

# **Tactical Combat Casualty Care for Medical Personnel**

## **August 2017**

**(Based on TCCC-MP Guidelines 170131)**



## **Introduction to TCCC**

# Pre-Test





# TCCC

**RMF**

**DEPLOYED MEDICINE**

**TCCC: Introduction**

[Link to Online Video](#)



# What is TCCC and Why Do I Need to Learn about it??



**Military units that have trained all of their members in TCCC have documented the lowest incidence of preventable deaths among their casualties in the history of modern warfare.**

**TCCC is now used by all services in the U.S. Military and many allied nations as well to care for their combat wounded. TCCC-based prehospital trauma training is now becoming widespread in the US civilian sector as well.**



# Objectives

- **List the goals of TCCC.**
- **DESCRIBE** the key factors influencing combat casualty care.
- **UNDERSTAND** the evidence that documents the lifesaving impact of TCCC use.
- **List the battlefield objectives of TCCC.**
- **DESCRIBE** the phases of care in TCCC.



# Trauma Care Setting



# Tactical Trauma Care Setting – Shrapnel Wound in the Hindu Kush





# **Battlefield Trauma Care Prior to 9/11**

- **Combat medical training historically was modeled on civilian courses.**
  - **Emergency Medical Technician**
  - **Advanced Trauma Life Support**
- **We trained to the standard of care in non-tactical (civilian) settings.**
- **Tactical factors were not considered.**



# Battlefield Trauma Care: 2001

- **Based on trauma courses NOT developed for combat**
- **Medics taught NOT to use tourniquets**
- **No hemostatic agents**
- **No junctional tourniquets**
- **Large volume crystalloid fluid resuscitation for shock**
- **Civil War-vintage technology for battlefield analgesia (IM morphine)**
- **SOF medics – IV cutdowns for difficult venous access**
- **No tactical context for the care rendered**
- **2 large bore IVs on all casualties with significant trauma**
- **No focus on prevention of trauma-related coagulopathy**
- **Heavy emphasis on endotracheal intubation**



# Tourniquets: The Primary Driver for TCCC

“The striking feature was to see healthy young Americans with a **single injury of the distal extremity** arrive at the magnificently equipped field hospital, usually within hours, but **dead on arrival**. In fact there were **193 deaths** due to wounds of the upper and lower extremities, ..... of the 2600.”

*CAPT J.S. Maughon  
Mil Med 1970*

\* Extremity hemorrhage math in Vietnam:  
193 of 2600 = 7.4% x 46,233 fatalities = 3,421  
preventable US deaths from extremity hemorrhage



# Different Trauma Requires Different Care Strategies

- It is intuitive that combat and civilian trauma are different, BUT...
- It is difficult to devise and implement needed changes.
- No one group of medical professionals has all of the necessary skills and experience.
- **Trauma docs and combat medical personnel have different skill sets. Both are needed to optimize battlefield trauma care strategies.**
- Tourniquets are one striking example of how battlefield trauma care has sometimes been slow to change.



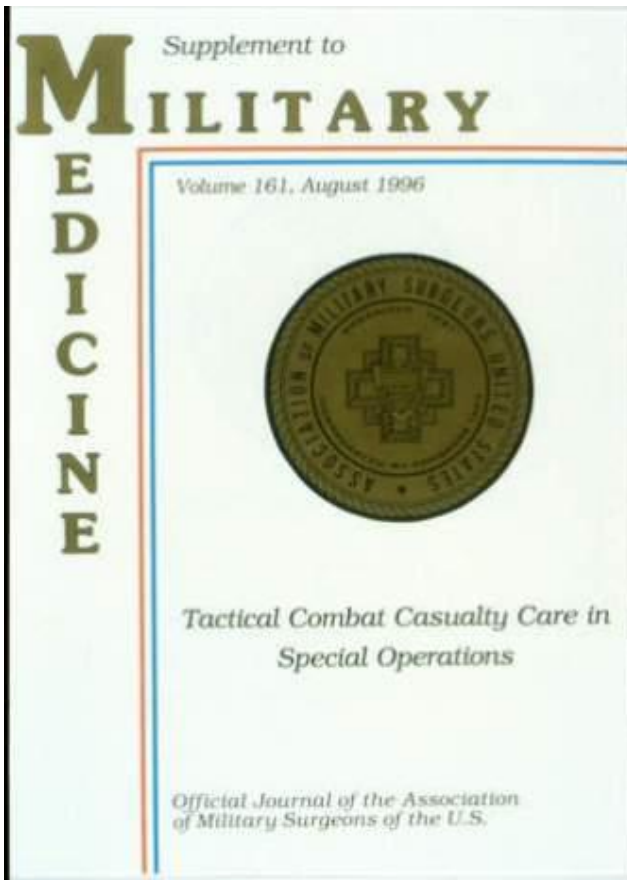
# Prehospital Trauma Care: Military vs. Civilian

