr>
<td>Hold</td>
<td>Minor</td>
<td>Minimal</td>
<td>Green</td>
<td>3</td>
</tr>
<tr>
<td>Deceased</td>
<td>Dead / Dying</td>
<td>Expectant</td>
<td>Black</td>
<td>4</td>
</tr>
<tr>
<td>Contaminated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
POTENTIAL PROBLEMS WITH CHILDREN

• Apnea: A primary respiratory problem?
• Perfusion maintained: The child may be saved
• Respiratory rate cutoff (30)
• Capillary refill: Not useful in cold environments
• Response to orders: Not useful in young children
TRIAGE IN CHILDREN

- Pediatric triage system JumpSTART®
- Similar to START algorithm

DIFFERENCES

- Decisions are based on physiological criteria with normal pediatric ranges
- It identifies the apneic child that still has some degree of perfusion, before an irreversible cardiac injury secondary to anoxia develops
JumpSTART©

Categories

**Minimal:** Able to walk

**Delayed:** Respiratory rate (RR): 15-45 *and* alert or responsive to voice.

**Immediate:** RR <15 or >45 after airway positioning and/or 5 rescue ventilations *and* pulse present

**Deceased:** No breathing or pulse after airway repositioning and rescue ventilation
MODIFICATION: CHILDREN WHO DO NOT WALK

All non-ambulatory, young children should be assessed first by the medical staff and triaged at least initially as YELLOW.
TRIAGE IN MCI

- **On-site Triage**
  - Classify victims on-site, in the collecting point
  - If personnel do not have experience in MCI, use only two categories:
    - Acute (Yellow & Red) & Not Acute (Green & Black)

- **On-site Evacuation Triage**
  - Classifies victims in terms of their priority for transportation to a hospital that can receive them

- **Medical Triage**
  - Determines the required level of care
ROLES OF THE ADVANCED MEDICAL POST

3 T’s Principle

Triage  Treat  Transport
TRANSPORT

IMPACT ZONE

COMMAND POST

Triage
First aid; Stabilization
Evacuation

Traffic control
Regulation of evacuation

Emergency Department

HOSPITAL ORGANIZATION

HOSPITAL DISASTER RESPONSE PLAN

Search
Rescue
Triage

Multi-sector rescue chain

PRE-HOSPITAL ORGANIZATION
TRANSPORT OF VICTIMS

• Control number and destination to avoid overwhelming hospitals

• Medical officer in Incident Command or AMP:
  – Receives data about patient status
  – Contacts hospitals
  – Confirms there is space available in the hospital
  – Notifies transport
TRANSPORT OF VICTIMS

• Evacuation Post:
  – Assess the patient’s stability
  – Evaluates the security of the equipment
  – Records patient’s data

• Use the “Noria” principle

• Hospital:
  – Constant monitoring of space availability
PATIENT TRANSPORT

- **Immediate:** Transported from the scene by ambulance or helicopter to a pediatric trauma center, if available

- **Delayed:** By ambulance to other emergency facility

- **Minimal:** Limited to on-site management, can be transferred to a more distant health care center, if necessary

- **Deceased:** To the morgue (hospital)
HOSPITAL ORGANIZATION

IMPACT ZONE

COMMAND POST

Search Rescue Triage

Triage First aid; Stabilization Evacuation

Traffic control Regulation of evacuation

Triage

Emergency Department

HOSPITAL DISASTER RESPONSE PLAN

PRE-HOSPITAL ORGANIZATION

HOSPITAL ORGANIZATION

Multi-sector rescue chain
PATIENT’S RECEPTION AT THE HOSPITAL

• Prepare areas
  – Reception and triage
  – Decontamination
  – Treatment

• Determine capacity and surge capacity in:
  – Emergency Department
  – Trauma rooms
  – Surgery
  – Critical care unit

• Assess available resources
PREPARING FOR PATIENT INFLUX

• Assume that health care will rely upon local resources

• Activate the hospital emergency plan
  – Notification and activation of chain command (HICS)
  – Safety
  – Prepare areas and increase availability
  – Prepare decontamination and isolation procedures, if needed
  – Assess available resources (personnel, blood, drugs, communications) and activate backups
  – Agreements for referral to other hospitals
  – Information center for press, families

• Frequent drills
HOSPITAL TRIAGE IN AN MCI

- Use a triage system that parallels normal routine
- Practice regularly
- Triage is a continuous process
- Re-triage all victims transported by EMS
- Set up triage area near the ED entrance
  - Shielded and secure
  - Readily accessible
MEDICAL TRIAGE

- **Red**: Require immediate stabilization, may need emergent operative intervention and ICU
- **Yellow**: Care can be delayed, but close monitoring required, observation or admission
- **Green**: Delayed care or no treatment or referral
- **Black**: Deceased
HAZMAT CONSIDERATIONS

1. Presence of Contamination
   - YES
   - Initiate START Primary Decon

2. Initiate START Primary Decon
   - Symptomatic Tx PRN

3. Strip/Bag Evidence

4. Initiate Secondary Decon

5. Secondary Triage

6. Move to Tx & Transport
SUMMARY

• Disaster preparedness through planning at all levels

• Accomplish the greatest good for the greatest number

• Triage is a simplified guide to help sort casualties and prioritize treatment

• Triage is a continuous process

• Special considerations for children

• Documentation!!
Thank You