Tourniquets, Tactics and Teamwork: Essential Elements in Active Shooter and IED Response

Background

• 18D
• PA
• JSOC
• AWG
• JCTAWS
Mil > Civ > Mil

- WWII, Korea and Viet Nam
  - Casualty transport, forward treatment

- “Cold War”
  - Modeled Civilian EMS/ATLS protocols

- OIF/OEF
  - Casualty transport, forward treatment
Somalia- 1993

• SFC Bob Mabry
  – 18D on CSAR Aircraft
    • Tourniquet = lost limb
    • Constricting band with periodic loosening

• LTC Bob Mabry
  – Leading advocate of TQ’s on the battlefield

NOTE

If bleeding continues and all other measures have failed (dressing and covering wound, applying direct manual pressure, elevating limb above heart level, and applying pressure dressing maintaining limb elevation), then apply digital pressure. See Appendix E for appropriate pressure points.

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The tourniquet should not be used unless a pressure dressing has failed to stop the bleeding or an arm or leg has been cut off. On occasion, tourniquets have injured blood vessels and nerves. If left in place too long, a tourniquet can cause loss of an arm or leg. Once applied, it must stay in place, and the casualty must be taken to the nearest medical treatment facility as soon as possible. DO NOT loosen or release a tourniquet after it has been applied and the bleeding has stopped.
Outcomes of Somalia 1993-2001

- SOF Medical Working Group
  - CAT Tourniquet

- John Holcomb and Frank Butler
  - TCCC
    - Deviation from ATLS
    - ABC’s vs MARCHE

Outcomes of Somalia 1993-2001

• TCCC is not a prehospital ATLS equivalent
  – Tourniquets recommended

• NAVSPECWARCOM endorses TCCC

• 4th Edition of PHTLS manual includes TCCC and TQ’s

Review of VN, Somalia and Gulf War Data

• Three Leading Causes of Preventable Death on the Battlefield
  
  – Tension Pneumothorax
    • Needle Decompression
  
  – Airway Obstruction
    • Recovery position
    • Cricothyroidotomy
  
  – Exsanguination from extremity hemorrhage
    • Tourniquet
    • Hemostatic Agents

bleeding. The wounded person must lie down and the arm or leg must be held up as high as possible while direct pressure is made on the wound and a sterile dressing is put on.

(c) Use of tourniquet.—(1) Do not use a tourniquet unless bleeding cannot be stopped by other means. Bleeding from a wound can usually be stopped by applying a sterile dressing, pressing directly over the wound, and, if possible, raising the wounded part. If a regular issue tourniquet is used, the buckle should be on the inside of the upper arm or thigh as shown in figures 3 and 4, and the strap should be pulled in a downward direction while the injured part is steadied.

If bleeding cannot be stopped by simply pulling the tourniquet tight, loosen it enough to slip a bayonet or other object under it so that it can be made tight enough by twisting.

(5) A properly applied tourniquet stops all the blood going to the injured part, and gangrene may develop if a tourniquet is left on too long. It should be loosened every 20 or 30 minutes, and then tightened again after 10 or 15 seconds.

(6) Do not cover a tourniquet with a bandage or a splint because, if covered, it may be forgotten and left on too long.
2-20. **Tourniquet**

**DANGER**

A tourniquet is only used on an arm or leg where there is a danger of the casualty losing his life (bleeding to death).

A tourniquet is a constricting band placed around an arm or leg to control bleeding. A service member whose arm or leg has been completely amputated may not be bleeding when first discovered, but a tourniquet should be applied anyway. This absence of bleeding is due to the body’s normal defenses (contraction or clotting of blood vessels) as a result of the amputation, but

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*The tourniquet should not be used unless a pressure dressing has failed to stop the bleeding or an arm or leg has been cut off.* On occasion, tourniquets have injured blood vessels and nerves. If left in place too long, a tourniquet can cause loss of an arm or leg. Once applied, it must stay in place, and the casualty must be taken to the nearest MTF as soon as possible. *DO NOT loosen or release a tourniquet after it has been applied as release could precipitate bleeding and potentially lead to shock.*
The Ranger Experience

• Russ Kotwal
  – Regimental Surgeon

• Stan McChrystal
  – Regimental Commander
  – Marksmanship, Physical Training, Small Unit Tactics, Medical Skills Training

The Ranger Experience

• 2001 to 2010
  – 8 thousand direct action raids
  – 419 casualties
  – 32 Deaths
  – NONE from 3 major, potentially survivable causes
    • Exsanguination from extremity hemorrhage
    • Tension pneumothorax
    • Airway obstruction

Leadership Implications from the Ranger Experience

• Casualties are a tactical problem

• Evacuation is a Tactical Leader responsibility

• Casualty events must become a part of every training event
Tourniquets

• Principles
  – Must stop arterial blood flow!
    • Extremely difficult with 1” and no mechanical advantage
  – ♦ limb circumference requires ♦ pressure
    • Width inversely influences relationship

• Consideration
  – One handed use?
  – Cost?
  – Durability?

Walters & Mabry (2005) Issues Related to the use of Tourniquets on the Battlefield. Military Medicine; 170(9), p 770-775
What Makes An Ideal Field Tourniquet?

• **Size Matters!**
  – 1” to 1.5”
    For adults!