- **Hostile fire**
- **Darkness**
- **Environmental extremes**
- **Different wounding epidemiology**
- **Limited equipment**
- **Need for tactical maneuver**
- **Long delays to hospital care**
- **Different medic training and experience**





# Tactical Combat Casualty Care in Special Operations



## Military Medicine Supplement August 1996

*Trauma care guidelines  
customized for the battlefield*



# Extremity Hemorrhage



[Link to Online Video](#)



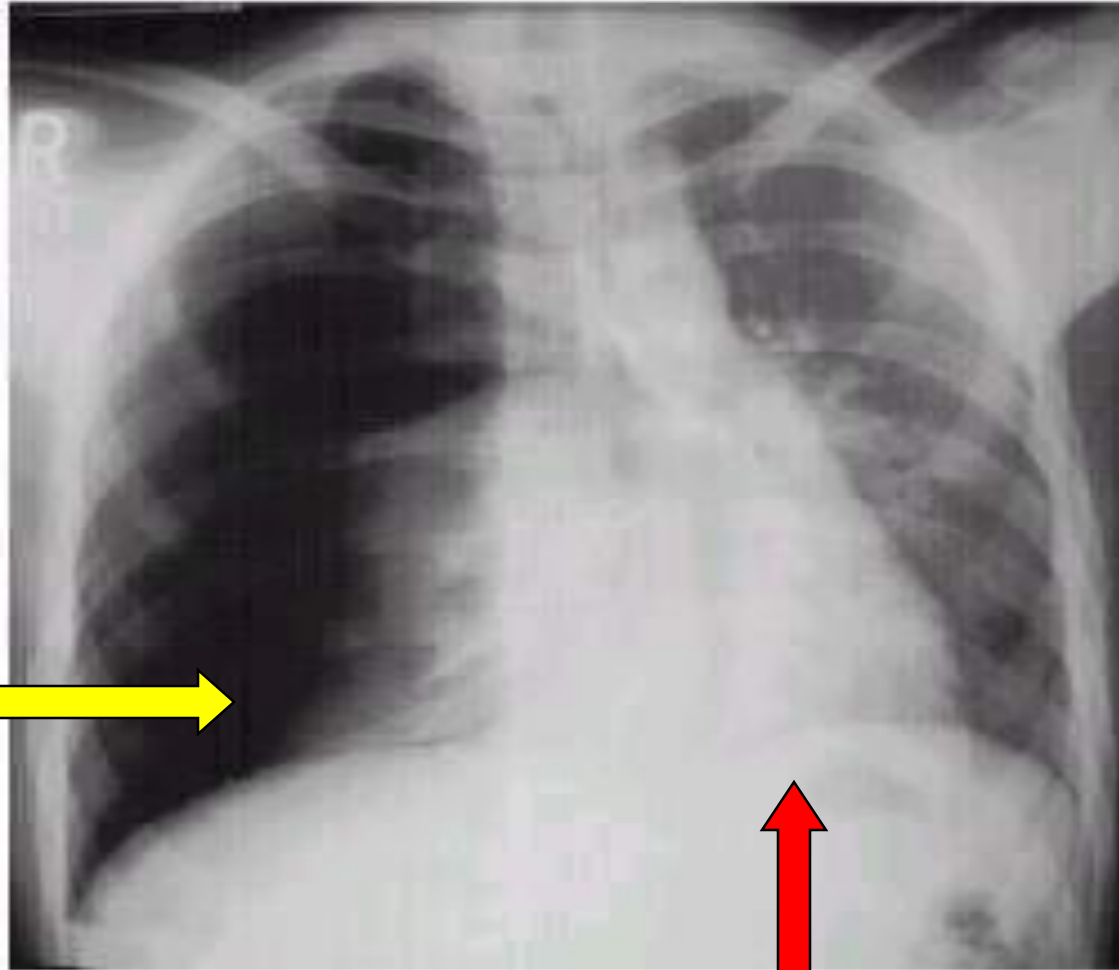
# Junctional Hemorrhage



**These types of wounds are often caused by IEDs and may result in junctional hemorrhage.**



# Tension Pneumothorax



**Air escapes from injured lung – pressure builds up in chest**

**Air pressure collapses lung and pushes on heart**

**Heart compressed - not able to pump well**



# Airway Trauma





# Three Objectives of TCCC

- **Treat the casualty**
- **Prevent additional casualties**
- **Complete the mission**





# Changes in TCCC: How Are They Made?



**The Committee on Tactical Combat  
Casualty Care**



# Committee on Tactical Combat Casualty Care

- **The prehospital arm of the Joint Trauma System**
- **42 members from all services in the DoD and civilian sector**
- **Trauma Surgeons, Emergency Medicine, and Critical Care physicians, combatant unit physicians; medical educators; combat medics, corpsmen, and PJs**
- **100% deployed experience as of 2017**
- **Meet periodically; update TCCC as needed**



# Battlefield Trauma Care Today

- **Phased care in TCCC**
- **Aggressive use of tourniquets in CUF**
- **Combat Gauze as hemostatic agent**
- **Aggressive needle thoracostomy**
- **Sit up and lean forward airway positioning**
- **Surgical airways for maxillofacial trauma**
- **Hypotensive resuscitation**
- **IVs only when needed/IO access if required**
- **PO meds, OTFC, ketamine as “Triple Option” for battlefield analgesia**
- **Hypothermia prevention; avoid NSAIDs**
- **Battlefield antibiotics**
- **Tranexamic acid**
- **Junctional Tourniquets/XStat/Pelvic binders**





# TCCC: How Do We Know That It's Working?





# TCCC Early in the Iraq and Afghanistan Conflicts

- **NOT widely used at the start of the wars**
- **Increased use by both Special Operations and conventional units beginning in 2005**

## The Drivers:

- **Early reports of success with TCCC, especially TQs**
