Tactical Combat Casualty Care for All Combatants
August 2017

(Based on TCCC-MP Guidelines 170131)

Introduction to TCCC

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.

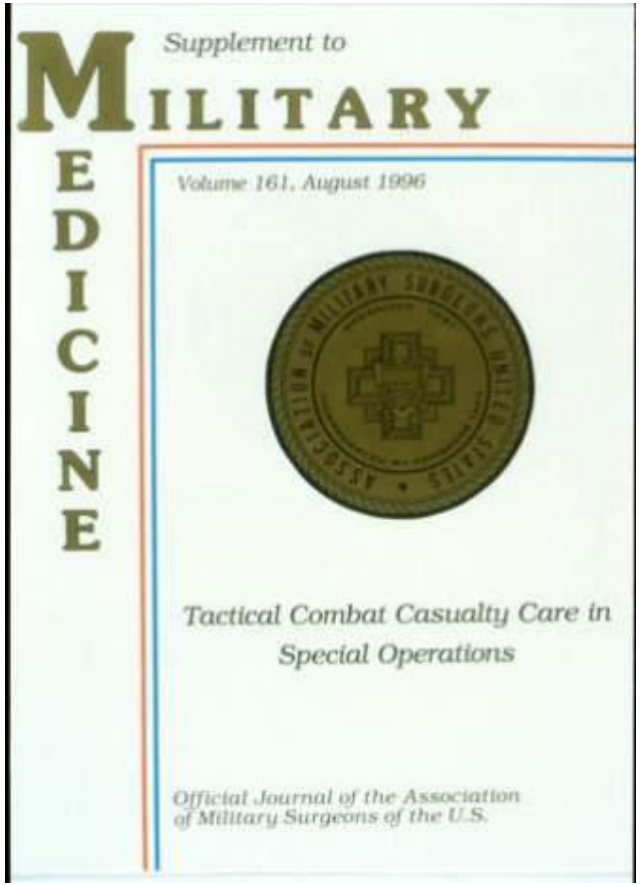
Trauma Care Setting

Tactical Trauma Care Setting – Shrapnel Wound in the Hindu Kush

Prehospital Trauma Care: Military vs. Civilian

- Hostile fire
- Darkness
- Environmental extremes
- Different types of wounds
- Limited equipment
- Need for tactical maneuver
- Long delays to hospital care
- Different self aid/buddy aid training and experience

Tactical Combat Casualty Care in Special Operations



Military Medicine Supplement
August 1996

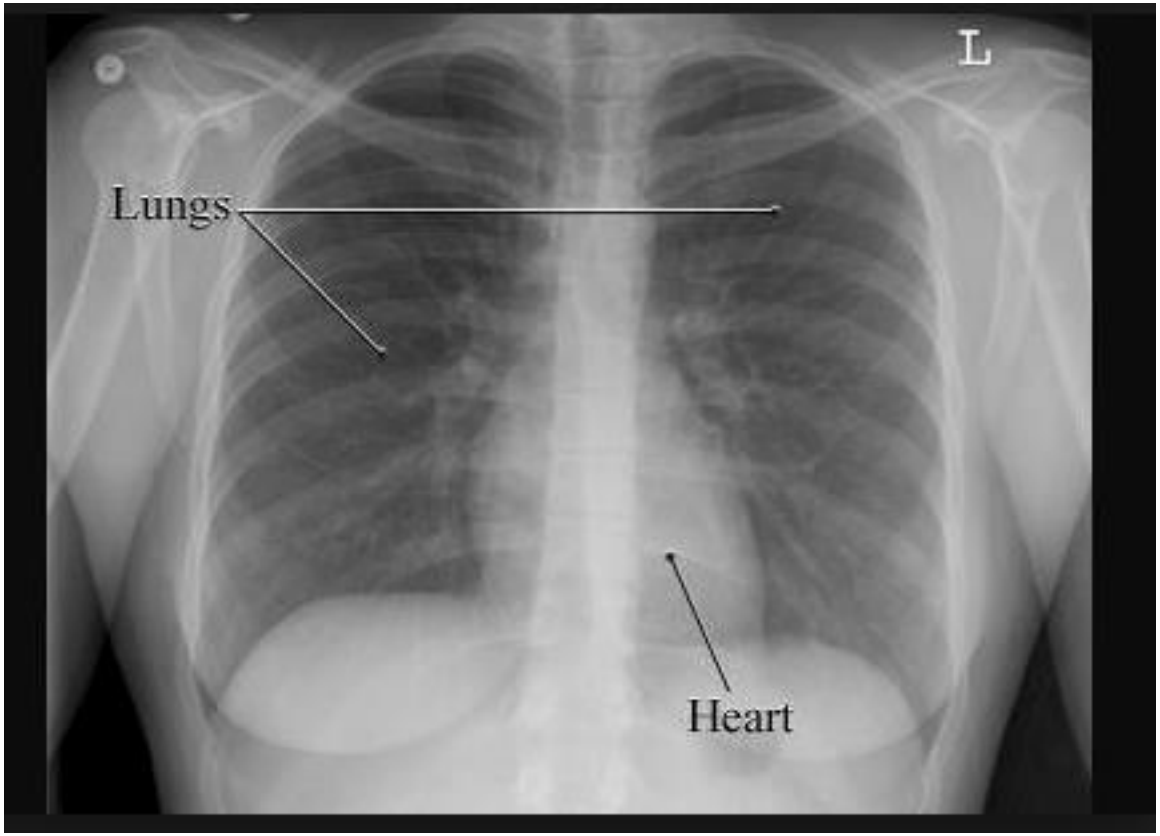
Trauma care guidelines customized for the battlefield

