

Tactical Combat Casualty Care



**Defense Health Board
13 November 2009
Dr. Frank Butler**



TCCC Update





TCCC and Preventable Deaths

- **Approximately 20% of fatalities in Iraq and Afghanistan have been reported to be potentially preventable (Holcomb 2007, Kelly 2009)**
- **NO preventable deaths in war to date documented by Rangers and Army SMU in 2009 – both units have been using TCCC from the start of the war**





Defense Health Board Memorandum 6 August 2009

- **TCCC for all deploying combatants**
- **TCCC for all deploying medical department personnel**
- **TCCC overview training for combat leaders**
- **Capture info from TCCC Casualty Card into the Joint Theater Trauma Registry and the Prehospital Trauma Registry**
- **Combat Evaluation Program at U.S. Army Institute of Surgical Research**

USA Today Feature Article

14 Sept 2009

Military considers revised medical training for troops

Updated | Comment | Recommend

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By Gregg Zoroya, USA TODAY

SAVING LIVES

Improved trauma care techniques could have prevented up to 20% of combat deaths in Iraq and Afghanistan.

Total number of combat deaths: 4,800

Estimated preventable deaths: Up to 808

Source: USA TODAY research

WASHINGTON — Troops trained in advanced trauma care could prevent up to 20% of combat deaths in Iraq and Afghanistan, the military's top medical board says.

The Defense Health Board said in a recommendation to the Pentagon last month that enhanced Tactical Combat Casualty Care (TCCC) skills developed by military trauma specialists already have saved an estimated 1,000 lives in both wars.

For example, preventable combat deaths — primarily cases where troops bleed to death — have been eliminated in an Army Special Forces unit and the 75th Ranger Regiment, both trained in these skills. Among other techniques, the training emphasizes aggressive control of blood loss with tourniquets.

More than 4,000 U.S. troops have died from combat wounds suffered in Iraq and Afghanistan.

The Army's goal is to replace its first aid training with the TCCC curriculum by Jan. 1, says Col. Karen O'Brien, command surgeon for the Army Training and Doctrine Command. She says she decided to recommend changing the training after reviewing the same statistics presented to the Defense Health Board.

Most preventable deaths involved troops who bled to death, according to military trauma surgeons who studied autopsy and medical records of servicemembers who died from their wounds.





Training for TCCC

- August 2009
 - Training in TCCC for all Combatants
 - TFCCC training for leaders
- Issued by Army TRADOC, COL Karen O'Brien





**IPR #4 Slides
(for VTC on FRI/18SEP)
ASPTF Initiative D2.3.5.1,
Adopt a trauma registry (similar to the
Ranger's PHTR) to assist in tracking POI
Medical Care**

**New Task from D2.3.5 (POI
Documentation Tool)**

**Action Officer
MEDCOM, HP&S
LTC Larry France**

Unclassified





DA Form 7656

Name ID: _____
 DTG: _____ ALLERGIES: _____
 Friendly: _____ Unknown _____ NBC _____

TQ
TIME

OSW BLAST MVA Other _____

TIME			
AVPU			
PULSE			
RESP			
EP			

A: Intact Adjunct Cric Intubated
 B: Chest Seal Needled Chest Tube
 C: TQ Hemostatic Packed Pressure Ds
 IV IO

FLUIDS: NS / LR 500 1000 1500
 Hextend 500 1000

Other: _____
 DRUGS (Type / Dose / Route): _____
 PAIN _____
 AIR _____
 OTHER _____

Medic's Name: _____

All,

APD assigned "DA Form 7656" to the Tactical Combat Casualty Care (TCCC) Card.

v/r

Tarek S. Riyad
 Electronic Forms Management Specialist
 Army Publishing Directorate
 703-325-6278, DSN 221-6278



MARADMIN 301713Z Oct 09

Released by Commandant

- 5. EFFECTIVE IMMEDIATELY, THE RECENTLY APPROVED TCCC GUIDELINES WILL BECOME THE STANDARD TO WHICH TRAINING EFFORTS SHOULD BE FOCUSED AND EVALUATION WILL BE BASED.**

THESE CHANGES WILL AFFECT NUMEROUS TRAINING PROGRAMS AND COURSES. EFFORTS ARE ALREADY UNDERWAY TO UPDATE STANDARDS AND WILL BE ACCOMPLISHED THROUGH THE NORMAL STAFFING PROCESS. **A KEY ELEMENT OF THE TCCC GUIDELINES IS THEIR APPLICABILITY TO MEDICAL PERSONNEL, COMBAT LIFESAVERS, AND INDIVIDUAL DEPLOYING COMBATANTS.**



