Urban | Tactical
First Aid Essentials

In the times in which we live there has been a great interest in tactical and combative based first aid due to fears of various types of life altering scenarios ranging from terror attacks to natural disasters. The following information is a snapshot of tactical first aid as it may be applied to traumatic injuries. The most field expedient method of stopping blood loss is with firm and direct pressure, often followed by a tourniquet if injuries exist to the arms or legs or a hemostatic agent such as a quick clot.

The following information was compiled upon review of the leading causes of preventable battlefield deaths:

- Bleeding from extremities: 60%
- Tension Pneumothorax (Sucking Chest Wound): 33%
- Airway Obstruction: 6%

Considering these numbers, it would make prudent sense to focus treatment while engaged in a tactical scenario to these conditions. While under fire or engaged in battle, there is no pause button or time to perform traditional CPR. Therefore, we utilize the following mnemonic device to guide us in treatment protocol- M.A.R.C.H.

M: Massive Bleeding, we look for bleeding injuries due to gunfire or stab wounds and stop bleeding as quickly as possible.

A: Airway, we open and airway and sweep away any obvious obstructions impeding proper air exchange.

R: Respiration, we seek to address any issues ranging from bullet wounds to implements due to shrapnel that may have injured the patient's ability to breathe normally.

C: Circulation, we keep the blood moving within the body by plugging holes and preventing blood loss and providing compression as needed.

H: Hypo/Hyperthermia, we maintain the patients core body temperature

Again, direct pressure on blood vessels can stop bleeding, even if that means sticking your finger into a wound to plug a hole or to press on a bleeding vessel for a short time. However, extensive wounds may require packing with an absorbent material such as gauze. Do not pack an abdominal wound or place it in an area where other injuries may make the condition worse as in the case of fragmented bones or glass, and shrapnel embedded into the wound site. If direct pressure does not stop bleeding, apply a

tourniquet. A Combat Application Tourniquet (CAT) or SOF-T are the better choices for your first aid kits due to their ease of use. Survival mentality dictates that two is one and one is none, therefore, pack two tourniquets into your kit or in a cargo pocket for worst case scenarios. A 3' x 3' piece of cotton cloth (like a shemagh) or 55 gallon drum liner also works well as an improvised tourniquet so long as it is easily deploy-able from the survivor's kit in mere seconds. This means rolling it and storing it with a windlass device like a toggle or tent stake. Once a tourniquet is applied, it is not removed due to the build up of potassium which essentially builds up and poisons the blood. In a hospital setting drugs are administered to counteract this before a tourniquet is removed, but in a long term austere environment, removal of the distal limb would be required when drugs are not available. Hemostatic agents (quick clots) should only be used on areas a tourniquet cannot be used, such as the neck, shoulder, groin or abdomen. When there is a hole in the chest or back with pain that results in it becoming more and more difficult to breathe- it's likely tension pneumothorax, so clean and cover the hole with an occlusive dressing and when and if possible needle decompression will be required and should be performed by someone trained to administer the technique properly. This is vital as too low or too high and more damage than necessary could be caused which will quickly worsen the condition.

Combat Application Tourniquet

Special Ops Forces Tactical Tourniquet

This may sound crass, but pain is the problem of the patient. When you're in a high stress situation, get what needs to be done, done, so that you can save your patient's life. Consider that hitting any major blood vessel in the body with a bullet results in a 100% fatality rate, so nicks to these areas from bullet shrapnel and bone fragments may result in bleeding out in a little as two minutes. With a total blood volume loss of 2.5 liters, the loss of life is imminent in a field setting.

The basics for care while under fire:

- Return fire and take cover
- Verbally direct or expect those wounded in your party to remain in the fight, but to seek cover and apply self-aid such as a tourniquet.
- Try to keep yourself or those in party free from additional injuries by getting to cover
- Stop immediate life threats (Massive Bleeding)

The fact is that there are only two times you can plan for a survival situation. Before and after... Planning ahead of time makes the most sense as after may be too little, too late.

