SAFEGUARD MEDICAL™

Clinical Training Series

TQ-RAM

SGM-TNG-0002

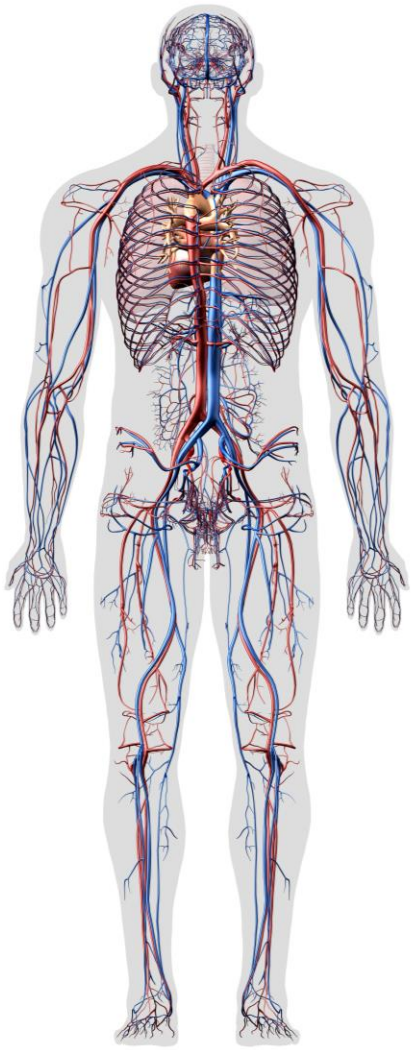

TQ-RAM

Terms of Reference

- **Tourniquet:** Is a device that is used to apply circumferential pressure to a limb or extremity in order to occlude the flow of blood distal to where it is applied
- **Point Pressure Device:** Is a device that provides downward pressure to a targeted location on the body, by way of a domed protrusion, or a device that extends downward via mechanical or pneumatic motion
- **Occlusion:** The process of blocking a blood vessel, so as to stop flow of liquid (such as blood) through the vessel
- **Truncal:** The central part of the human body which extends from the base of the neck and to the point of attachment of the arms and legs. It is also referred to as the Torso and includes the thorax and abdomen.
- **Junctional:** Referring or pertaining to one of the 5 points where the truncal portion of the body connects to the roots the 4 limbs and/or the neck. These areas are particularly important as they contain major blood vessels in close proximity and are not amenable to the use of a tourniquet when injured.
- **Distal:** Situated away from the point of attachment or origin or a central point of the body
- **Proximal:** A point nearest to the body in any structure or nearest to the center of the system concerned
- **Arteries:** Blood vessels that carry oxygenated blood away from the heart to the body
- **Veins:** Blood vessels that carry blood from the body back into the heart
- **Capillaries:** Tiny blood vessels between arteries and veins that distribute oxygenated blood to the body

Anatomy and Physiology Overview

- The circulatory system is a network of vessels that include arteries, veins, and capillaries that emanate from the heart that serves as the system's pump
- Blood is contained inside the vessels, which is a closed-loop system, that circulates unidirectionally from the heart in order to profuse the organs, and then returns to the heart
- The circulatory system is used to transport nutrients and gases through the body. Simple diffusion allows the exchange of nutrients, waste, and gases
- When an injury occurs to this closed system, in form of a cut or other damage, blood will be lost and can result in life threatening hemorrhage



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The Why & Statistics

- Globally, hemorrhage is a major cause of preventable death and is the #1 cause of preventable death on the battlefield (B. Eastridge et al., 2012)
- Tourniquets are not appropriate to stop all forms of hemorrhage: *head, neck, torso, groin, axilla*
- Emergency situations often require rapid patient movement, making it difficult to maintain pressure over hemostatics on non-tourniquet able wounds
- Death can occur in as quickly as 5 minutes from a major external bleeding
- Hemostatic gauzes require anywhere from 1 to 3 minutes of uninterrupted direct pressure to start to gain hemostasis
- The TQ Ram allows for direct pressure application to the wound while keeping the hands free to perform other interventions

The Why & Statistics

US Iraq and Afghanistan battlefield fatalities were reviewed and analyzed from October 2001 through June 2011. This study looked at 4,596 fatalities

- 87.3% of all injury mortality occurred pre-hospital (died prior to getting to a hospital)

Of the pre-hospital deaths, 75.7% (n = 3,040) were classified as non-survivable, 24.3% (n = 976) were deemed Potentially Survivable (PS). The injury / physiology of PS acute mortality was largely associated with hemorrhage (90.9%). The sites of lethal hemorrhage were:

- Truncal (67.3%)
- Junctional (19.2%)
- Peripheral-extremity (13.5%)

Source: B. Eastridge et al. (2012) Death on the battlefield (2001 2011): Implications for the future of combat casualty care.