Extremity Hemorrhage

Junctional Hemorrhage

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

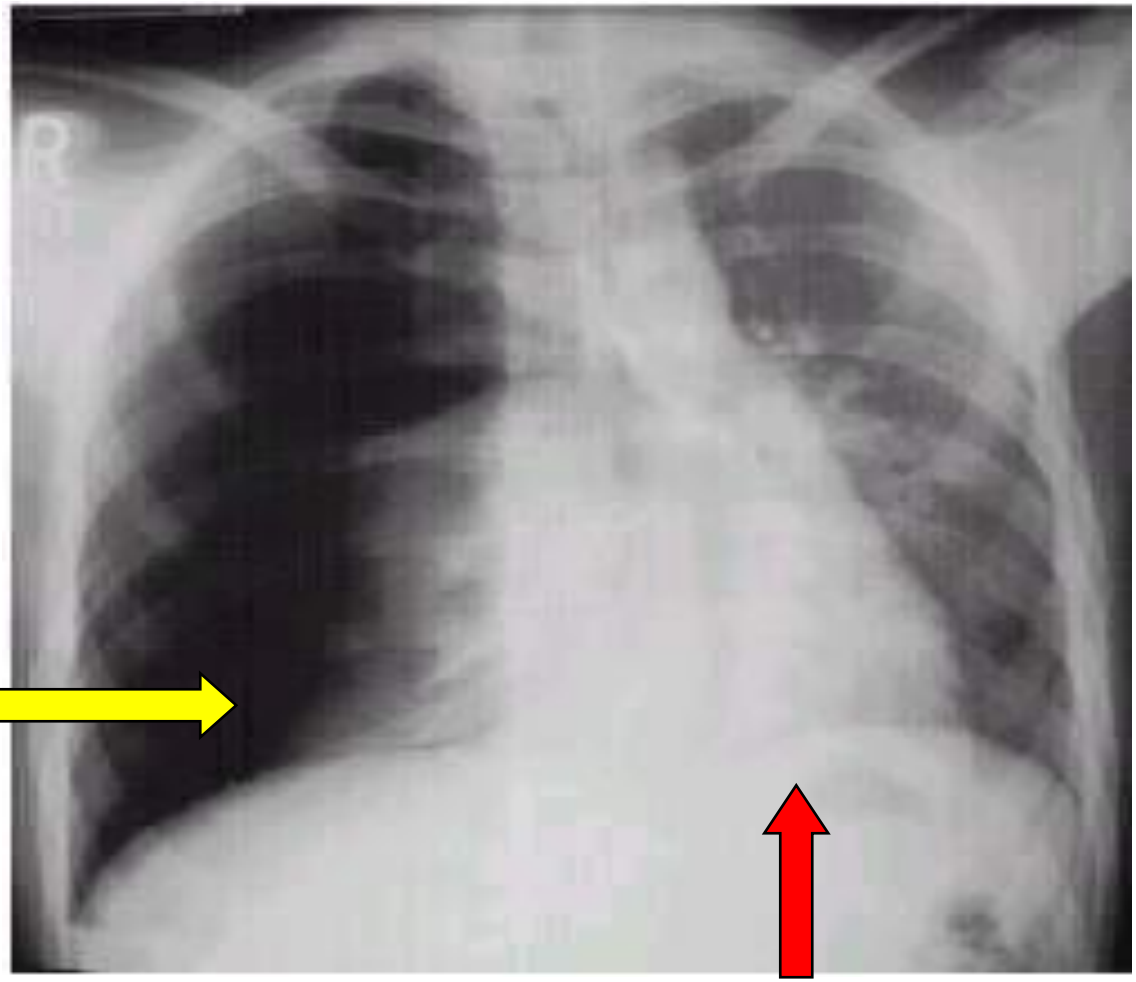
Normal Chest X-Ray



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**

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**

<u>The Drivers:</u>

- **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 <u>saving lives</u> 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 75th 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

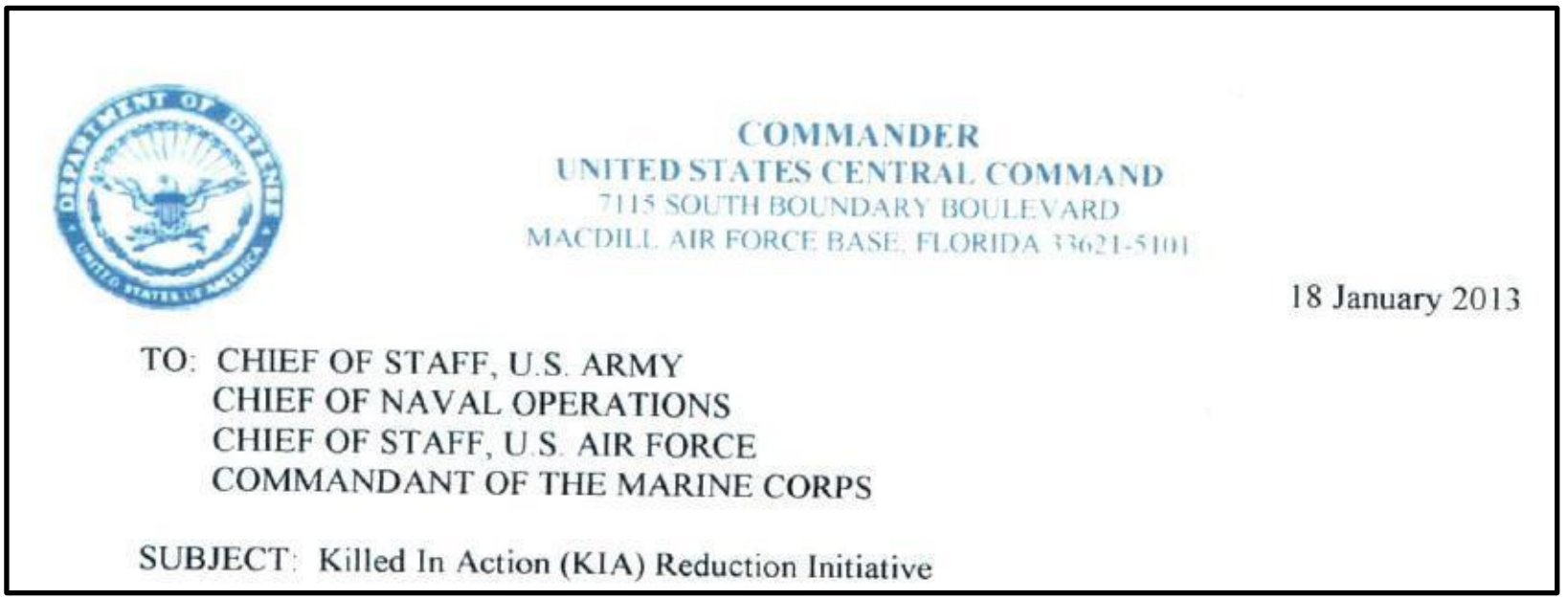
SUBJECT: Tactical Combat Casualty Care Training for Deploying Personnel, 2011-02

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.