The basics when treating field injuries:

- Use 1quart of potable water to irrigate 1 inch of wound. So, a five-inch wound requires 5qt of clean water.
- To disinfect, avoid peroxide as it slows the healing process. Alcohol, while it burns, is less damaging.
- Honey or sugar is a good form of neosporin without the complications of neosporin or triple antibiotic ointments which could irritate some patients. Just remember that neither honey or sugar can be put into an open wound until the bleeding has been completely stopped/ controlled, otherwise it will worsen the condition. It's best to wait at least 24 hours in the field before applying honey or sugar.
- Never, ever, EVER use a tampon in a gunshot wound or any other wound for that matter. It does not maintain enough pressure in the wound and can actually cause more dynamic issues inside the wound that will lead to infections. It's better to use your finger and best to use a hemostatic gauze packed tightly into the wound with pressure applied for at least three minutes.
- For pain management in the field 1000mg of acetaminophen and 800mg of ibuprofen make for an effective anti-pain and swelling combination similar to a Vicoden without the narcotic effects. Ibuprofen however, is toxic to the liver in large doses so it should only be used sparingly.

A Basic Tactical First Aid Kit should include:

- Tourniquets: 2
- Chest Seals: 2
- Duct Tape
- Nitrile Gloves: 2 Pair
- Quick Clot
- Steri-Strips
- Dermabond or Vetbond

Tourniquet Myths

A tourniquet in layman's terms is a device that is placed around an injured extremity between the wound and the heart, then tightened to stop bleeding. While this seems like a simple enough concept, there is an amazing amount of research and testing that has been put into this medical device, and for good reason. The internet is full of misinformation on what a tourniquet is, or at least should be, and how to properly apply it. The misinformation is further muddied by companies out for profit making various knock offs or improperly tested devices that they claim will serve the same purpose as a tourniquet. The United State Army Institute for Surgical Research whose mission is to “provide combat casualty care medical solutions and products for injured soldiers, from self-aid through definitive

care...” is the agency that sets the initial standard of practice for many field based treatments we end up following in first aid and emergency medical services. In the times in which we live there has been a great interest in tactical and combative based first aid due to fears of the various types of life altering scenarios ranging from active shooter events and terror attacks to natural disasters that any one of us may encounter on any given day. It is with these things in mind that we'll look at five of the most common myths about tourniquets.

We'll use the EMS abbreviation TQ whenever referencing a tourniquet for the remainder of the article.

#1 Tourniquets are the Last Resort
It's actually the first option when there is a suspicion that an injured person (casualty) has bleeding from an extremity (arms or legs), especially during an active shooter or dynamic tactical event. With such significant improvements to national training programs such as Stop the Bleed and the adoption of Tactical Combat Casualty Care (TCCC) protocols among the civilian and EMS there has been a marked decrease in mortality due to TQ use. Having been involved in conflicts in the Middle East for well over a decade has given military medical professionals a constant source of training and information. According to the Journal of Emergency Medicine during the Iraq war early TQ application resulted in an 87% survival rate whereas only 4% survived when TQ application was delayed until after signs of shock appeared. Of 499 casualties with 651 TQ's placed on limbs, no limbs were lost due to TQ ischemia. which is a restriction in blood supply to tissues that causes a shortage of oxygen that is needed to keep tissue alive. There are now even Junctional TQ's which can be applied to the pelvic, groin or armpit areas. If you are involved in training that states that a TQ is the last resort, demand a refund and leave! Always attend a course under a qualified trainer teaching the most current information available.

#2 Belts make excellent Tourniquets
Belts make terrible tourniquets! It is nearly impossible to stop arterial blood flow with the common belt. Belts are generally too rigid to be used properly with a windlass (winding stick). Heavy riggers belts, some of which are marketed for TQ use are also far too rigid for use with a windlass, although that can often apply a fair amount of pressure which may significantly slow the flow of blood, but not stop it which is ultimately the purpose of a TQ. Belts are better suited for use as pressure dressings when you need your hands free for other injuries or tasks or when you're unable to provide manual direct pressure in an austere environment.

#3 By using a Tourniquet, it enables you to get back to the fight or self-rescue

Once a TQ is properly applied, it's uncomfortable. It actually hurts... a lot. The extremity eventually goes numb and becomes of little use because the TQ is doing its job of compressing blood flow; but also compresses in that process nerves and muscles. So, while is has been reported that in active combat zones soldiers have continued fighting after a TQ was applied, it was because they were in an active fire fight with adrenalin pumping and the will to live at an all-time high. The average person is less likely to be able to get back to the fight and, depending on the location of the injury, unlikely to be able to self-rescue from an austere environment.

#4 Once a Tourniquet is applied, loosen it every 15 minutes.

