EMS Medicine Live!

Welcome

Seventh EMS Webinar

Experienced Professionals
EMS Medicine Live!

- **EML’s Mission**
  - Community & Academic EMS Physician Education
    - Information Sharing
    - Board Preparation
  - Group involvement
    - See and meet your peers
    - Involve your unique experiences and skills
EMS Medicine Live!
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    • Everyone will be muted
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    • Upstate will record and post conferences online
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• Zoom
  – Questions
    • Questions at the end
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EMS Medicine Live

Rescue Task Force

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- Residency: SUNY Upstate
- EMS Fellowship: SUNY Upstate
- EMS Medical Director, Portsmouth Regional Hospital
- Seacoast Emergency Response Team Physician
RTFs: The Evolution of EMS in Immediate Threat Scenarios

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EMS MEDICAL DIRECTOR
SERT PHYSICIAN
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Objectives

- Discuss the traditional role of EMS in immediate threat scenarios
- Identify the impetus for change
- Identify and discuss terminology
- Discuss the difference between tactical medics/physicians and RTFs
- Highlight interventions and thought processes different in this environment versus traditional EMS
- What are we doing in NH?
- Review a recent active shooter drill carried out here in NH
Traditional Role of EMS in Active Shooter/Immediate Threat Scenarios

- Victims/patients delivered to you or egress on their own
- Triage and transport accordingly
- Stage away from the scene in the “cold zone”
- EMS kept “away from the fight” until hot zone became a cold zone
Tactical Medicine

- Tactical medicine has been a mainstay of military operations since the days of Napoleon.
- Switched to civilian SWAT teams after a seminal event at the University of Texas at Austin where on August 1, 1966 a sniper (Charles Whitman) shot and killed 15 people while wounding 31 others.
- LAPD and LA County Sheriff's Department were among the first to develop tactical teams.
- Prior to 1989, medical care to SWAT teams came from regular civilian EMS staged at safe locations removed from areas of operation.
- After the Gulf War, the concept of getting medical care “close to the fight” was realized and implemented during Operation Iraqi Freedom.
- This translated to the civilian environment as well.
- Evolved from tactical emergency medical support, to tactical EMS, and now tactical medicine.
Lessons Learned in the Civilian Arena

- Columbine in 1999
- The numbers:
- Over 100 incidents and according to FEMA 250 people killed between 2000 and 2012 with a drastic rise since 2008.
- Sandy Hook: “maximizing survival requires an updated and integrated system that can achieve multiple objectives simultaneously”
- Dept of Homeland Security: “in order to maximize lives saved, there is a need to get life-saving medical attention to victims quickly. In previous active shooter incidents, the focus has been exclusively on law enforcement neutralizing the threat”
EMS in the Warm Zone

- **Active Shooter:** An individual or individuals actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, active shooters use firearms(s) and there is no pattern or method to their selection of victims.

- **Ballistic Protective Equipment:** Ballistic protective gear, including body armor, for the head and body; i.e., vests, gloves, knee pads, helmets, and shields.

- **Casualty Collection Point (CCP):** A location that is used for the assembly, triage (sorting), medical stabilization, and subsequent evacuation of casualties. It may be an intermediary point before formal triage.

- **Cleared:** An area has been searched and does not pose a threat — no perpetrator present.
Definitions

- **Cold Zone**: i) Area where no significant danger or threat can be reasonably anticipated. ii) Area where triage and treatment of patients would occur, additional resources would be staged, and command functions carried out.

- **Concealment**: A structure that hides a person’s exact location but can be penetrated by ballistic weapons (e.g. a sheetrock wall).

- **Contact Team**: The first responding officers/security personnel who go directly to the ongoing threat, make contact as soon as possible, and neutralize the threat, in order to minimize injuries and lives lost.

- **Cover**: An area generally impenetrable to ballistic weapons, such as concrete wall. Something that prevents a responder from being observed by the perpetrator AND provides direct protection from the hazard/threat. i)
Definitions

- **Hot Zone:** i) Area wherein a direct and immediate life threat exists. ii) Depends upon current circumstances and is subjective. iii) Area is dynamic and may change frequently depending upon the situation.