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

JAMES N. MATTIS
General, U.S. Marines

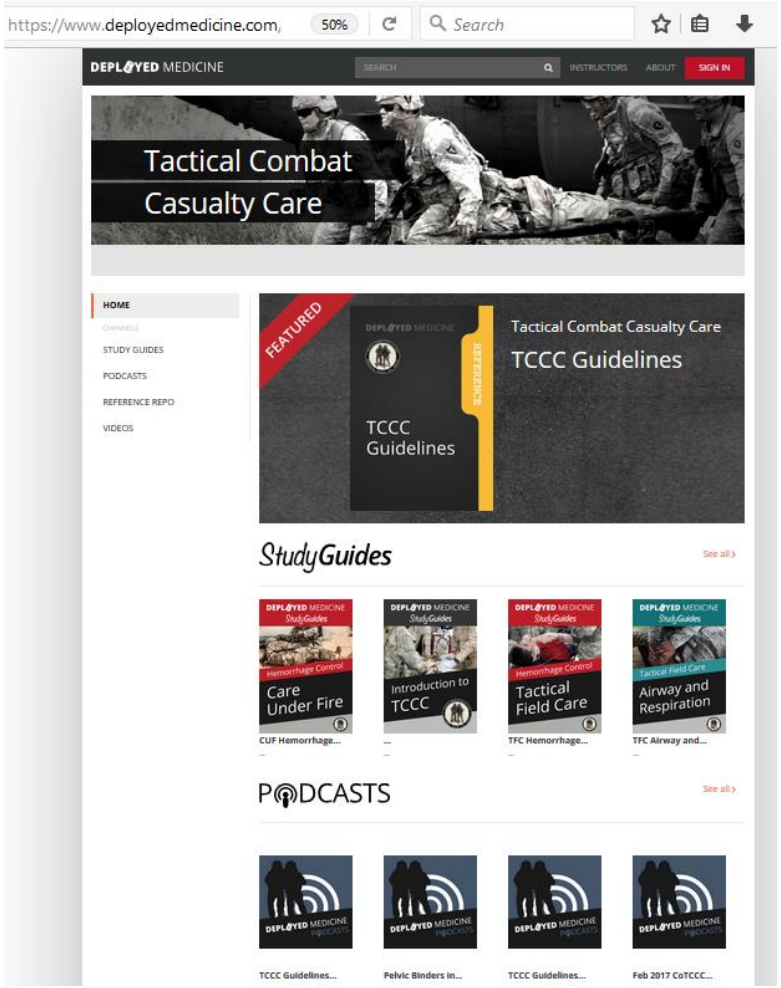
Summary of Key Points

- **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**

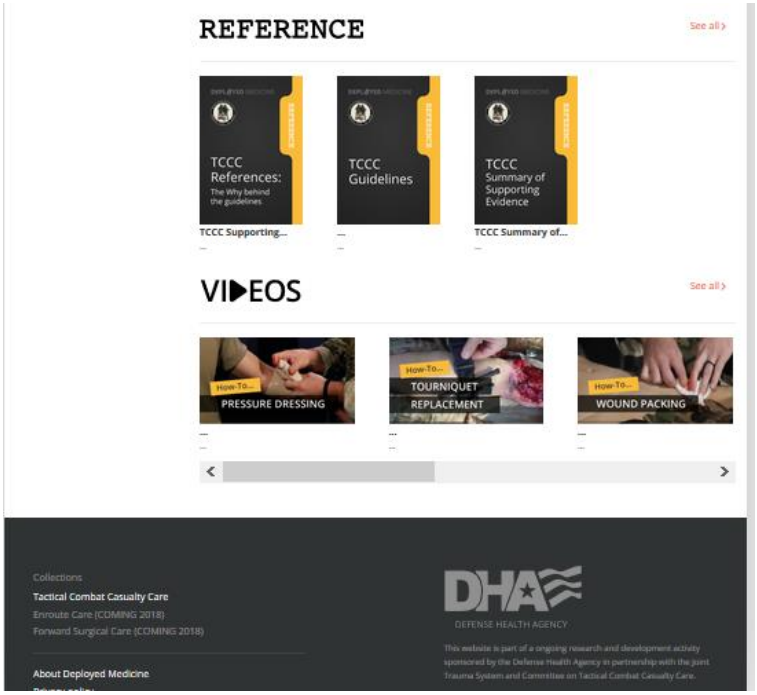
Official TCCC Education Sites



www.cotccc.com

or

www.deployedmedicine.com



Follow TCCC on Social Media

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https://www.facebook.com/CoTCCC/

@CommitteeonTCCC

https://twitter.com/CommitteeonTCCC

Channel Name:

CoTCCC Committee-on-TCCC

http://www.youtube.com/c/CoTCCCCommitteeonTCCC

https://www.linkedin.com/company/jointtraumasystem

Join the LinkedIn TCCC Discussion Group:

TCCC (https://www.linkedin.com/groups/12036508)

tc3committee

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

Questions?

Photo courtesy MSG (Ret) Harold Montgomery
75th Ranger Regiment

Tactical Combat Casualty Care for Medical Personnel
August 2017

(Based on TCCC-MP Guidelines 170131)

Care Under Fire

Objectives

- **DESCRIBE** the role of firepower supremacy in the prevention of combat trauma.
- **DEMONSTRATE** techniques that can be used to quickly move casualties to cover while the unit is engaged in a firefight.
- **EXPLAIN** the rationale for early use of a limb tourniquet to control life-threatening extremity bleeding during Care Under Fire.

Objectives

- **DEMONSTRATE** the appropriate application of a CoTCCC-recommended limb tourniquet to the arm and leg.
- **EXPLAIN** why immobilization of the cervical spine is not a critical need in combat casualties with penetrating trauma to the neck.

Care Under Fire Guidelines

1. Return fire and take cover.

2. Direct or expect casualty to remain engaged as a combatant if appropriate.

3. Direct casualty to move to cover and apply self-aid if able.

4. Try to keep the casualty from sustaining additional wounds.

Care Under Fire Guidelines

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

6. Stop life-threatening external hemorrhage if tactically feasible:

   a. Direct casualty to control hemorrhage by self-aid if able.

   b. Use a CoTCCC-recommended limb tourniquet for hemorrhage that is anatomically amenable to tourniquet use.