Many still remember that in 1982 Sheriff Will Teasle told his deputy Mitch to use his belt for a TQ and release it every 15 minutes after will had been seriously injured. This was of course as they were trying to track John Rambo in the movie Rambo: First Blood. We have come a long way in medical intervention since then and due to extensive studies, the current protocol is that, once applied, the tourniquet should be left in place until definitive medical care is reached. Military studies have actually indicated an increased rate of death if TQ's are temporarily removed or released therefore once they are properly applied, they should be left in place. In the event the one you apply is not sufficient at stopping blood flow and the distal pulse, consider adding a second TQ next to the first and again, leave them in place until arrival at a hospital at which time emergency professionals will deal with the situation.

#5 The best tourniquet is...?

The best TQ is the one you have and know how to use properly. That said, the Combat Application Tourniquet (CAT) and the Special Operation Forces Tactical Tourniquet (SOF-TT) are the two most widely used, tested and recommended by every agency of the US Armed Forces and the majority of Emergency Medical Service agencies operating under the National Registry system. There are constant innovations in TQ's ranging from various ratcheting systems to zip tie like formats, all of these however are novelties until they have been proven effective, tested extensively and ultimately received the seal of approval from a reputable medical body. A Tourniquet is a medical device and it should be treated as such. When shopping around get those that have been proven effective, your life is worth far more than the few dollars you might save on a budget TQ that breaks under stress. Also, have more than one available to you and always within arm’s reach. In your vehicle, at work and at home, you never know when the need will arise and with all the options available to carry TQ's on the market today, they can be carried as easily as a cell phone.

Keep in mind, this article is not meant to provide you with a definitive lesson in tourniquet use and application, there is much more information available. I highly recommend seeking out training from a nationally recognized instructor of First Aid, Wilderness First Aid or Tactical Medicine. For those of

you with some first aid training, recertify and remain up to date with the latest information and be aware of the tools at your disposal. As with all skills, practice them regularly, especially those that may have a direct implication in saving a life.

When and how to Improvise a Tourniquet

There are times in the field when a single tourniquet is not enough. There are also those times that we fail to have the foresight to pre-plan every day and thus, leave our tourniquets at home or too far out of reach for immediate use should the need arise. It is with these things in mind that we should look to common items within reach to improvise a TQ on the fly.

The primary things to ask for tourniquet improvisation are 1) Is it wide enough? A TQ material must be at least 1” wide with up to 2” being preferred to avoid potentially damaging underlying body tissues. 2) Is it flexible? The idea of a heavy leather or concealed carry belt being used as a TQ is incorrect, while they make excellent pressure dressings, such belts lack the flexibility required to be used with a windlass. 3) Is it long enough? Material that's short will not enable you to utilize the windlass properly. Material should ideally be between 36” - 60” in length. Anything more than that is too cumbersome while anything less, while fine for an arm injury, may not work effectively on a leg or a larger person. Finally, understand that most improvised tourniquets don't work and if not applied properly, will result in a 100% failure rate. Train, train, train when it comes to medical improvisation. The following improvised tourniquets I have found to be very effective and easy to apply while in an austere environment.

55 Gallon Drum Liner or Trash Bag

The drum liner makes a great option for an improvised TQ in a survival situation. The best method to deploy this material is to first fold it lengthwise into a 2” wide strip, which is easily done before making it a part of your kit. Accordion fold it so that it will be easily deployed, then rubber band a tent stake or other windlass device to it so it is always available as a last-ditch option for multiple casualties or when your real TQ is not available. Make sure to always check the pulse below the TQ. If you feel a pulse then the TQ is not tight enough or improperly applied.

Hammock Strap

The straps from your hammock make for a good improvised TQ and may also be used as an effective pressure dressing. Because of the long length of such straps, it may be necessary to cut off extreme excess webbing so no additional hazards are created for the injured or rescuers. You can use the existing loop to apply the initial tension to the strap around the injured extremity, but instead of feeding the entire length of web through it, only insert a loop through which you can insert the windlass, which could be anything from a sturdy stick to a tent stake or other piece of equipment. Tighten until bleeding stops and then tie it off with the remaining length of webbing before cutting off or securing excess material. Check the distal pulse.

Cotton Shemagh

Like the drum liner, the shemagh can be used from your kit in the same manner. Hold the shemagh by opposite corners to make a large triangle, similar to how you would use a cravat. Twirl it in front of you to quickly roll up the excess material until you are left with about a 2” wide band of material. Tie this around the injured extremity, insert the windlass device and tie it again to secure the windlass. Then turn the device until bleeding stops. Secure the windlass so pressure is maintained by taking the remaining fabric and wrapping it around the windlass in opposite directions and tying off under arm. Check the distal pulse, if no pulse is found, fully secure TQ with tape or other means.