PEDIATRIC DISASTER TRIAGE
Preparedness, Practice and Ethics of Caring for Children in Disasters

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Disclosures

- No financial conflicts of interest
Objectives

- Scope of the Problem
- Define Terms
- Review Triage Schemes
- Discuss ethical and legal aspects of disaster triage
School Field Trip Gone Bad
Tornados

Tornados

Catastrophic Collapse
Catastrophic Collapse
Austere Environment
Disaster Risks in New England

- Flood
- Thunderstorm
- Hurricane
- Blizzard
- Tornado
- Earthquake
- Power Outage
- Man Made
- Acts of Violence/Terror
Rhode Island Population

- 0-12 Years = 15%
- 13-17 Years = 7%

Children Sustain Disproportionate Injuries

- Lack of understanding
- Lack of physical resilience to physical injury
- Higher respiratory rate
- More prone to hypothermia & dehydration
- Different distribution of injury
- Higher dose/weight exposure
Trimodal Death Distribution

ATLS Student Manual, (2008), 8th Ed., American College of Surgeons Committee on Trauma, Chicago, IL
Triage

French = “to sort”
Triage Goal

- Separate Out
  - Minimally Injured
  - Non-Survivable Injuries
  - Obviously Dead
- Focus Efforts On
  - Seriously Injured with a Chance of Survival with Available Resources
When would we be sorting patients?

- Routine Trauma
- Multiple Casualty Incident
- Mass Casualty Event
- Disaster
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Adequate Resources
When would we be sorting patients?

- Routine Trauma
- Multiple Casualty Incident
- Mass Casualty Event
- Disaster

- Adequate Resources
- Resources Stretched
When would we be sorting patients?
When would we be sorting patients?

- Routine Trauma
- Multiple Casualty Incident
- Mass Casualty Event
- Disaster

- Adequate Resources
- Resources Stretched
- Resources Overwhelmed
- Response System Overwhelmed or Disrupted
Triage is a dynamic process and is usually done more than once.
“Continuous Integrated Triage”

Primary Triage

Secondary Triage

Tertiary Triage
Recent Disaster Drill at RIH/HCH

- Primary Triage: Scene Triage
  - Priority for transport

- Secondary Triage: ER entrance
  - Priority for management

- Tertiary Triage: Trauma Room & OR
  - Priority for surgery
Assessment of physiology

Goal:

- Maximize survival
- Recognize unstable physiology
- Recognize unsurvivable physiology
Secondary Disaster Triage

- Reassessment of physiology
- Initial assessment of physical injuries

**Goal:**
- best match patients' needs to resources
Tertiary Disaster Triage

- Sophisticated assessment and treatment

- Goal:
  - Optimize *individual* outcomes:
August 6, 2010
I-44 Near St Louis

2 School buses, 1 pickup truck, 1 semi truck

Casualties:
• 2 dead
• 50 injured
  • 42 children
  • 8 adults
January 12, 2010

Port-au-Prince, Haiti

Magnitude 7.0 earthquake

Estimates:

• 217,000 – 230,000 dead
• 300,000 injured
• 1,000,000 homeless
• 250,000 residences & 30,000 commercial buildings damaged or destroyed

How To Do Triage
NATO METTAG
Triage Categories

- **Green:**

  Minor injuries that can wait for longer periods of time for treatment
Triage Categories

- **Black:**

  Dead or still with life signs but injuries are incompatible with survival under disaster conditions
Life-threatening but treatable injuries requiring rapid medical attention
Potentially serious injuries, but stable enough to wait a short while for medical treatment
Triage Tools
START
Simple Triage And Rapid Treatment

1. Identify “Walking Wounded”
2. Presence of Breathing
3. Respiratory Rate
4. Perfusion
5. Mental Status
START Triage

RESPIRATIONS

- NO
  - Position Airway
    - NO
      - Non-salvageable
    - YES
      - Immediate

- YES
  - Under 30/min
    - Immediate
  - Over 30/min
    - Cap refill > 2 sec
      - Control Bleeding
        - Immediate
      - Failure to follow simple commands
        - Immediate
    - Cap refill < 2 sec
      - MENTAL STATUS
        - Can follow simple commands
          - Delayed
Step 1 – Walking Wounded
Step 2 – Breathing
Step 2 – Not Breathing With Assistance
Step 2 – Breathing
Step 2 – Breathing With Assistance
Step 3 – Respiratory Rate
Step 3 – Respiratory Rate >30
Step 4 – Perfusion
Step 4 – Perfusion Poor
(Cap Refill > 2 seconds)
Step 5 – Mental Status
Step 5 – Mental Status Poor (Not Following Commands)
Step 5 – Mental Status
Step 5 – Mental Status Good (Following Commands)
JumpSTART Pediatric MCI Triage

- The physiologic parameters used in START are not suitable for all ages of children
  - Walking
  - Respiratory death vs cardiac death
  - Respiratory rates
  - Mental status assessment
START Triage

RESPIRATIONS

NO

Position Airway

NO

Non-salvageable

YES

Over 30/min

Immediate

YES

Under 30/min

PERFUSION

Cap refill > 2 sec

Immediate

Cap refill < 2 sec.