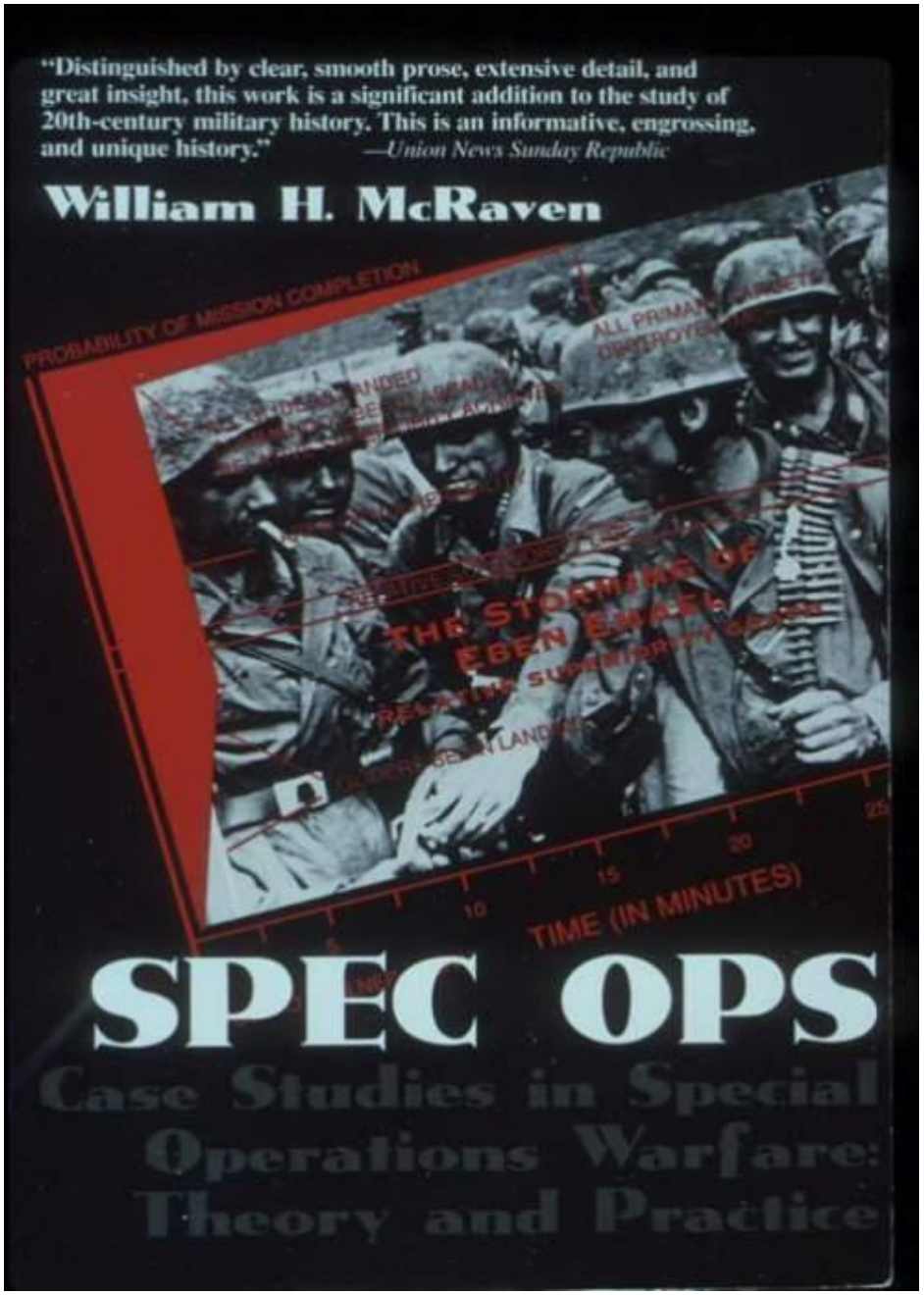
   c. Apply the limb tourniquet over the uniform clearly proximal to the bleeding site(s). If the site of the life-threatening bleeding is not readily apparent, place the tourniquet “high and tight” (as proximal as possible) on the injured limb and move the casualty to cover.

Care Under Fire Guidelines

7. Airway management is generally best deferred until the Tactical Field Care phase.

Care Under Fire

- Prosecuting the mission and caring for the casualties may be in direct conflict.
- What's best for the casualty may NOT be what's best for the mission.
- When there is conflict, which takes precedence?
- Scenario dependent
- Consider the following example:


"Distinguished by clear, smooth prose, extensive detail, and great insight, this work is a significant addition to the study of 20th-century military history. This is an informative, engrossing, and unique history." —Union News Sunday Republic
William H. McRaven
PROBABILITY OF MISSION COMPLETION
TIME (IN MINUTES)
SPEC OPS
Case Studies in Special Operations Warfare: Theory and Practice

Raid on Entebbe

by ADM Bill McRaven

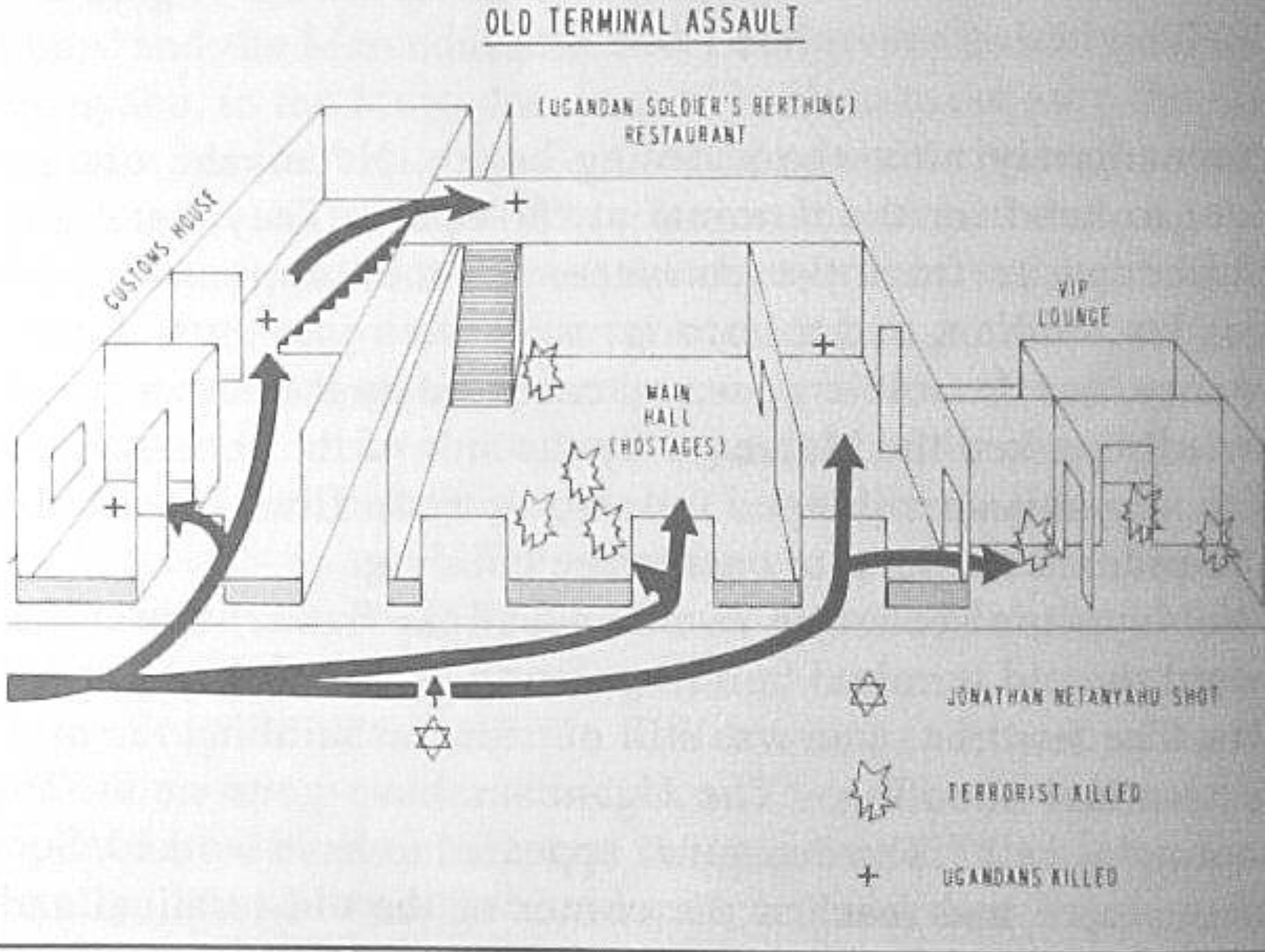
- 27 June 1976
- Air France Flight 139 hijacked
- Flown to Entebbe (Uganda)
- 106 hostages held in Old Terminal at airport
- 7 terrorists guarding hostages
- 100 Ugandan troops perimeter security
- Israeli commando rescue planned

