Changing the Paradigm:
Tactical Emergency Casualty Care Guidelines for High Risk Scenarios

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Game changer.....

High Threat Mass Casualty
- What is the traditional teaching on operational medical response for the recon and subsequent rescue in scenarios with known wounded but active threats?
  - Do rescuers stage and wait for the all clear?
High Threat Mass Casualty

• If they decide to effect life rescue and enter the scene, are they carrying the right equipment?

High Threat Mass Casualty

• Are they knowledgeable about and trained to do the appropriate care prior to and during evac?

Defining the problem

• Is there a currently gap in how civilian first responders train to and respond to the high threat mass casualty scenario, both in medical tactics and medical actions?

Absolutely
Stage and Wait? Time Counts!

- Systematic review of combat casualty data showed that the majority of fatal combat injuries die within 30 minutes
  - Every minute with uncontrolled injury decreases chance of survival!!!

Death Curve for Combat Trauma

- Instantaneous Death
- Hemorrhage
- Airway obstruction
- Shock
- Infections
- Prevention Of Injury
- First aid
- BLS skills
- ALS level skills
- Surgery interventions
- And Antibiotics

Wound Data and Munitions Effectiveness Team (WDMET) study

- Post-Vietnam era study of combat deaths to identify aspects of weapon lethality
  - Sub-analysis revealed interesting findings

- First study to show unique characteristics of battlefield field trauma management
  - Multiple subsequent studies have substantiated
Wound Data and Munitions Effectiveness Team (WDMET) study

- Greatest opportunity for life saving intervention is early on….
- 90% of deaths occurred prior to definitive care
  - 42% immediately
  - 26% within 5 minutes
  - 16% within 5 and 30 minutes
  - 8-10% within 30 minutes and 2 hours
- Remainder survived between 2 and 6 hours during prolonged extrication to care
- Only 10% of combat deaths occurred after medical care initiated

Wound Data and Munitions Effectiveness Team (WDMET) study

- Summary Results
  - "The greatest benefit will be achieved through a configuration that puts the caregiver at the patient’s side within a few seconds to minutes of wounding."
  - "Far forward placement of medical assets is lifesaving."

Causes of death in conventional land warfare

- Landmark data provided by R.F. Bellamy and Arnold et al
  - Textbook of Military Medicine, 1984
  - Military Medicine Journal, 1978
- Examined military autopsy data from multiple conflicts
- Lists cause of death described at autopsy
  - Does not describe wound pattern or non-lethal injuries
Causes of death in conventional land warfare

- Summary:
  - 15% of fatalities in combat from readily treatable causes:
    - 9% Exsanguination from peripheral hemorrhage
    - 5% Open/Tension pneumothorax
    - 1% Airway obstruction

Improving Survival = Point of Injury Care

- Rapid application of simple appropriate stabilizing treatment at or near the site of wounding
- Expedient evacuation to closest appropriate medical facility

EQUALS

Maximal survival rate for those injured
**Concept of Point-of-Injury Care**
- As with almost all advances in pre-hospital medicine, we must look to the military…

**Battlefield Medicine prior to 1990s**
- Combat medics taught to manage battlefield injuries using the civilian standard for trauma
  - Advanced Trauma Life Support
    - Designed to train the non-trauma physician how to manage trauma victims in a non-trauma hospital setting
  - Prehospital Trauma Life Support
    - Designed to train civilian EMTs and Medics how to manage trauma victims with good resources, no ongoing operations, and no continued threat

Best practice?? Military research was being done…

**PHTLS/ATLS on the battlefield??**
- Study identified that PH/ATLS lacked of provisions for the specific combat environment
  - Need to balance the management of casualties within the conduct of an ongoing combat mission
  - Different trauma pattern
  - Hostile action, continued threats
  - Environmental factors
  - Casualty transportation problems and long delays to definitive care
Tactical Combat Casualty Care

- Result was set of medical guidelines for use on the battlefield
  - Published by Butler et al in 1996 Supplement to Military Medicine
- Adopted quickly throughout the Special Operations Community
  - Now widely adopted across the Military

Tactical Combat Casualty Care

- Prioritization and application of medical care to address the preventable causes of battlefield death while accounting for specific limitations and conditions surrounding combat

Is TCCC an effective care strategy?

