Disasters, Mass Casualty Incidents And YOU

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Well……

Maybe we should opt for 2020 V 2.0

OR

Hibernate / socially distance/iso late until 2021, 2022?)
Focus on

- You
- Family
- Community
- Planning and Preparation
A Disaster is...

- An emergency that disrupts normal community function...
- Impact of a natural or man-made hazard that negatively affects society or environment
- A natural or manmade event that suddenly or significantly disrupts the environment of care (JCAHO)

“…Needs exceed resources…”
A Mass Casualty Incident (MCI) is...

- Any incident in which emergency medical services resources, such as personnel and equipment, are overwhelmed by the number and severity of casualties.

- Any large number of casualties produced in a relatively short period of time, usually as the result of a single incident such as an aircraft accident, hurricane, flood, earthquake, or armed attack that exceeds local logistical support capabilities.
Sources of Disaster / MCI

- Manmade
  - Industrial
  - Structural
  - Transportation
  - Terrorism
  - War

- Natural
  - Floods
  - Hurricanes
  - Earthquakes
  - Wildfires
  - Pandemics

Chemical / Biological / Radiological / Explosive
Terrorism

- Defined as any activity involving a criminally unlawful act that is dangerous to human life or potentially destructive of critical infrastructure or key resources, and that appears intended to intimidate or coerce a civilian population, to influence government policy by intimidation or coercion, or to affect the conduct of a government by mass destruction, assassination, or kidnapping.
Targeted Violence

- Refers to any incident of violence that implicates homeland security and/or U.S. Department of Homeland Security (DHS) activities, and in which a known or knowable attacker selects a particular target prior to the violent attack.

- Unlike terrorism, targeted violence includes attacks otherwise lacking a clearly discernible political, ideological, or religious motivation, but that are of such severity and magnitude as to suggest an intent to inflict a degree of mass injury, destruction, or death commensurate with known terrorist tactics.
Mass Shooting

- FBI defines a "mass murder" as "four or more murdered during an event with no "cooling-off period" between the murders."
- Based on this, it is generally agreed that a mass shooting is whenever four or more people are shot (injured or killed), not including the shooter(s).
Civilian Public Mass Shooting

- 58% of victims had GSW’s to the head and chest
- 20% had extremity wounds
- Only 7% had potentially survivable wounds
- No deaths from exsanguination from an extremity

The Profile of Wounding in Civilian Mass Shooting Fatalities”, Smith, ER, et.al., J Trauma and Acute Care Surgery 2016 JUL;81(1):86-92
“Take Home” Reality

Three categories of casualties in a MCI

- Those who will do well regardless of what we do for them
- Those who are going to die regardless of what we do for them
- Those that we can save by prompt, appropriate tactical and medical actions but who will die if we do nothing for them
“Early” Deaths From Trauma

- Too much bleeding
- Too little breathing

Lack of O’s to the toes
Physician Response

- What can you do?
- What should you do?
- What do you want to do?
- Depends on:
  - Where you are?
  - What you are?
  - What do you have?
“IN PREPARING FOR BATTLE I HAVE ALWAYS FOUND THAT PLANS ARE USELESS, BUT PLANNING IS INDISPENSABLE.”

Dwight D. Eisenhower
Initial Response & Actions

- Protect yourself!!
  - Natural instincts may NOT be the best response
  - “Go to ground and look around”
- Assess the situation
- Think of the basics
Active Shooter

- Assess Situation
- Run
  - Find safe exit
  - Find secure place
- Hide
  - Out of sight
  - Barricade area
- Fight
  - Last chance.....?!?!
"The fate of the wounded rest in the hands of the one that applies the first dressing."