Raid on Entebbe

by ADM Bill McRaven

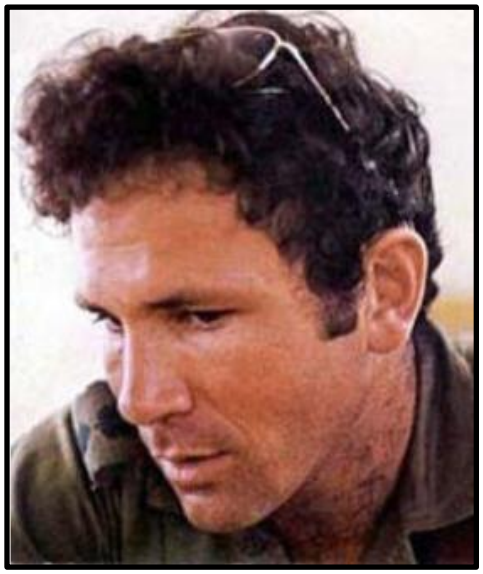
Rescue 4 July 1976

- Exit from C-130 in a Mercedes and 2 Land Rovers to mimic the mode of travel of Idi Amin – the Ugandan dictator at the time.
- Israeli commandos were dressed as Ugandan soldiers.
- Drove up to the terminal - shot the Ugandan sentry.
- Assaulted the terminal through 3 doors.


OLD TERMINAL ASSAULT
(UGANDAN SOLDIER'S BERTHING)
RESTAURANT
CUSTOMS HOUSE
VIP
LOUNGE
MAIN
HALL
(HOSTAGES)
JONATHAN NETANYAHU SHOT
TERRORIST KILLED
UGANDANS KILLED

Raid on Entebbe

ADM Bill McRaven



- **LTC Yoni Netanyahu – the ground commander – shot in the chest at the beginning of the assault**
- **What should the medic do?**
  - **– Disengage from the assault?**
  - **– Start an IV?**
  - **– Immediate needle decompression of chest?**

Raid on Entebbe

by ADM Bill McRaven

"As previously ordered, the three assault elements disregarded Netanyahu and stormed the building."

"<u>At this point in the operation, there wasn't time to attend to the wounded.</u>"

Do seconds really matter in combat?

Ma’a lot Rescue Attempt

by ADM Bill McRaven

- 15 May 1974
- 3 PLO terrorists take 105 hostages
- Schoolchildren and teachers
- When assault commenced, terrorists began killing hostages
- 22 children killed, 56 wounded
- The difference between a dramatic success and a disaster may be measured in seconds.

Recent Feedback from a TCCC Student

“I have never even heard of the Raid on Entebbe. Why do we need to learn about military history?”

History's Lesson

- There are only two times that you can plan for what to do in a tactical casualty situation –
  - Before it happens

    or
  - After it happens

SEAL Hostage Rescue Mission – Afghanistan 2012

- **Quick-reaction hostage rescue**
- **Helicopter insert**
- **4-hour patrol to target**
- **Point man shot in the head on building entry**
- **Do you stop and treat the casualty?**
- **Or do you rescue the hostage and neutralize the terrorists first?**

SEAL Hostage Rescue – Afghanistan 2012

- Second assaulter killed one hostile
- Secured the hostage (an American physician)
- Held a second hostile by the throat until he could be neutralized by another team member
- Room cleared - hostage passed off
- THEN the second assaulter, a corpsman, began to treat the casualty

SCPO Ed Byers – The Second Assaulter

The Tactical Imperative:
Senior SOF Leader Quote

"I watched with tremendous pain as the (*nation redacted*) failed in a mission because they stopped mid-assault to care for one of their wounded. It ended up costing them three more lives and a failed rescue attempt. We should never forget that you have to secure the target quickly so you don't lose more lives and you can then save the ones that are injured."