Comparison of Statistics for Battle Casualties, 1941 – 2005

Holcomb et al J Trauma 2006

The U.S. casualty survival rate in the GWOT is the best in our nation’s history

<table>
<thead>
<tr>
<th></th>
<th>World War II</th>
<th>Vietnam</th>
<th>OIF/OEF</th>
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<tbody>
<tr>
<td>%Casualty Fatality Rate</td>
<td>19.1%</td>
<td>15.8%</td>
<td>9.4%</td>
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The Power of TCCC

- Evidence based and best practice based
  - A decade of data with continued evidence to support guidelines
- Well known and well supported throughout the military
- Now is being brought back to civilian Fire/EMS/Police by returning veterans

TCCC: A New Civilian Paradigm??

- **Reality**: Current standard Fire/EMS operational medical response is inadequate for atypical emergencies
- TCCC seemed initially to be the answer....
- BUT.... it doesn't translate exactly to civilian operations.

Applying Military Medical Lessons Learned to Civilian High Threat Prehospital Care
Where TCCC potentially fails...

- Guidelines of TCCC is largely based off of evidence gleaned from the overall young and healthy military combat population
- Written for the military combatant treating the combat wounded military population in the combat environment
- Similar to PH/ATLS on the battlefield, fails to account for the differences in civilian settings and resources

Civilian Differences

- Scope of practice and liability
- Patient population to include geriatrics, pediatrics, and special needs
- Availability of transport assets and differences in barriers to evacuation
- Baseline health of the population
- Wounding patterns without ballistic armor
- Chronic medication use in the injured
- Equipment selection, procurement, and logistics

Plus... language matters.

- Need a framework that emphasizes common operating language across all disciplines
- Civilian medical operations???
  - “Care under Fire”
  - “The best medicine on the battlefield is fire superiority”
  - “Return fire and take cover”
  - “Direct or expect casualty to remain engaged as a combatant if appropriate”
Tactical Emergency Casualty Care (TECC)

- Civilian threat-based medical care guidelines
  - New high threat medical care framework based on Tactical Combat Casualty Care but adapted to civilian language, protocols, population, and civilian operational constraints

Tactical Emergency Casualty Care (TECC)

- NOT in competition with TCCC but is the evolution of TCCC for civilian use
  - Tactical EMERGENCY Casualty Care = Civilian
  - Tactical COMBAT Casualty Care = Military

Tactical Emergency Casualty Care (TECC)

- Same but different
  - All higher threat levels
  - Pediatric guidelines
  - Emphasis on triage for priority and destination
  - Civilian specific conditions, e.g., smoke inhalation
TECC: The new paradigm

TECC Goals:

• To establish a medical care framework that balances the threat, civilian scope of practice, differences in civilian population, medical equipment limits, and variable resources for ALL atypical emergencies and mass casualty

TECC: The new paradigm

TECC Goals:

• To provide aggressive forward deployment and principles for point of wounding management of trauma in HIGH THREAT AND MASS CASUALTY ENVIRONMENTS

• To provide care guidelines that account for ongoing threat and operations to minimize provider risk while maximizing pt benefit

Only for medical personnel??

• ANY first responder can initiate TECC care
  - Guidelines can be implemented at any level
  - Patrol officers and non-medical first responders should initiate care as the tactical situation allows
TECC is Situation-Driven

- Operational medical guidelines applied in 3 distinct phases defined by the relationship between the provider and the threat

- Phases of Care
  - Direct Threat Care (DT)
  - Indirect Threat Care (IDT)
  - Evacuation Care (Evac)

What TECC is...

- Civilian driven, civilian appropriate
- Representative of multi-agencies and specialties
- Appropriate for use in any scenario where there is significant on-going operational risk
- Vetted, evolving principles of care and operational recommendations
- Venue for future operational medical research

What TECC is NOT...

- NOT rigid care protocols and/or a formalized training program
  - Teach a man to fish....
- NOT Law Enforcement specific
- NOT only for use by “Tactical Medics” working in law enforcement tactical settings
  - In TECC, “Tactical” means operational, not just Law Enforcement or SWAT
Tactical Emergency Casualty Care

Applications: SWAT/Tactical Medic

Tactical Emergency Casualty Care

Applications: Technical Rescue Medic

Tactical Emergency Casualty Care

Applications: Wilderness Medical Response
Tactical Emergency Casualty Care

Applications: Mass Casualty Response

Questions???

“The fate of the injured often lies in the hands of the one who provides the first care to the casualty”