

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.





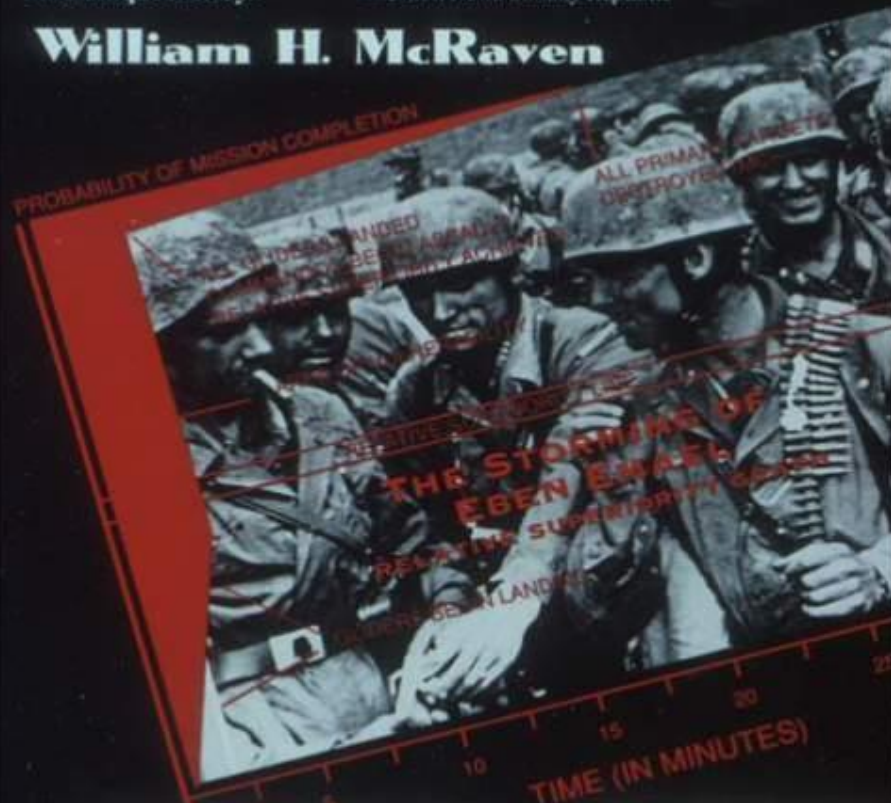
Care Under Fire

- 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



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



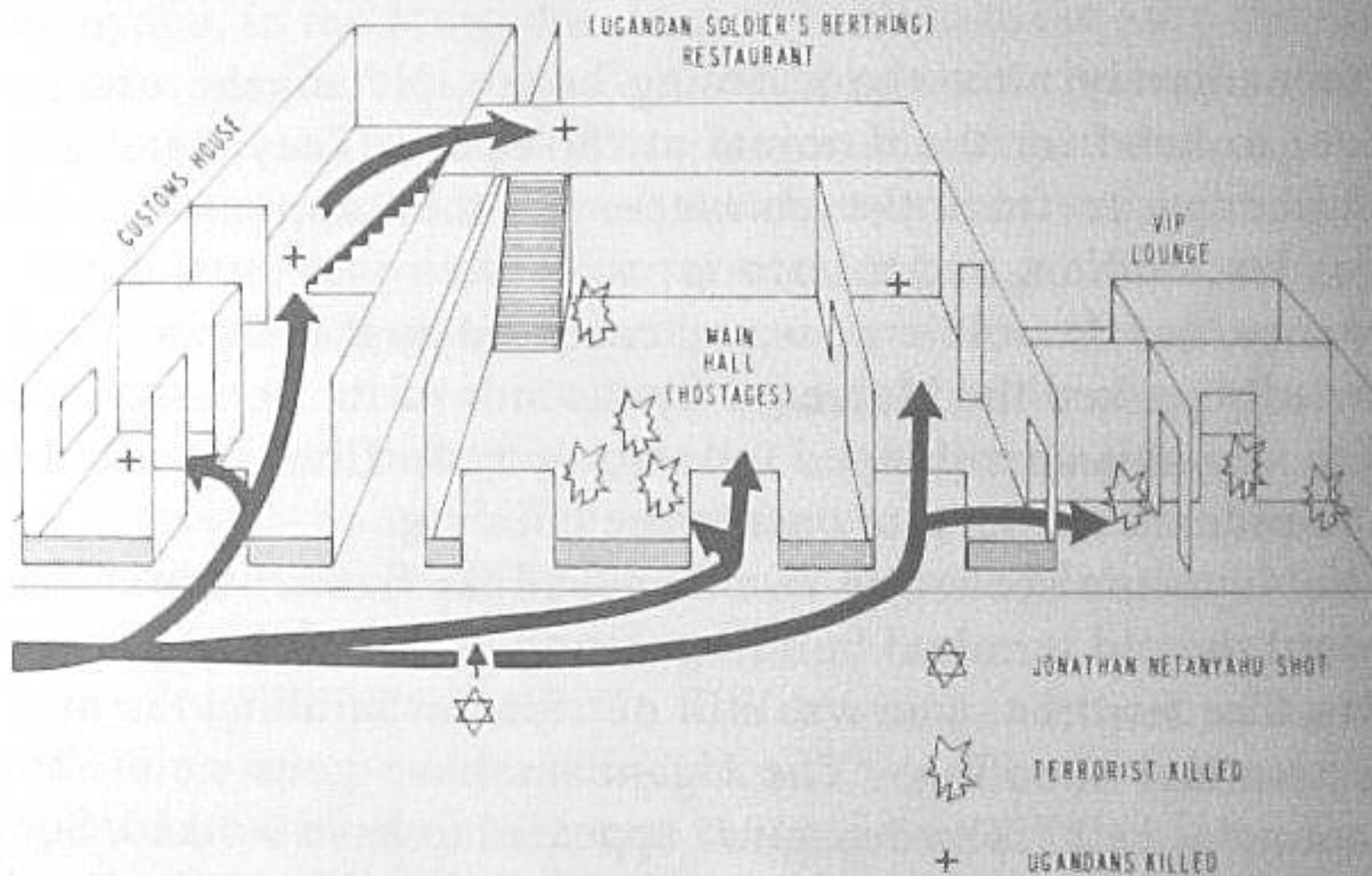
Raid on Entebbe

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

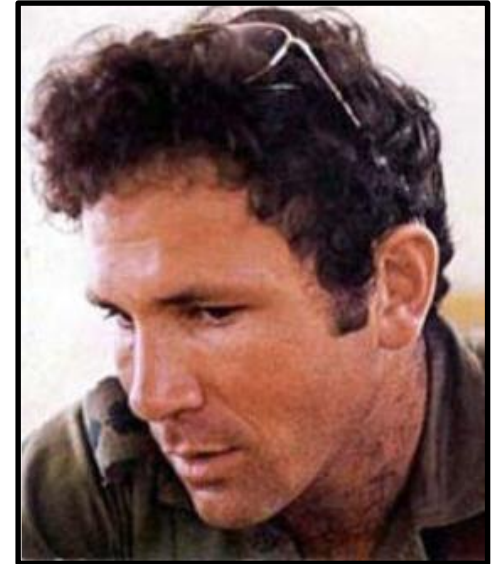




Raid on Entebbe

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.”

“At this point in the operation, there wasn’t time to attend to the wounded.”



**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 Not 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



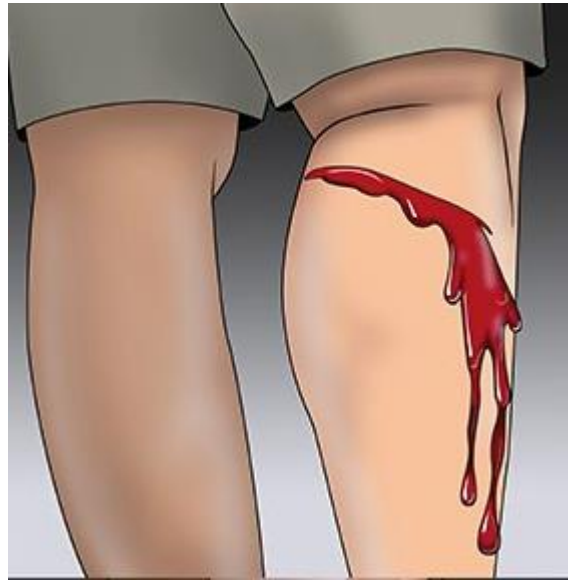
The Number One Medical Priority in CUF

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.