• **Windlass**
  – Durable
  – Rigid

• **Windlass Catch**
Combat Application Tourniquet (CAT)
Special Operations Forces Tourniquet (SOF-T)
SOF-T Wide
MET
Tactics

• TCCC
  – Military population
  – Military environment
    • Care Under Fire, Tactical Field Care, Evacuation

• CTECC
  – Speed the transition from Mil to Civ
  – Adapt Mil to Civ
    • Direct Threat, Indirect Threat, Evacuation Care
Committee for Tactical Emergency Casualty Care (C-TECC)

• Civilian and Military work in different environments
  – Patient population
  – Scope of practice
    • Standard of care
  – Legal/Liability
  – Resources
  – Language
Current C-TECC Recommendations

• TQ for exsanguinating extremity hemorrhage

• High on Extremity over clothes
  – 2 “ above wound but not on a joint

• Attempt to convert to pressure dressing and consider hemostatic agents if evacuation time greater than 2 hours

CTECC Guidelines, 2014
Terrorist vs Mass Murderer

• Terrorist
  – Driven by ideology
  – Make a statement
  – Political or social change

• Mass Murderer
  – Pathologic
  – Fame or Recognition
  – Avenge a perceived affront

• Lone Wolf
Asymmetric Attack aka Hybrid Targeted Violence
Taj Mahal Hotel

- Fire As a Weapon
- Hostages
- Targeted Execution
Aurora
Aurora

• Non-standard evacuation
  – Pick-up truck
  – Police vehicle

• Mutual Aid
  – LE/EMS

• Choke points of ingress/egress
Boston Marathon
Boston

- Bystander Response
- Improvised Tourniquets
Teamwork

• Bystander

• EMS

• LEO
AED Model

• CPR

• AED
  – $750 to $1750
  – Maintenance
  – Software Upgrade

• Why not hemorrhage control?
Stop the Bleed

No matter how rapid the arrival of professional emergency responders, bystanders will always be first on the scene. A person who is bleeding can die from blood loss within five minutes, therefore it is important to quickly stop the blood loss.

"Stop the Bleed" is a nationwide campaign to empower individuals to act quickly and save lives.

Remember to be aware of your surroundings and move yourself and the injured person to safety, if necessary.

Call 911.

Bystanders can take simple steps to keep the injured person alive until appropriate medical care is available. Here are three actions you can take to help save a life:

Compress

Find where the bleeding is coming from and apply firm, steady pressure to the bleeding site with bandages or clothing.
LEO – EMS

• Traditional Model
  – Active Shooter response
    • LE leads
    • EMS waits in “safe zone” (cold zone)

• Emerging Model
  – EMS enters with LE protective escort
Current Models of Active Shooter Response

- Rescue Task Force/Escorted Warm Zone
  - Follow on entry element

- Warm Corridor
  - 3 Echo

- Police Rescue
  - LE has Direct Threat and Indirect Threat

- Protected Island
  - Secure CCP
Joint LE/EMS Active Shooter Response Training (N-256)

• Do you feel adequately prepared to respond to an active shooter incident?
  • Pre = 41%  Post = 89%  Δ = 48%

• Do you feel adequately trained to respond to an active shooter incident?
  • Pre = 36%  Post = 87%  Δ = 51%
Joint LE/EMS Active Shooter Response Training (N-256)

- You should NEVER enter a building with an active shooter.
  - Pre 73%  Post 61%  Δ = 12%

- No Prior Military Δ > than Prior Military
3 Echo

• Minneapolis, Minnesota
  – 2008 Republican Convention prompted introspection

  – Working Group
    • LE/Tactical LE
    • EMS
    • Military (Civil Support Team)
    • EOD
<table>
<thead>
<tr>
<th>Issue</th>
<th>Outcome</th>
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<tr>
<td>LE focus was on neutralization of threat and not on living victims, location, and potential safe areas of access.</td>
<td>follow-up resources were not used effectively resulting in substantial delays</td>
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<td>EMS and fire staged far from the event and did not approach until fully secure</td>
<td>Substantial delays in accessing and transporting patients</td>
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<td>LE command transitioned rapidly, limited information sharing between LE/EMS/FIRE</td>
<td>Substantial delays in communication occurred</td>
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<td>LE and EMS personnel were not comfortable with, or equipped to treat, immediate life threats, such as exsanguinating limb hemorrhage.</td>
<td>victims would have died from their simulated injuries.</td>
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<td>Responders were not attuned to secondary threats</td>
<td>More lives would have been lost in the scenarios.</td>
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Core Tenets of 3 Echo

• LE priorities
  – safe access
  – supporting victim evacuation
  – contain/neutralize threat

• Rescue response > safe scene
  – appropriate to the needs of injured and hemorrhaging patient
  – must be incorporated into initial operations, and is a higher priority than establishing a completely safe scene.

• EMS/Fire Staging
  – safe distance
  – early liaison with LE
  – Rapid Entry
    • Safe area
    • Safe corridor
Enter – Evaluate - Evacuate

- **Enter**
  - Caution
    - Rapidly identify potential secondary threats
  - Communicate
    - Casualties and hazards
  - Create
    - Command Center
    - Perimeter
    - Staging for Evac vehicles
    - Assembly for walking wounded/escapees
  - Conceal and Cover
    - Secure and protected
  - Corridor
    - Enter with basic life saving equipment
Enter – Evaluate - Evacuate

• Evaluate
  – Caution
    • Secondary threat
    • Victim or Perpetrator?
  – Care
    • Rapid triage
    • Body sweep (victim or perp?)
    • Hemorrhage control
Key Points

• Tourniquets work
  – Only if you have them!

• Bystanders are an asset
  – If properly trained

• Active Shooter / IED is a Systems Problem
  – The day it happens is NOT the day to figure out how to work together
Questions?

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