Care Under Fire

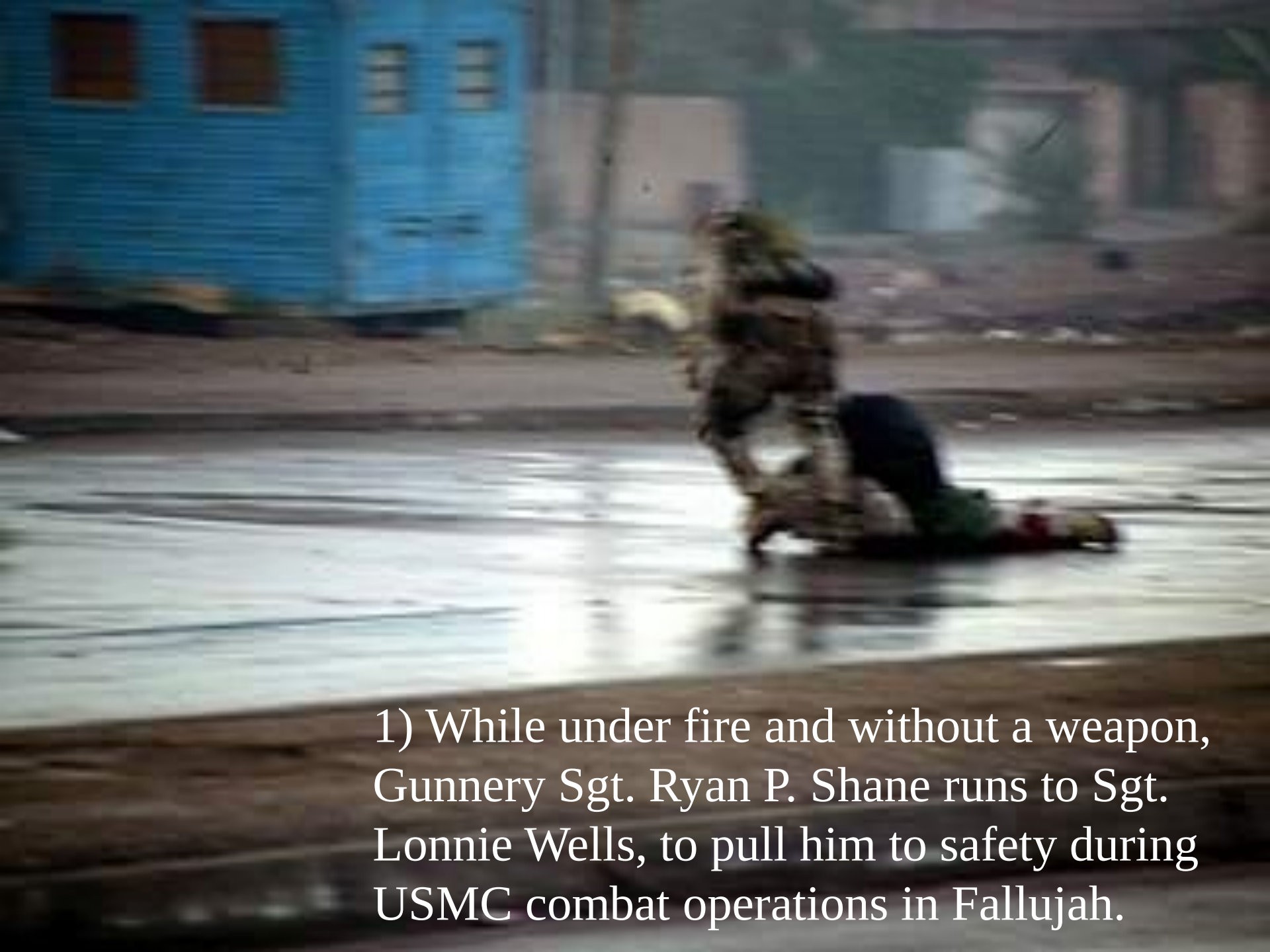
- **If the firefight is ongoing - don't try to treat your casualty in the Kill Zone!**
- Suppression of enemy fire and moving casualties to cover are the major concerns.

Care Under Fire

- Suppression of hostile fire will minimize the risk of both new casualties and additional injuries to the existing casualties.
- The firepower contributed by medical personnel and the casualties themselves may be essential to tactical fire superiority.
- **The best medicine on the battlefield is Fire Superiority.**

Moving Casualties in CUF

- If a casualty is able to move to cover, he should do so to avoid exposing others to enemy fire.
- If casualty is unable to move and unresponsive, the casualty is likely beyond help and moving him while under fire may not be worth the risk.
- If a casualty is responsive but can’t move, a rescue plan should be devised if tactically feasible.
- The next sequence of slides shows the hazards of moving casualties before hostile fire is suppressed.



1) While under fire and without a weapon, Gunnery Sgt. Ryan P. Shane runs to Sgt. Lonnie Wells, to pull him to safety during USMC combat operations in Fallujah.

2) Gunnery Sgt Shane attempts to pull a fatally wounded Sgt Wells to cover.

3) Another Marine comes to help.

4) Gunnery Sgt. Shane (left) is hit by enemy fire.

5) Gunnery Sgt Shane, on ground at left, was hit by insurgent sniper fire.

Casualty Movement
Rescue Plan

If you must move a casualty under fire, consider the following:

- **Location of nearest cover**
- **How best to move him to the cover**
- **The risk to the rescuers**
- **Weight of casualty and rescuer**
- **Distance to be covered**
- **Use suppression fire and smoke to best advantage!**
- **Recover casualty's weapons if possible**

C-Spine Stabilization

Penetrating head and neck injuries do not require C-spine stabilization

- Gunshot wounds (GSW), shrapnel
- In penetrating trauma, the spinal cord is either already compromised or is in relatively less danger than would be the case with blunt trauma.

C-Spine Stabilization

Blunt trauma is different!

- **Neck or spine injuries due to falls, fast-roping injuries, or motor vehicle accidents may require C-spine stabilization.**
- Apply only if the danger of hostile fire does not constitute a greater threat.

Types of Carries for Care Under Fire

- **One-person drag with/without a line**
- **Two-person drag with/without a line**
- **SEAL Team Three Carry**
- **Hawes Carry**

One-Person Drag

Two-Person Drag

Video: Two-Person Drag

Link to Online Video

Courtesy 75th Ranger Regiment

Two-Person
Drag Using Lines

SEAL Team Three Carry (1)

Also called the Shoulder-Belt carry.

SEAL Team Three Carry (2)

Also called the Shoulder-Belt carry.

Hawes Carry

Also called the Modified Firemen's carry or Pack Strap Carry.

Carries Practical

How <u>Not</u> to Do It

Burn Prevention in CUF

- Remove the casualty from burning vehicles or structures ASAP and move to cover.
- Stop burning with any non-flammable fluids readily accessible, by smothering, or by rolling on the ground.

Burn Prevention in CUF

Wear fire-retardant Nomex gloves and uniform!

Right hand of a burn casualty spared by fire-resistant glove

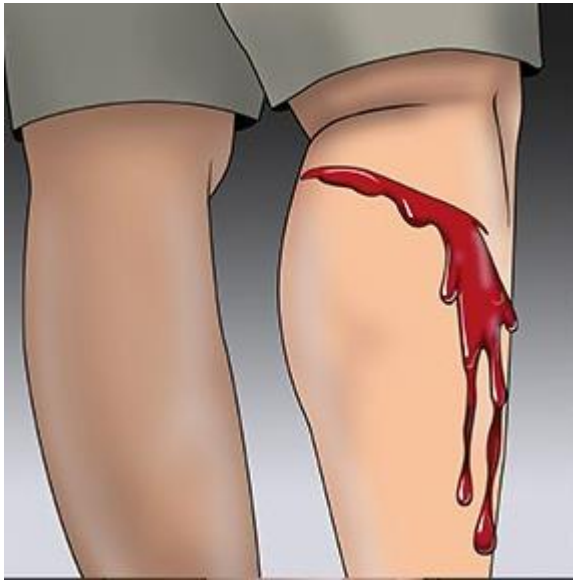
Fire-Resistant Army Combat Shirt

The Number One Medical Priority in CUF

Early control of severe hemorrhage is critical.

- **In the past, extremity hemorrhage was the most frequent cause of *preventable* battlefield deaths.**
- Over 2500 deaths occurred in Vietnam secondary to hemorrhage from extremity wounds.
- Injury to a major vessel can quickly lead to shock and death.
- ***Only life-threatening bleeding warrants intervention during Care Under Fire.***

When is bleeding life-threatening?