- **Incident Command:** A management system designed to enable effective and efficient domestic incident management by integrating a combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to enable effective and efficient domestic incident management.

- **Incident Command Post:** The field location where the primary functions of Incident Command are performed.
Definitions

- **Point-of-Wound Care**: The physical location (building or otherwise) where patient care is initiated at or near to where the victim was injured.

- **Rescue Task Force (RTF)**: A team or set of teams deployed to provide point of wound care to victims where there is an ongoing ballistic or explosive threat. These teams treat, stabilize, and remove the injured while wearing Ballistic Protective Equipment in a rapid manner under the protection of law enforcement. This response can be deployed to work in, but not limited to, the following: i) Active shooter in a school, business, mall, health care facility, conference, special event, etc. ii) Any other scene that is, or has, the possibility of an ongoing ballistic or explosive threat.
Definitions

- **Secured**: An area has been searched and is now under direct Law Enforcement control.

- **Soft Target**: A person or thing that is relatively unprotected or vulnerable, especially to attack.

- **Tactical Emergency Casualty Care (TECC)**: TECC guidelines are a set of best practice recommendations for casualty management during high threat civilian tactical and rescue operations. Based upon the principles of Tactical Combat Casualty Care (TCCC), TECC guidelines account for differences in the civilian environment, resources allocation, patient population, and scope of practice. The applications of the TECC guidelines for civilian Fire/EMS medical operations are far reaching, beyond just the traditional application in tactical and Law Enforcement operations.
Tactical Medic/Physician vs RTF

- My role on SERT
- The role of the rescue task force team responder
- What do we have in common?
TECC – Tactical Emergency Combat Care

- TCCC is the military version
- Many lessons learned from the wars in Iraq and Afghanistan
- Movement to make applicable to the civilian environment
- Change in mindset from traditional prehospital medicine
Introduction

- The goals of Tactical Emergency Casualty Care (TECC) are:
  
  1. Save preventable deaths
  2. Prevent additional casualties
  3. Rapid EMS Trauma Assessment
  4. Rapid treatment of life threats
  5. Timely evacuation
This approach recognizes a particularly important principle:

- To perform the correct intervention at the correct time in the continuum of Tactical Care
- A medically correct intervention performed at the wrong time in potentially hostile environment may lead to further casualties
Combat Deaths

- KIA: 31% Penetrating head trauma
- KIA: 25% Surgically uncorrectable torso trauma
- KIA: 10% Potentially surgically correctable trauma
- KIA: 9% Hemorrhage from extremity wounds
- KIA: 7% Mutilating blast trauma
- KIA: 5% Tension pneumothorax
- KIA: 1% Airway problems
- 12% Mostly from infections and complications of shock
Preventable Causes of Combat Related Deaths

- 60% Hemorrhage from extremity wounds
- 33% Tension pneumothorax
- 6% Airway obstruction e.g., maxillofacial trauma
  - Data is extrapolated from Vietnam to present day Iraq and Afghanistan
Stages of Care
3 Distinct Phases

- Care in potentially hostile environment.
- Tactical Field Care
- Tactical Casualty Evacuation Care

Seconds Count
Care in Potentially Hostile Environment

- **EMS shall not be armed**
- Available medical equipment is limited to that carried by the medic or first responder
  - Tourniquets
  - Chest Seals and 10 g catheters for chest decompression
  - Trauma Dressings
  - Nasal Airways
  - Hemostatic dressings
  - Space blankets
  - Casualty tags
“Tactical Field Care” is the care rendered by the medic once it has been determined by Police that the scene is no longer under direct threat, “Warm Zone Entry”

Available medical equipment still limited to that carried into the field by medical personnel

Time to evacuation may vary considerably
“Tactical Evacuation” is the rapid evacuation of a casualty using Megamover, Skedds, or Drags.

