



# THE INTERAGENCY BOARD

## Training Trigger: Tourniquet Use Under Medical Protocols

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### OPERATIONAL ISSUE

Tourniquet use in emergency medical services (EMS) has generated much controversy during the last 50 years. Until recently, the use of tourniquets has been discouraged other than as a last resort for amputated extremities due to the concern that their use could lead to significant injury to nerves, muscles, and blood vessels. Lessons learned in recent mass casualty incidents (MCI) and combat casualty care have shown that a properly applied tourniquet can save the patient's life in cases where severe (critical) blood loss endangers the survival of the patient. Therefore the new accepted standard of practice is to apply a tourniquet if direct pressure does not control the bleeding. Tourniquets should be used as a component of bleeding control practices and not as the one and only hemorrhage control tool. Tactical medics may take a different approach to hemorrhage control as dictated by their operations.

### FAST FACTS

Tourniquets have been proven effective for bleeding control of severe hemorrhage especially in MCI situations and combat casualty care where blood loss endangers a positive patient outcome.

- The adult human has 1.5 gallons (10 pints) of circulating blood. Blood transports oxygen to cells and carbon dioxide away from cells, so the loss of blood compromises the transport of oxygen for cellular use and the elimination of carbon dioxide produced by metabolism.
- Direct pressure should be the first intervention by the first rescuer in stopping blood loss from extremity wounds; however, immediate operational risk, time and distance for EMS interventions and access to definitive medical care dictate treatment priorities.
- Tourniquet application is an effective way to stop potentially life-threatening blood loss from extremity wounds.
- Quick application in life threatening situations and severe bleeding of the extremities can be the difference between life and death.
- Some tourniquets are designed to be self-applied.
- There is little, if any, risk of tissue damage from a properly applied tourniquet for the first two hours. After two hours, tourniquet application may cause further damage due to inadequate blood supply to the limb (ischemia) and compartment syndrome (pressure buildup due to bleeding or swelling of tissues).
- Tourniquet application is more difficult on the thigh because more compression is required to be effective; therefore, a lower extremity injury requires proper application and may require more than one tourniquet.
- Tourniquets should only be loosened or removed by trained medical personnel under appropriate medical protocols.

### ACTIVITIES

The IAB Training & Exercises (T&E) SubGroup recommends that organizations seeking to include tourniquet usage in their SOP/SOG:

1. Employ tourniquets in accordance with local protocols and medical control.
2. Apply direct pressure first to control bleeding before employing a tourniquet. Bleeding that is easily controlled with direct pressure and a properly applied,

effective pressure bandage may not require a tourniquet.

3. Employ commercially available tourniquets that include a windlass or ratcheting device (mechanical advantage) and are at least one and a half inches wide.
4. Employ tourniquets that can be self-applied and that have a locking mechanism once applied.
5. Use improvised tourniquets only as a last resort when commercially made tourniquets are unavailable. To be effective, improvised tourniquets require proper material, training, and application.
6. Clearly indicate on a patient that a tourniquet has been placed and clearly mark application time so that EMS and medical staff can quickly identify them.
7. Not loosen or remove a tourniquet until patient arrives at definitive care facility unless trained and operating under an approved medical protocol.
8. Plan for EMS to treat severe pain that can be associated with tourniquet usage.

### TEMPLATES/BEST PRACTICES

[SEL Item# 09MS-04-TNQT](#)

[DHS Stop the Bleed Campaign](#)

[NAEMT - Bleeding Control for the Injured](#)

[Committee for Tactical Emergency Casualty Care](#)

[Emergency Nurses Association Translation into Practice - Tourniquets](#)

### OTHER RESOURCES

[Hartford Consensus IV - A Call for Increased National Resilience](#)

[Efficacy of Pre-hospital Application of Tourniquets and Hemostatic Dressings \(NHTSA Study\)](#)

[First Care Provider \(www.FirstCareProvider.org\)](#)

This document is not inclusive of all symptoms, side effects or other medical parameters and should not be considered a policy document for any agency. Local medical control should be consulted before SOP/SOG incorporation. Medical advisement is required. As the InterAgency Board identifies new information on this topic, it will be posted at [www.interagencyboard.org](http://www.interagencyboard.org). Please send any comments, feedback, and questions to [info@interagencyboard.us](mailto:info@interagencyboard.us)