1. There is pulsing or steady bleeding from the wound.

Courtesy Dr. Lenworth Jacobs, Hartford Consensus Group

When is bleeding life-threatening?

2. Blood is pooling on the ground.

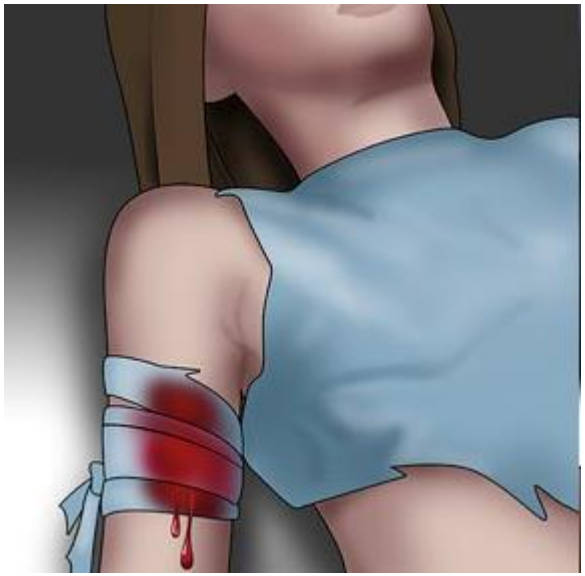
Courtesy Dr. Lenworth Jacobs, Hartford Consensus Group

When is bleeding life-threatening?

3. The overlying clothes are soaked with blood.

Courtesy Dr. Lenworth Jacobs, Hartford Consensus Group

When is bleeding life-threatening?



4. Bandages or makeshift bandages used to cover the wound are ineffective and steadily becoming soaked with blood.

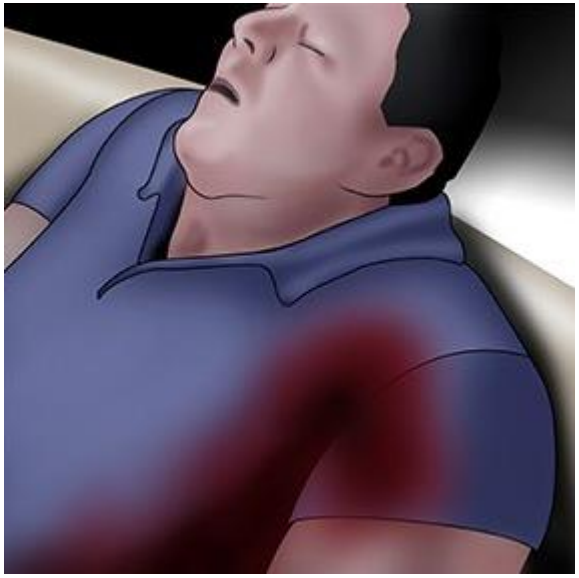
Courtesy Dr. Lenworth Jacobs, Hartford Consensus Group

When is bleeding life-threatening?

5. There is a traumatic amputation of an arm or leg.

Courtesy Dr. Lenworth Jacobs, Hartford Consensus Group

When is bleeding life-threatening?



6. There was prior bleeding, and the patient is now in shock (unconscious, confused, pale).

Courtesy Dr. Lenworth Jacobs, Hartford Consensus Group

Question

- How long does it take to bleed to death from a complete femoral artery and vein disruption?
- Answer:
  - Casualties with such an injury can bleed to death in ***as little as 3 minutes***

Video:
Femoral Artery Bleeding

Link to Online Video

Video courtesy COL John Holcomb

Care Under Fire

The need for immediate access to a tourniquet in such situations makes it clear that all personnel on combat missions should have a CoTCCC-recommended limb tourniquet readily available at a standard location on their battle gear, and be trained in its use.

- **Casualties should be able to easily and quickly reach their *own* tourniquets.**

Care Under Fire

Where a tourniquet can be applied, it is the ***first*** choice for control of life-threatening hemorrhage in Care Under Fire.

A Preventable Death

Did not have an effective tourniquet applied - bled to death from a leg wound

Limb Tourniquet Application

- Apply without delay if indicated.
- Both the casualty and the medic are in grave danger while a tourniquet is being applied in this phase – don't use tourniquets for wounds with only minor bleeding.
- The decision regarding the relative risk of further injury versus that of bleeding to death must be made by the person rendering care.

Tourniquet Application

- Non-life-threatening bleeding should be **ignored** until the Tactical Field Care phase.
- Apply the tourniquet without removing the uniform – make sure it is clearly proximal to the bleeding site.
- **If you are not sure exactly where the major bleeding site is on the extremity (night operations, multiple wounds), apply the tourniquet "high and tight" (as proximal as possible) on the arm or leg.**

Tourniquet Application

- **Tighten the tourniquet until bleeding is controlled.**
- **If the first tourniquet fails to control the bleeding, apply a second tourniquet just above (proximal to) the first.**
- **Don’t put a tourniquet directly over the knee or elbow.**
- **Don’t put a tourniquet directly over a holster or a cargo pocket that contains bulky items.**

C·A·T® COMBAT APPLICATION TOURNIQUET®

GEN 7

Instructions for One-Handed Application

Courtesy of North American Rescue

1

Step 1

Insert the injured limb through the loop in the band and position the tourniquet 2-3" above the bleeding site. If the most proximal bleeding site is not readily identifiable, place the tourniquet as high as possible on the limb.

2

Step 2

Pull the band **TIGHTLY** and fasten it back on itself all the way around the limb, but not over the rod clips. The band should be tight enough that the tips of three (3) fingers **cannot** be slid between the band and the limb. If the tips of three (3) fingers slide under the band, retighten and re-secure.

3

Step 3

Twist the rod until bleeding has stopped.

4

Step 4

Snap the rod inside a clip to lock it in place. **Check for bleeding and a distal pulse.** If bleeding is not controlled, or a distal pulse is still present, consider more tightening or applying a second tourniquet above and side-by-side to the first. Reassess.

5

Step 5

Route the band over the rod and between the clips. Secure with the gray securing strap. Record the time of application.

Video: C-A-T One-Handed Application to an Arm

Link to Online Video

GEN 7

Instructions for Two-Handed Application

Courtesy of North American Rescue

1

Step 1

Route the band around the limb, pass the red tip through the slit of the buckle, and position the tourniquet 2-3" above the bleeding site. If the most proximal bleeding site is not readily identifiable, place the tourniquet as high as possible on the limb.

2

Step 2

Pull the band **TIGHTLY** and fasten it back on itself all the way around the limb, but not over the rod clips. The band should be tight enough that the tips of three (3) fingers **cannot** be slid between the band and the limb. If the tips of three (3) fingers slide under the band, retighten and re-secure.

Step 3

Twist the rod until bleeding has stopped.