Additional medical personnel and equipment will be staged per Incident Command for additional casualty management and rapid transport to appropriate hospital destination.
Care in Hostile Environment

- Minimal attention to airway at this point because of need to evacuate the casualty quickly
- Control of hemorrhage is essential since injury to a major vessel can result in hypovolemic shock in a short time frame
- Remember the “Average” person can exsanguinate in 3-5 minutes with a major vessel injury i.e. Femoral Artery Disruption
Massive Hemorrhage
Tourniquets
Care in Hostile Environment

- “Control Bleeding”
- The tourniquet should be placed on the extremity 2-3 inches, above the injury as soon as possible, ignoring the clothing
Combat Application Tourniquet (CAT)
Key Points

- Airway management beyond placing a nasopharyngeal is best deferred until the casualty reaches treatment area.
- Stop any life threatening hemorrhage with a commercially available tourniquet (CAT).
- Apply tourniquet for any total or partial amputation regardless of bleeding.
- Consider hemostatic dressings, and trauma pressure dressing.
- Reassure the casualty.
Tactical Emergency Casualty Care

- **Initial Casualty Assessment**
  - Bleeding control before breathing
  - Nasal airways, no advanced airways
  - Place in a position to maintain open airway
  - No CPR/rescue breathing
  - Rapid treatment and evacuation

- **Ongoing Assessment, Treatment Area**
  - Airway- advanced PRN
  - Breathing- O2- assisted as needed
  - Circulation- IV/IO access, fluid resuscitation
Tactical Emergency Casualty Care

- Open the airway with a chin-lift
- If unconscious and spontaneously breathing, insert a nasopharyngeal airway
- Place the casualty in the recovery position
Nasopharyngeal Airway
Tactical Emergency Casualty Care

**Breathing**

- Traumatic chest wall defects should be closed quickly with an occlusive dressing without regard to venting one side of the dressing.
- Also may use an Asherman Chest Seal or Sam Chest Seal.
  - Allow casualty to assume position that best protects the airway, including sitting up.
  - Place unconscious casualty in the recovery position.
"Asherman Chest Seal"
Sam Chest Seal

- **Latex Free**: Non-allergenic
- **Occlusive**: For use on open chest wounds
- **Strong Adhesion**: Sticks in the presence of blood, hair, sweat, and sand, or when submerged in water
- **Transparent**: Allows for visual placement over wound
- **Environmental Range**: Works under extreme heat and cold
- **One-Way Valve (optional)**: Allows one-way airflow from the chest cavity
- **Thin Edge Layer**: Maximizes surface area with smooth edges to resist lifting or peeling
- **Night Vision Optimized**: The visibility under night conditions (using night vision device)
- **Dual Tabs**: Can be used to facilitate placement of dressing
- **Ability to Reseal**: Makes it ideal for sentencing
Needle Chest Decompression
Tactical Emergency Casualty Care

Circulation

- Any bleeding site not previously controlled should now be aggressively addressed.
- Only the absolute minimum of clothing should be removed, although a thorough search for additional injuries must be performed.
Hemostatic Dressing

- Apply directly to bleeding site and hold in place 2 minutes, casualty assist if possible.
- If dressing is not effective in stopping bleeding after 4 minutes, remove original and apply a new dressing.
- Additional dressings cannot be applied over ineffective dressing.
- Pack wound with gauze (enough to fill cavity).
- Apply a battle dressing/bandage to secure hemostatic dressing in place.
- If bleeding controlled, do not remove dressing.
Hemostatic Dressing
Tactical Emergency Casualty Care

**IV Fluids**

- **First, stop the bleeding!**
- Deferred until evacuated to treatment area
- IV access should be obtained using a single 14-16 gauge catheter because of the ease of starting. Rapidly consider I/O access
- IV fluids be administered in amounts enough to maintain systolic B/P > 90 mmHg with 0.9 NS
Tactical Emergency Casualty Care