- **Holcomb study: “Causes of SOF Deaths 2001-2004”**
- **USAISR tourniquet study by Walters et al (2005)**
- **USSOCOM TCCC message - March 2005**
- **USCENTCOM tourniquet and hemostatic agents (HemCon) message - 2005**



# Preventable Combat Deaths from Not Using Tourniquets

- **Maughon – *Mil Med 1970*: Vietnam**
  - 193 of 2,600
  - 7.4% of total combat fatalities
- **Kelly – *J Trauma 2008*: OEF + OIF (2003/4 and 2006)**
  - 77 of 982 (in both cohorts of fatalities)
  - 7.8% of total fatalities – no better than Vietnam
- **Tourniquets became widely used in 2005-2006**
- **Eastridge – *J Trauma 2012*: OEF + OIF (to Jun 2011)**
  - 119 of 4,596
  - **2.6% of total fatalities – a 67% decrease**



# Tourniquet Outcomes in TCCC Transition Initiative Report

- **Sixty-seven** successful tourniquet applications identified in 2005 and 2006
- **No avoidable loss of limbs due to tourniquet use identified**

*Butler, Greydanus, Holcomb*

*2006 USAISR Report*

*“TCCC: Combat Evaluation 2005”*



# TCCC: Success in Combat 3rd Infantry Division

“The adoption and implementation of the principles of TCCC by the medical platoon of TF 1-15 IN in OIF 1 resulted in **overwhelming success**. Over 25 days of continuous combat with 32 friendly casualties, many of them serious, we had 0 KIAs and 0 Died From Wounds, while simultaneously caring for a significant number of Iraqi civilian and military casualties.”

*CPT Michael Tarpey  
Battalion Surgeon 1-15 IN  
AMEDD Journal 2005*



# Tourniquets – Kragh et al: Two Landmark Papers



- **Published in 2008/2009**
- **Tourniquets are saving lives on the battlefield**
- **31 lives saved in 6 months** by tourniquets
- **Author estimated 2000 lives saved with tourniquets in this conflict up to that date (2009)**
- **No arms or legs lost because of tourniquet use**



# Eliminating Preventable Death on the Battlefield



- TCCC in the 75<sup>th</sup> Ranger Regiment
- All Rangers and docs trained in TCCC
- Ranger preventable death incidence: 3%
- Overall U.S. military preventable deaths: 24%



# What Do the Soldiers Say?

A recent U.S. Army Training and Doctrine Command survey of Soldiers in combat units found that **TCCC is the second most valued element** of their training, exceeded only by training in the use of their individual weapons.