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Mechanism of Action

- Point pressure devices exist in pneumatic and mechanical variations
- The TQ-RAM provides point pressure to a targeted location on the body by way of a domed protrusion that affixes to the Tactical Mechanical Tourniquet (TMT)
- The arched plate with domed protrusion of the TQ-RAM provides downward pressure when the slack is removed from the tourniquet (TMT)
- Slack removal from the TMT strap is critical for seating the dome protrusion into the wound bowl, or desired anatomical location, and providing stability to the TQ-RAM
- Of Note: Flexing of the TQ-RAM may occur but should not affect the efficacy of the device when placed in the correct anatomical landmark

TQ-RAM

- The TQ-RAM attaches to the Tactical Mechanical Tourniquet to provide the end user an advantage in controlling life-threatening hemorrhaging at various anatomical sites
- It is easy to carry at all levels of care due to its small and lightweight design
- The TQ-RAM can be used for proximal severe hemorrhage control, as a packing adjunct, to apply point pressure for minor hemorrhage control, and hemorrhage control on the truncal area of the body



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Features and Benefits

- Frees the end user's hands to perform other acute emergent procedures
- Conserves supplies by limiting the need for bulky gauze dressings
- Rapid application eliminates timely wrapping and excessive packing of wounds
- Deliberately designed pressure device that minimizes ineffective improvising leading to unnecessary blood loss
- Multiple applications such as proximal severe hemorrhage control, packing adjunct, targeted pressure to control minor venous bleeds, and truncal hemorrhage control
- Color coded to simplify emergency medicine, enabling responders to select the right product rapidly



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How to Apply- Assembly

STEP 1: Unbuckle the speed buckle and let TMT fall open, holding the carriage plate upwards



- With the speed buckle disconnected, hold one end of the strap by the white time label tab, allow the TMT® to fall open with the word “PULL” facing away from you. Place the torsion bar in the palm of the hand with the carriage plate facing upwards

How to Apply- Assembly

STEP 2: Hold TQ-RAM ball in palm and lock into TMT

- With ‘hemorrhage ball’ in the palm of other hand, insert TQ-RAM locking tab into slot of the carriage plate of the TMT



How to Apply- Assembly

STEP 3: Push TQ-RAM into the slots on the TMT



- Use finger to grip and apply downward pressure to the opposing side until second tab can be placed into slot

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How to Apply- Assembly

STEP 6: Seat TQ-RAM onto the TMT carriage area until "click" is heard

- A *click* will be felt when TQ-RAM is properly seated, but visually confirm proper placement



How to Apply- Proximal

STEP 1: Locate injury and apply pressure upstream (proximal)



- Locate injury and apply manual, proximal pressure until bleed is controlled
- Using the steps in the previous slides, ensure device is assembled

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How to Apply- Proximal

STEP 2: Feed the assembled device around the patient

- After locating injury, track up toward the center of the body
- While maintaining pressure, starting from the injured side, feed the buckle of the assembled TMT and TQ-RAM around the patient



How to Apply- Proximal

STEP 3: Place the hemorrhage ball onto manual pressure point

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- "Roll' TQ-RAM into the same location as manual pressure and connect the buckle on the opposite end. Maintain downward pressure on carriage plate until the end of application.

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How to Apply- Proximal

STEP 4: Reassess placement and pull until snug

- Reassess placement of device, ensure TQ-RAM is seated properly
- Grip tail close to the buckle, firmly pull up, out and away from the body and downward until snug



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How to Apply- Proximal

STEP 5: Tighten torsion bar to create necessary downward pressure



- Tighten torsion bar as necessary to achieve desired downward pressure and lock into retainer
- As device is secured, bleeding in wound area "should" start to slow

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How to Apply- Proximal

STEP 6: Reassess for bleeding control, adjust TQ-RAM and repeat steps if needed

- If bleeding is not controlled, loosen device, adjust TQ-RAM, and repeat steps 3, 4 and 5. Secure excess strap with hook and loop tail band
- Monitor for hemorrhage control and adjust device as necessary especially after any patient movement



How to Apply- Wound Packing

STEP 1: Locate wound and apply pressure while packing onto bleeding source

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- Locate intended wound for packing
- Expose the wound. Identify the point of bleeding and apply manual pressure. Pack gauze or hemostatic gauze to the source of bleeding as required.
- Pack wound until just below wound edges allowing the TQ Ram to rest into the wound bowl over packing

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How to Apply- Wound Packing

STEP 2: Place TQ-RAM over packed area seating dome into wound

- Ensure TMT and TQ-RAM are assembled correctly based on previous slides
- Place the TQ-RAM over the packed gauze, allowing the dome to seat into the wound
- Apply downward pressure to the carriage plate and maintain pressure throughout the application



How to Apply- Wound Packing

STEP 3: Wrap TMT around injured extremity

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- Wrap/feed the TMT around the injured extremity, ensuring device is not twisted, and reconnect the buckle

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How to Apply- Wound Packing

STEP 6: Pull TMT apart so the hook and loop are separated

- Pull time label tab until hook and loop tail band is separated
- Ensure device stays in place while holding pressure



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How to Apply- Wound Packing

STEP 5: Grip tail and pull snug around extremity



- Grip tail close to the buckle, firmly pull up, out, and away from the body and downward, in a quick, ratcheting motion
- Repeat step until snug around extremity

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How to Apply- Wound Packing

STEP 6: Tighten torsion bar and lock into retainer

- Tighten torsion bar as necessary to remove slack and to achieve desired downward pressure
- Lock torsion bar into retainer
- Monitor for hemorrhage control and reassess as necessary especially after any casualty movement



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As the manufacturer of this device, we do not practice medicine and do not recommend this product for use on a particular patient. The first responder who treats the patient must determine the appropriate device and procedure for each individual patient.

For any additional information, including warnings, risks and indications for use please refer to instructions for use provided with the product or contact us at sales@safeguardmedical.com.

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