Control Bleeding

Immediate

MENTAL STATUS

Failure to follow simple commands

Immediate

Can follow simple commands

JumpSTART Pediatric MCI Triage*

Able to walk?

YES

MINOR

Secondary Triage*

NO

Breathing?

NO

Position upper airway

APNEIC

BREATHING

IMMEDIATE

NO

Deceased

YES

Pulsole pulse?

NO

Deceased

YES

5 rescue breaths

APNEIC

DECEASED

IMMEDIATE

Respiratory Rate

<15 OR >45

IMMEDIATE

10-45

P pulmopulse?

NO

IMMEDIATE

YES

P (inappropriate), posturing or "C" posture

DECEASED

AVPU

K, Y or P (appropriate)

DELAYED

©Lee Rabin MD, 2002

*Evaluate patients first in secondary triage using the online JS algorithm.
• Can walk
  • well-compensated physiology, regardless of injuries
Secondary Triage

- Patients carried to **Green Area**
  - have not proven their physiologic
  - should be assessed first among all those in the Green Area
- Position the upper airway
  - If they breathe
- If they do not breathe, check pulse.
  - If no pulse
- Have palpable pulse
  - give 5 mouth-to-barrier breaths to open the lower airways.
  - Still Apneic, tag
- Breathing, tag.
DO NOT CONTINUE TO VENTILATE THE PATIENT.

RESUME TRIAGE DUTIES.
Assess the respiratory rate of the spontaneously breathing child.
If respiratory rate is <15 or >45, tag
- No palpable pulse
- Inappropriate responsive to pain, posturing, or unresponsive, tag as

- Alert, responds to Voice or appropriately responds to Pain, tag as
JumpSTART: Age

The ages of “tweens and teens” can be hard to determine so the current recommendation is:

*If a victim appears to be a child, use JumpSTART.*

*If a victim appears to be a young adult, use START.*
Combined START/JumpSTART Triage Algorithm

Able to walk?
- YES → MINOR → SECONDARY TRIAGE*
- NO
  - Breathing?
    - NO → POSITION UPPER AIRWAY
      - APNEIC → ADULT
    - YES → APNEIC
      - NO PULSE → DECEASED
    - + PULSE → 5 RESCUE BREATHS
      - APNEIC → DECEASED
      - BREATHING → IMMEDIATE
  - Respiratory Rate
    - >30 ADULT
    - <15 OR ≥45 PEDI
    - <30 ADULT
      - 15-45 PEDI
  - Perfusion
    - CR > 2 sec (ADULT)
    - NO PALPABLE PULSE (PEDI)
    - YES → IMMEDIATE
  - Mental status
    - DOESN'T OBEY COMMANDS (ADULT)
    - OBEYS COMMANDS (ADULT)
    - "A", "V" OR "P" (APPROPRIATE) (PEDIATRIC)
    - "X", "V" OR "P" (INAPPROPRIATE) POSTURING OR "U" (PEDIATRIC)

* Using the JS algorithm, evaluate first all children who did not walk under their own power.
Ethics & Legal Considerations
Triage is Not Easy

Not everyone can be saved
Triage is Not Easy

You are not killing someone you tag as Black
Ethics

- Normal Practice of Medicine:
  - Obligation to the individual patient
  - Advocate for that patient
"Utilitarian Rule":
- The greatest good of the greater number
Ethics

- Standard of care:
  - “minimally acceptable care”
Good Samaritan Laws

- Legal immunity when acting in the benefit of the victim to the best of your knowledge
- Only in true emergencies
- Generally not in the hospital setting...even in a disaster
- Some form is active in all states
Legal Coverage

- Hospital Disaster Plan
  - Required by licensing and accrediting agencies
  - Defines emergency privileging and scope of practice
  - Generally provides legal protection for practitioners when activated
Legal Coverage

- State or Federally Declared Emergencies
  - The government body *may* assume legal responsibility for actions of practitioners
  - May be retroactive
  - Not commonly done
Children will likely be casualties in most foreseeable disasters
Proper preparation and practice of triage techniques will provide the best outcome for the greatest number of victims
Ethics and law recognize people will do their best in duress, but it is important to know the disaster policies in force in your own organization and jurisdiction
Resources/References

- ATLS Student Manual, 8th Ed., American College of Surgeons Committee on Trauma, Chicago, IL
- United State Marine Corps. Medical Field Training Battalion, Fort LeJune. 2008
- Incident Command System http://www.fema.gov/incident-command-system
- http://www.facs.org/trauma/updateshaiti.html
- Photos were some of my own and my wife’s and some from my traveling companions’. 