Tourniquets

J Emergency Med 2009

BATTLE CASUALTY SURVIVAL WITH EMERGENCY TOURNIQUET USE TO STOP LIMB BLEEDING

John F. Kragh, Jr, COL, MC, USA,* Michelle L. Littrel, CPT, AN, USA,† John A. Jones,*
Thomas J. Walters, PhD,* David G. Baer, PhD,* Charles E. Wade, PhD,* and John B. Holcomb, MD†

*US Army Institute of Surgical Research (USAISR), Fort Sam Houston, Texas and †Department of Nursing, Brooke Army Medical Center, Fort Sam Houston, Texas

Reprint Address: John F. Kragh, Jr, COL, MC, USA, Bone and Soft Tissue Trauma Research Program, US Army Institute of Surgical Research, 3400 Rawley E. Chambers Ave., Bldg. 3611, Room L82-16, Fort Sam Houston, TX 78234-6315

- 499 casualties (TQ on 651 limbs) from Iraq
- Survival 87%
- 4% survival if TQ applied after shock present
- Transient peripheral neuropathies 1.5%
- Limb shortening 0.4%
- Limbs lost 0%
- 10 fatalities from extremity hemorrhage – no TQ



Hextend

Dr. Ken Proctor - Ryder

Gentlemen: Within the constraints of our IRB, we designed our study to directly address the Army's use of **1 liter or less** of Hextend on the battlefield for initial resuscitation. In **1700 patients**, we **unequivocally demonstrated safety** (no increased mortality and no coagulopathy), and possible efficacy (**mortality was reduced by half**), within the caveat that this was an open-label, non-randomized, single center trial. The limitations of this study were presented at ATACCC 09. **Hex is now part of our resuscitation algorithm at Univ of Miami Ryder Trauma Center.** The data will also be presented at Southern Surgical, and published in JACS.

E-mail 30 Oct 09



American College of Surgeons



- **ACS Clinical Congress 14 October 2009**
- **Panel on Trauma Care Advances in Military**
- **TCCC – prehospital care segment**

Clinical Congress NEWS

American College of Surgeons

95th Annual Clinical Congress

October 11 – 15, 2009



Chicago

Wednesday, October 14, 2009

Scudder Oration

Evolution of trauma care in the U.S. should focus on inclusive systems

**American College of Surgeons
Scudder Oration 2009
A. Brent Eastman, MD**

As an ideal model of an inclusive trauma system, Dr. Eastman pointed to the highly developed trauma systems for Iraq and Afghanistan: "The military has developed a superb Joint Theater Trauma System, and this system is a lesson for rural trauma care."