Nicholas Senn, M.D.
49th President
American Medical Association
1897
Life Saving Interventions (LSI)

- Rapid Primary Exam
- Hemostasis
  - Tourniquets
  - Hemostatic dressings
- Obtain / Maintain airway
- Chest Decompression for tension pneumothorax
- Obtain Vascular Access
LSI - Hemostasis

- Hemostatic Dressings (Combat gauze, HemCon, Chitogauze, X-Stat)
- Tourniquets
- Tranexamic Acid within 3 hours of wounding*
Tourniquets

- Love / Hate relationship or “Love to hate”
- Used for thousands of years
- Literature and anecdotal commentaries from WW I and WW II mostly negative
- Considered the hemostatic technique of “last resort”
- Resurgence and validation by military in current conflict (Kragh et.al.)
Tourniquet “Success” based on:

- Effective training of the user
- Type of wound / hemorrhage that is present
- Transport time to resuscitative surgery or trauma center
- Overall environment:
  - Battlefield and military MCI
  - Civilian MCI, complex disaster & remote location
  - EMS response system
JETT

CROC

SAM SLING
“Stop The Bleed”

- Federal government, nation wide program
- 90 Minute course sponsored by ACS
- Think of it as CPR for bleeding
- Tourniquets and hemostatic dressings in public and private locations
  - Comparable to AED locations
Tranexamic Acid (TXA)

- **Indication:** If a casualty is anticipated to need significant blood transfusion.
- **Administer:** 1 gram of TXA in 100 cc Normal Saline or Lactated Ringers as soon as possible but NOT later than 3 hours after injury.
- **Begin second infusion of 1 gm TXA after Hextend or other fluid treatment.**
LSI - Airway

Combitube

I-Gel
Cricothyroidotomy

- Numerous different techniques and “tools”
  - General goal is to insert 6-7 mm internal diameter cuffed catheter
- Traditional surgical technique
- Cric Key
- Bougie aided...
Interosseous Infusion (IO)

- Peripheral IV is often difficult to obtain
  - Requires significant initial and periodic training
  - Difficult to find veins in a patient with low blood pressure, blood volume or cardiac arrest
- IV Requires an average of 3-12 minutes
- IV failure rate ranges between 10-40%
WHY IO?

- Takes less than 60 seconds to place and initiate treatment
- Flow rates comparable to IV
- First time IO success rates of 80% -100%
  - Studies vary significantly on success rates due to level of training and previous IO experience

“The non-collapsible vein”
Injured lung tissue acts as a one-way valve, trapping more and more air between the lung and the chest wall. Pressure builds up and compresses both lungs and the heart.
Both lung function and heart function are impaired with a tension pneumothorax, causing respiratory distress and shock.

Treatment is to let the trapped air under pressure escape.

Done by inserting a needle into the chest

- 4th-5th Intercostal space anterior axillary line
- 2nd Intercostal space mid-clavicular line
- 3.25 inch long, 14 gauge needle is the recommended size
SALT Triage

- National concept / standard for triage
  - Endorsed by numerous governmental and medical professional organizations

- SALT Triage
  - Sort
  - Assess
  - Lifesaving Interventions
  - Treatment & Transport
Step One – Sort: Global Sorting

- Walk
- Assess 3rd
- Wave/Purposeful Movement
- Assess 2nd
- Still/Obvious Life Threat
- Assess 1st

Step Two – Assess: Individual Assessment

- LSI*
  - Control major hemorrhage
  - Open airway (if child, consider 2 rescue breaths)
  - Chest decompression
  - Auto injector antidotes

- Breathing
  - Obeys commands or makes purposeful movement?
  - Has peripheral pulse?
  - Not in respiratory distress?
  - Major hemorrhage in control?

- Minor injuries only?
  - Yes
  - Delayed
  - Immediate
  - Expectant

- Likely to survive given current resources?
  - Yes
  - Dead

*LSI: Life Saving Interventions
Mass Casualty Patient Realities

- Patients will not wait for triage and transport
- Patients with minor injuries, will self-transport and arrive before the more seriously injured patients
- Patients will not follow instructions and will overwhelm the known emergency rooms
- Self transport patients will not be decontaminated
Summary

- MCI’s will happen
- Individual and team preparation essential
- MCI response and LSI’s must be practiced!!
Comments?  Questions?