*COL Karen O'Brien  
TRADOC Surgeon  
CoTCCC Meeting April 2010*



# TCCC in Canadian Forces

## Savage et al: Can J Surg 2011

### Conclusion:

“For the first time in decades, the CF has been involved in a war in which its members have participated in sustained combat operations and have suffered increasingly severe injuries. Despite this, **the CF experienced the highest casualty survival rate in history.** Though this success is multifactorial, **the determination and resolve of CF leadership to develop and deliver comprehensive, multileveled TCCC packages to soldiers and medics is a significant reason for that** and has unquestionably saved the lives of Canadian, Coalition and Afghan Security Forces.....”



# **Limb Tourniquets in the U.S. Military**

**In 2001, almost nobody in the U.S. Military had a tourniquet.**

**In 2017, thanks to TCCC, no American Soldier, Sailor, Airman, or Marine goes onto the battlefield without a tourniquet.**



# Hartford Consensus

## 2 April 2013

- **Working group organized by American College of Surgeons Board of Regents and FBI**
- **In response to Sandy Hook shootings**
- **Excerpt from findings:**

Life threatening injuries in active shooter incidents such as those in Fort Hood, Tucson, and Aurora are similar to those encountered in combat settings. Military experience has shown that the number one cause of preventable death in victims of penetrating trauma is hemorrhage. Tactical Combat Casualty Care (TCCC) programs, when implemented with strong leadership support, have produced dramatic reductions in preventable death. Recognizing that active shooter incidents can occur in any community, the Hartford Consensus encourages the use of existing techniques and equipment, validated by over a decade of well-documented clinical evidence.



# ASDHA TCCC Letter

## 14 February 2014



THE ASSISTANT SECRETARY OF DEFENSE

1200 DEFENSE PENTAGON  
WASHINGTON, DC 20301-1200

HEALTH AFFAIRS

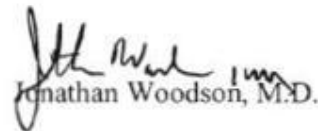
FEB 14 2014

MEMORANDUM FOR DIRECTOR, DEFENSE HEALTH BOARD

SUBJECT: Tactical Combat Casualty Care Training for Deploying Personnel, 2011-02

Please accept my appreciation for your continued efforts to provide the Department of Defense with constructive recommendations to help maximize the health, safety, and effectiveness of the U.S. Armed Forces. As we continue to seek opportunities to improve and standardize medical training, we have reviewed and will accept your recommendations related to "Tactical Combat Casualty Care (TCCC) Training for Deploying Personnel." We will incorporate training guidance as described in your recommendation to facilitate uniform TCCC training throughout the Department.

The point of contact for questions regarding this action is Ms. Elizabeth Fudge. Ms. Fudge may be reached at (703) 681-8295, or [Elizabeth.Fudge@dha.mil](mailto:Elizabeth.Fudge@dha.mil).

  
Jonathan Woodson, M.D.



# Secretary of Defense James Mattis



COMMANDER  
UNITED STATES CENTRAL COMMAND  
7115 SOUTH BOUNDARY BOULEVARD  
MACDILL AIR FORCE BASE, FLORIDA 33621-5101

18 January 2013

TO: CHIEF OF STAFF, U.S. ARMY  
CHIEF OF NAVAL OPERATIONS  
CHIEF OF STAFF, U.S. AIR FORCE  
COMMANDANT OF THE MARINE CORPS

SUBJECT: Killed In Action (KIA) Reduction Initiative

- **General Mattis letter to Service Chiefs**
- **Written during his time as CENTOM Commander**
- **Highlights Ranger success with TCCC**
- **Stresses importance of TCCC training**



# Secretary of Defense James Mattis

3. In November 2012 my Command Surgeon and pre-hospital trauma experts from the JTS traveled to Afghanistan to survey pre-hospital medical teams from both the conventional and SOF perspective. Findings on the difference between the Ranger experience and DoD at large appear attributable to the Ranger Casualty Response System, which is a command-directed program that aggressively teaches the Tactical Combat Casualty Care (TCCC) curriculum to all unit personnel, integrates TCCC into small unit tactics and battle drills, and uses a unit-based trauma registry for performance improvement and directed procurement. This system was in place prior to the onset of hostilities. It has undergone continuous updates throughout the current conflict via a unit-base trauma registry and by the expert recommendations from the Committee on TCCC. The unprecedented low incidence of preventable deaths achieved by the Ranger Casualty Response System may serve as a model for improving pre-hospital trauma care and saving lives on the battlefield.