When is bleeding life-threatening?



2. Blood is pooling on the ground.



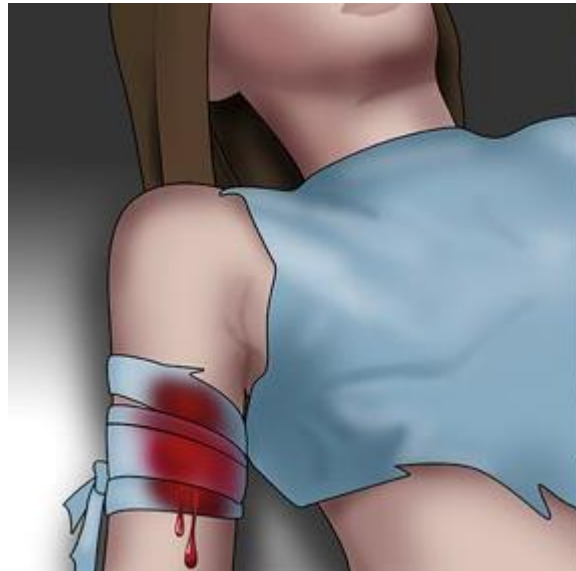
When is bleeding life-threatening?



3. The overlying clothes are soaked with blood.



When is bleeding life-threatening?



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



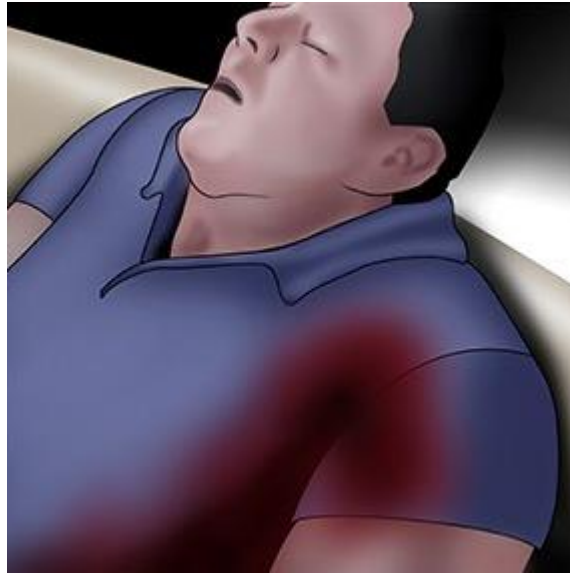
When is bleeding life-threatening?



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



When is bleeding life-threatening?



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



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.**



CAT[®] 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](#)



CAT[®] COMBAT APPLICATION TOURNIQUET[®]

GEN 7



Instructions for Two-Handed Application

Courtesy of North American Rescue



1

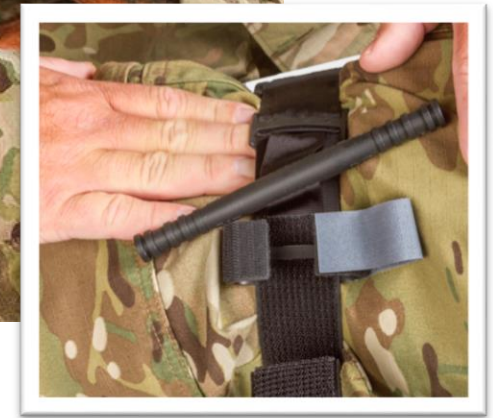


Step 1

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.



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 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 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 estimated 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 severe 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?