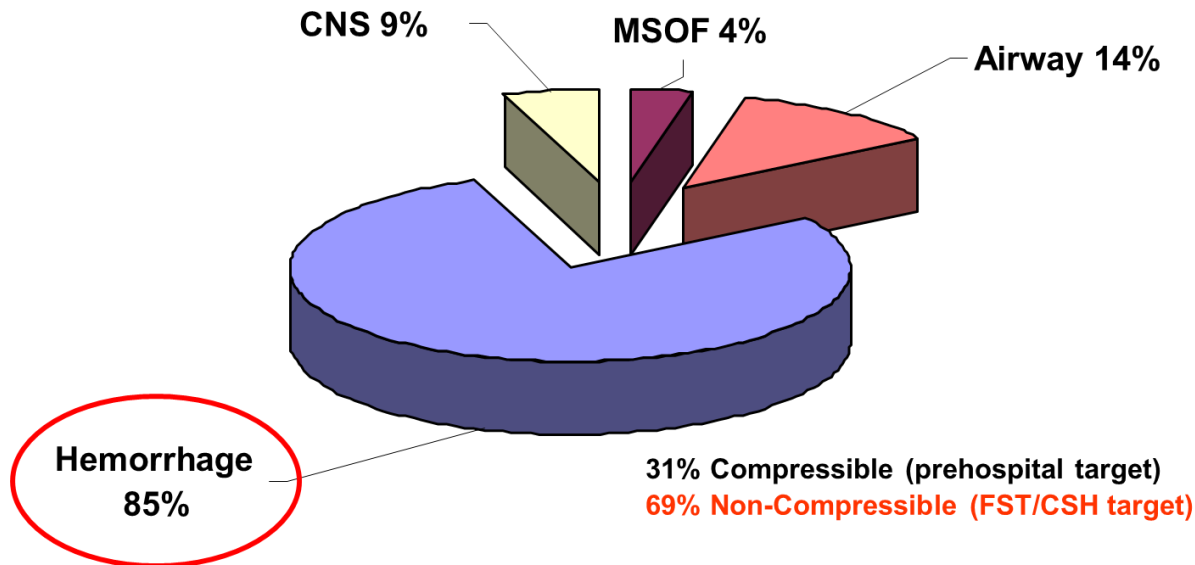
New Items

- **1. Battlefield Trauma Care Research Priorities**
- **2. Treatment of Burns in TCCC**





Potentially Survivable Deaths (232)



From evaluation of 982 casualties, and casualties could have more than 1 cause of death. (Kelly J., J Trauma 64:S21, 2008)



TCCC Research Priorities

- **Non-Compressible Hemorrhage Control**
- **Damage Control Resuscitation**
- **TCCC Care Documentation**
- **TCCC Combat Evaluation Program**
- **Improved Battlefield Analgesia**
- **Electronic TCCC Training**
- **Truncal Tourniquet**
- **Optimal Fluid Resuscitation for TBI**
- **Monitor-Driven Fluid Resuscitation**
- **Surgical Airway Kits**
- **New Tourniquet Testing**
- **New Hemostatic Agent Testing**



Treatment of Burns in TCCC

- Treatment of burns not previously addressed in TCCC





U.S. Army Institute of Surgical Research



Thanks to the USAISR Burn Center



Treatment of Burns in TCCC

Care Under Fire

5. Casualties should be extricated from burning vehicles or buildings and moved to places of relative safety. Do what is necessary to stop the burning process.



Treatment of Burns in TCCC

Tactical Field Care

15. Burns

- a. Facial burns, especially those that occur in closed spaces, may be associated with inhalation injury. Aggressively monitor airway status and oxygen saturation in such patients and consider early surgical airway for respiratory distress or oxygen desaturation.
- b. Estimate total body surface area (TBSA) burned to the nearest 10% using the Rule of Nines.



Treatment of Burns in TCCC

Tactical Field Care

c. Cover the burn area with dry, sterile dressings. For extensive burns (>20%), consider placing the casualty in the Blizzard Rescue Wrap in the Hypothermia Prevention Kit in order to both cover the burned areas and prevent hypothermia.



Treatment of Burns in TCCC

Tactical Field Care

- d. Fluid resuscitation (USAIRS Rule of Ten)**
 - If burns are greater than 20% of Total Body Surface Area, fluid resuscitation should be initiated as soon as IV/IO access is established. Resuscitation should be initiated with Lactated Ringer's, normal saline, or Hextend. If Hextend is used, no more than 1000 ml should be given, followed by Lactated Ringer's or normal saline as needed.**



Treatment of Burns in TCCC

Tactical Field Care

- Initial IV/IO fluid rate is calculated as %TBSA x 10cc/hr for adults weighing 40-80 kg.
- For every 10 kg ABOVE 80 kg, increase initial rate by 100 ml/hr.
- If hemorrhagic shock is also present, resuscitation for hemorrhagic shock takes precedence over resuscitation for burn shock. Administer IV/IO fluids per the TCCC Guidelines in Section 6.



Treatment of Burns in TCCC

Tactical Field Care

- e. Analgesia in accordance with TCCC Guidelines in Section 12 may be administered to treat burn pain.**
- f. Prehospital antibiotic therapy is not indicated solely for burns, but antibiotics should be given per TCCC guidelines in Section 14 if indicated to prevent infection in penetrating wounds.**



Treatment of Burns in TCCC

Tactical Field Care

g. All TCCC interventions can be performed on or through burned skin in a burn casualty.



Treatment of Burns in TCCC

Tactical Evacuation Care

– Same as TFC, plus

h. Burn patients are particularly susceptible to hypothermia. Extra emphasis should be placed on barrier heat loss prevention methods and IV fluid warming in this phase.



Proposed Actions

- 1. Core Board endorsement and forwarding of battlefield trauma care research priorities**
- 2. Core Board approval of proposed TCCC burn management strategies**



Trauma and Injury Subcommittee Review

- **Both items reviewed on 4 November**
- **Unanimous approval of members present**



Questions?