4. My Command Surgeon and the JTS team will be contacting your staff personally to share more information about this promising program. I urge each of you to take their briefing outlining the importance of TCCC training for your combat troops, the criticality of command ownership of this process, and other aspects of this response system.

v/r  
Jim

JAMES N. MATTIS  
General, U.S. Marines



# Summary of Key Points

- **Prehospital trauma care in tactical settings is very different from civilian settings.**
- **Tactical and environmental factors have a profound impact on trauma care rendered on the battlefield.**
- **Good medicine can be bad tactics.**
- **Up to 24% of combat deaths today are potentially preventable.**
- **Good first responder care is critical.**
- **TCCC will give you the tools you need!**



# Summary of Key Points

- **Three phases of care in TCCC**
  - **Care Under Fire**
  - **Tactical Field Care**
  - **TACEVAC Care**



# Summary of Key Points

- **TCCC was designed for combat.**
- **BUT many of these concepts have excellent applicability in civilian prehospital settings, too.**





# Official TCCC Education Sites

https://www.deployedmedicine.com, 50% Search

DEPLOYED MEDICINE SEARCH INSTRUCTORS ABOUT SIGN IN

## Tactical Combat Casualty Care

HOME

- COURSES
- STUDY GUIDES
- PODCASTS
- REFERENCE REPO
- VIDEOS

**FEATURED**

DEPLOYED MEDICINE TACTICAL COMBAT CASUALTY CARE TCCC GUIDELINES

**Study Guides** [See all >](#)

- DEPLOYED MEDICINE Study Guides Hemorrhage Control Care Under Fire CUF Hemorrhage...
- DEPLOYED MEDICINE Study Guides Introduction to TCCC
- DEPLOYED MEDICINE Study Guides Hemorrhage Control Tactical Field Care TFC Hemorrhage...
- DEPLOYED MEDICINE Study Guides Tactical Field Care Airway and Respiration TFC Airway and...

**PODCASTS** [See all >](#)

- DEPLOYED MEDICINE Podcasts TCCC Guidelines...
- DEPLOYED MEDICINE Podcasts Pelvic Binders In...
- DEPLOYED MEDICINE Podcasts TCCC Guidelines...
- DEPLOYED MEDICINE Podcasts Feb 2017 CoTCCC...

[www.cotccc.com](http://www.cotccc.com)

or

[www.deployedmedicine.com/tccc](http://www.deployedmedicine.com/tccc)

## REFERENCE

[See all >](#)

- DEPLOYED MEDICINE TCCC Supporting...
- DEPLOYED MEDICINE TCCC Guidelines
- DEPLOYED MEDICINE TCCC Summary of Supporting Evidence

## VIDEOS

[See all >](#)

- How To... PRESSURE DRESSING
- How To... TOURNIQUET REPLACEMENT
- How To... WOUND PACKING

DEPLOYED MEDICINE Podcasts

Tactical Combat Casualty Care  
Enroute Care (COMING 2018)  
Forward Surgical Care (COMING 2018)

About Deployed Medicine

This website is part of a ongoing research and development activity sponsored by the Defense Health Agency in partnership with the Joint Trauma System and Committee on Tactical Combat Casualty Care.



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Join the LinkedIn TCCC Discussion Group:  
TCCC (<https://www.linkedin.com/groups/12036508>)



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**tc3committee**

<https://www.instagram.com/tc3committee/>



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- Look at one or more of the TCCC curriculum websites



**CoTCCC.com**



**NAEMT**



**JSOM**



**SOMA**

- Sign up for the TCCC Distribution List at:

[cotccc@cox.net](mailto:cotccc@cox.net)

- Get your electronic copy of the TCCC Quick Reference Guide

# Questions?