Step 4

Snap the rod inside a clip to lock it in place. **Check for bleeding and a distal pulse.** If bleeding is not controlled, or a distal pulse is present, consider more tightening or applying a second tourniquet above and side-by-side to the first. Reassess.

Step 5

Route the band over the rod and between the clips. Secure with the gray securing strap. Record the time of application.

Video: C-A-T Two-Handed Application to a Leg

Link to Online Video

CAT Application

- **For generation six or earlier CATs, the manufacturer recommended passing the Self-Adhering Band through both slits in the buckle. Experience and research have shown that routing it through only one of the slits is also effective and allows the tourniquet to be applied a little more quickly.**
- **With any version of the CAT, monitor the casualty closely to ensure that the tourniquet remains tight and that bleeding remains controlled.**

Other Tourniquets

- **The SOF Tactical Tourniquet (SOFTT) by Tactical Medical Solutions, Inc.**
- **Also recommended along with the C.A.T. by the CoTCCC for carriage by Combat Medics on the battlefield.**

Photo courtesy TMS, Inc.

Other Tourniquets

- **Emergency and Military Tourniquet (EMT) by Delfi Medical Innovations, Inc.**
- **The EMT is an excellent tourniquet and is recommended by the CoTCCC for use in evacuation platforms and medical treatment facilities, but not for carriage by medics on the battlefield at this point.**

Photo courtesy Wafflephile/Wikipedia

Beware of Fakes!

- Unscrupulous manufacturers make and sell knock-offs that look very much like CoTCCC-approved limb tourniquets.
  - Poorer quality
  - Numerous failures reported
- Purchase only through military supply channels:
  - Tourniquet, nonpneumatic (CAT)
    - NSN 6515-01-521-7976
    - North American Rescue
  - Tourniquet, nonpneumatic (SOFT T-W)
    - NSN 6515-01-587-9943
    - Tactical Medical Solutions

Impact of Tourniquet Use
Kragh - Annals of Surgery 2009

- Ibn Sina Hospital, Baghdad, 2006
- Tourniquets are saving lives on the battlefield.
- **Survival was better when tourniquets were applied BEFORE casualties went into shock.**
- 31 lives were saved in this study by applying tourniquets in prehospital settings rather than in the Emergency Department.
- An e**stimated 1000-2000 lives had been saved by tourniquets as of 2008 (data provided to Army Surgeon General via an internal communication)**

Safety of Tourniquet Use
Kragh - Journal of Trauma 2008

- Combat Support Hospital in Baghdad
- 232 patients with tourniquets on 309 limbs
- CAT was the best field tourniquet
- No amputations were caused by tourniquet use
- Approximately 3% had transient nerve palsies

Tourniquet Mistakes to Avoid!

- **Not using one when you should, or waiting too long to put it on.**
- **Not pulling all the slack out before tightening.**
- **Using a tourniquet for minimal bleeding.**
- **Putting it on too proximally if the bleeding site is clearly visible.**
- **Not taking it off when indicated during TFC.**
- **Taking it off when the casualty is in shock or has only a short transport time to the hospital.**
- **Not making it tight enough – the tourniquet should both stop the bleeding AND eliminate the distal pulse.**
- **Not using a second tourniquet if needed.**
- **Periodically loosening the tourniquet to allow blood flow to the injured extremity.**

*** These lessons learned have been written in blood. ***

Examples of Extremity Wounds That Do NOT Need a Tourniquet

Use a tourniquet ONLY for <u>severe</u> bleeding!

Tourniquet Pain

- **Tourniquets HURT when applied effectively!**
- **Pain does not necessarily indicate a mistake in application.**
- **Pain does not mean you should take it off!**
- **Manage pain per TCCC Guidelines.**

After a Tourniquet has been Applied

- **After ANY tourniquet application, monitor the casualty closely to ensure that the tourniquet remains tight and that bleeding remains controlled.**
- **Reassess! Reassess! Reassess!**

Questions?

Hemorrhage Control in CUF

Link to Online Video

Limb Tourniquet Practical

Hemorrhage Control for Non-Extremity Bleeding

- Some wounds will be in places where a limb tourniquet cannot be applied, such as the:
  - Neck
  - Axilla (armpit)
  - Groin
- **The use of a hemostatic agent (e.g., Combat Gauze) is generally not tactically feasible in CUF because of the requirement to hold direct pressure for 3 minutes.**

Airway – Will Cover in TFC

No immediate management of the airway is anticipated during Care Under Fire.

- Don't take time to establish an airway while under fire.
- Defer airway management until you have moved the casualty to cover.
- Combat deaths from compromised airways are relatively infrequent.
- If the casualty has no airway in Care Under Fire, chances for survival are minimal.

Summary of Key Points

- **Return fire and take cover!**
- **Direct or expect the casualty to remain engaged as a combatant if appropriate.**
- **Direct the casualty to move to cover if able.**
- **Try to keep the casualty from sustaining additional wounds.**
- **Get casualties out of burning vehicles or buildings.**

Summary of Key Points

- **Stop life-threatening external hemorrhage if tactically feasible.**
  - **Use a limb tourniquet for hemorrhage that is anatomically amenable to its application.**
  - **Direct the casualty to control hemorrhage by self-aid if able.**

- **Airway management is generally best deferred until the Tactical Field Care phase.**

Questions?

Scenario-Based Planning

- If the basic TCCC combat trauma management plan for Care Under Fire doesn't work for your specific tactical situation – ***then it doesn't work***.
- Scenario-based planning is critical for success.
- Incorporate likely casualty scenarios into unit mission planning!
- The following is one example:

Convoy IED Scenario

Convoy IED Scenario

- Your element is in a five-vehicle convoy moving through a small Iraqi village.
- A command-detonated IED explodes under the second vehicle.
- There is incoming sniper fire.
- The rest of the convoy is suppressing the sniper fire.

Convoy IED Scenario

- You are a medic in the disabled vehicle.
- The person next to you has sustained bilateral mid-thigh amputations.
- There is heavy arterial bleeding from the left stump.
- The right stump exhibits only mild oozing of blood.

Convoy IED Scenario

- The casualty is conscious and in moderate pain.
- Your vehicle is not on fire, and is right side up.
- You are uninjured and able to assist.

Convoy IED Scenario

First decision:

- Return fire or treat the casualty?
  - Treat the immediate threat to life.
  - Why?
    - The rest of convoy is providing suppressive fire.
    - The treatment is effective and QUICK.
- First action?
  - You put a tourniquet on the stump with arterial bleeding.

Convoy IED Scenario

Next action?

- Should you put a tourniquet on the other stump?
  - Not until Tactical Field Care.
  - It is not bleeding right now.

Next actions?

- Drag the casualty out of the vehicle and move to your best cover.
- Return fire if needed.
- Communicate info on the casualty to the team leader.


Questions?