Secondary Injuries

- Focus of life threats
- Secondary injuries deferred until after evacuation to treatment area
- Continually reevaluate casualties for changes in condition while maintaining situational awareness
- Consider Emergency Airway
Tactical EVAC

- At some point in the operation the casualty will be evacuated.
- Time to evacuation may be quite variable from minutes to hours.
- A MASS CASUALTY EVENT may exceed the capabilities of the medic.
Tactical EVAC

- Ambulate before carry when possible
- Rapid evacuation non-ambulatory casualties-Mega Mover, Skedds, Drags
Documentation of Care

- Document clinical assessments, treatments rendered, and changes in the casualty’s status in accordance with local protocol.
- Consider implementing a casualty care card that can be quickly and easily completed by non-medical first responders.
- Forward this information with the casualty to the next level of care.
Casualties will die from preventable deaths unless proper life-saving steps are taken as soon practical, once the Police determine that the scene is no longer under direct threat.

- **60% Hemorrhage**
- **33% Tension Pneumo**
- **6% Airway Obstruction**

This is the group MEDICS can help the most.
What does a Rescue Task Force look like?

- Typically it is a 1:1 or a 2:1 LE to EMS ratio
- Ballistic protection in the form of vests (rated I-IV) and helmets
- First 2 officers in usually clear and you follow behind
- Security is provided as you move through the area providing TECC for maximum number of patients for most benefit (typically supplies for 6-8 victims)
- Do not forget to anticipate pediatric patients
- Evac becomes the focus when you cannot continue forward progress or have exhausted your supplies.
- Essential to train with LE to figure out what strategy works best for moving and switching up teams.
What are some issues, based on experience, you think need to be addressed to start off?

What unique scenarios might we face here in NH?

Commonly encountered barriers to implementation
What have/are we doing here in NH?

- Stakeholder meetings
- Formulation of a best practices document (vs protocol)
- Derry Fire and Deny PD
Examples of successes?

- Boston Marathon Bombing
Recent Active Shooter Drill in Portsmouth, NH

- Drill involved multiple local police and fire agencies, emergency management, homeland security, FBI, regional SWAT (SERT) and state police SWAT, EOD
- 1000 hrs reports of shots fired at the high school. Callers also reporting sounds of explosions and can see/smell smoke
- 1005 first LE responding units arrived on scene
- Incident command was set up with senior LE and FD officials on duty. SWAT activated.
- Casualty collection point established approximately 150-200 yards from the high school
- Communications through forward operations to command identify multiple victims corroborating 911 calls
- Hospital is made aware and code White initiated
Active Shooter Continued

- Approach initially with operators in the BearCat who deploy
- SERT medic deploys with second wave of operators
- I am stationed in the BearCat just outside the high school
- Casualties are brought to the BearCat and evacuated as there are reports of multiple active shooters
- 911 now receives calls reporting multiple gun shots fired at the middle school in addition to reports of explosions
- State Police SWAT is now redirected to the Middle School. SERT continues operations at the high school.
- Fire sets up a second command post at the Middle School.
Active Shooter Take Home

- Awaiting official AAP
- I quickly ran out of supplies in the back of the Cat
- Some team members treated victims with their Med Kits
- Extraction limitations with real threat - feasibility of ambulances versus Cat
- Timing first call to intervention with Reds and Yellows
- Highlights need for RTFs
- EMS and the hospital actually had a steady, slow pace of patients
Getting ready to deploy from rally point
Incident Command
In the Cat with EOD observing an IED
EOD tools
PFD addressing “fire as a weapon” with active shooter still at large
Review

- Evolving role of EMS in immediate threat scenarios
- TECC - change in tactics and mindset from traditional prehospital medicine
- Difference between “traditional” tactical medics and docs versus rescue task force teams
- Cooperation and collaboration amongst agencies is essential
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• Thank you to Dr. Wallus

• Upcoming EML
  – August: TBA (Looking For Speaker and Topic)
  – September: Jeremy Cushman, “The Brewer Street Incident”
  – October: TBA
  – November: Michael Dailey, EMS and End of Life Issues
  – December: TBA