


Bleeding Control for the Injured

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Bleeding Control (1 of 2)



- The focus of this training is on recognition of life-threatening bleeding with appropriate medical treatment.
- This training will show you the actions that you can take to help save a life before professional rescuers arrive.

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Bleeding Control (2 of 2)

- The information in this course has been adapted from the following courses:
 - U.S. military Tactical Combat Casualty Care (TCCC) course
 - Committee on Tactical Emergency Casualty Care Guidelines
 - Pre-Hospital Trauma Life Support (PHTLS) course
- It is cosponsored by the American College of Surgeons—Committee on Trauma.




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Bleeding Control Training

- Provides a foundation in first response trauma care
- Teaches the initial steps you can take to care for bleeding patients
- **Warning!** Some of the images shown during this presentation are graphic and may be disturbing to some people.

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Objectives

- **Explain** why it is important to use a tourniquet to control life-threatening bleeding from an arm or leg.
- **Demonstrate** how to apply a tourniquet to the arm and leg.
- **Demonstrate** how to “pack a wound” and apply pressure to control bleeding.
- **Explain** why it is important to identify injuries to the chest and abdomen.
- **Explain** the need for victims with these injuries to be transported immediately to an appropriate hospital.


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Why Do I Need This Training?

- Bombings
- Home injuries
- Motor vehicle crashes
- Work-related injuries
- Mass Shootings

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Importance of the First Responder (1 of 2)

- Dr. Nicholas Senn, founder of the Association of Military Surgeons of the United States, wrote: “The fate of the wounded lies in the hands of the ones who apply the first dressing.”
 - A significant number of seriously injured victims die before they reach the hospital.
 - The help that bystanders offer can often make the difference between life and death.


With the right training, you can help save lives!

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Importance of the First Responder (2 of 2)

- While EMS usually responds quickly...
 - Delays can occur.
 - Long delays are possible in some circumstances.



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Four Primary Principles

1. Ensure your own safety.
2. Identify the injury.
3. Stop the bleeding.
4. Keep the victim warm.


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Safety (1 of 2)

- Before you offer any help, you must ensure your own safety!
- If you are injured, you will not be able to help the victim.
- Protect yourself from bloodborne pathogens by wearing gloves.

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Safety (2 of 2)

- Direct someone to call 9-1-1, or call yourself.
- Initiate care if the scene is safe for you to do so.
- If at any time your safety is threatened, attempt to remove yourself from danger and find a safe location.
- Protection from bloodborne pathogens:
 - Rubber gloves
 - Eye protection


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Identify the Injury

- Before you can begin treatment, you must identify the location of the injury and the type of bleeding.


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Identify

Bleeding from an Artery (1 of 2)

- Bleeding from an artery
 - Bright red in color
 - Will spurt or pump from the wound
- Arterial bleeding is **life-threatening**.




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Identify

Bleeding from an Artery (2 of 2)



Courtesy of Norman McSwain, MD, FACS, NREMT-P

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Identify

Bleeding from a Vein


- Bleeding from an injured vein is usually dark red in color and flows steadily from the wound.
- Venous bleeding may be life-threatening if a large vein is damaged.

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Identify Bleeding from Capillaries

- Capillaries are tiny blood vessels that connect arteries to veins.
- Bleeding from capillaries is usually dark red in color and “oozes” from the injury site.




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Identify Expose the Wound

- Remove or cut the victim’s clothes to expose the wound.
- By removing clothing, you will be able to see injuries that may have been hidden or covered.


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Causes of Bleeding Deaths

- Wounds to the arms and legs
- Torso junctional wounds, especially:
 - Groin
 - Shoulder and armpit
 - Neck
- Internal bleeding (e.g., bleeding inside the chest or abdomen)

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Bleeding from Arms and Legs


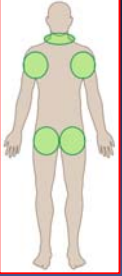


- Bleeding from wounds to the arms and legs can be controlled by direct pressure and/or a tourniquet.

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Junctional Location Bleeding



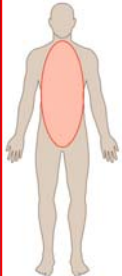
Courtesy of John Holcomb, MD.

- Areas of concern are the neck, shoulder, and groin.
- Bleeding can be controlled by direct pressure and/or wound packing.

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Internal Bleeding




- Injuries to the chest and abdomen may cause bleeding inside the body
- Cannot be managed outside the hospital
- Important to recognize these wounds and call 9-1-1 immediately

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Injuries to the Airway

- Deaths from airway injuries (i.e., face or neck) account for a small percentage of trauma fatalities.
- Victims who are conscious will usually be able to keep breathing on their own.
- It may help to keep the victim sitting up and leaning forward.



Courtesy of Peter T. Pons, MD, FACEP.


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Stop the Bleeding


- A victim who is bleeding from an artery can die in as little as 3 minutes.
- Serious bleeding from an extremity is the **most frequent cause of preventable death from injury.**
- Life-threatening bleeding warrants immediate intervention.
 - Bleeding from an artery
 - Blood spurts or pumps from wound

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The Tourniquet

- A tourniquet is a device that stops the flow of blood.
- If applied correctly, the tourniquet stops arterial blood flow into the extremity and to the wound.
- Limiting blood loss may prevent the patient from going into shock.



Courtesy Norman McSwain, MD, FACS, NREMT-P.


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Tourniquets in Action: Ft. Hood Shootings

- 12 dead; 31 wounded
- Officer Kim Munley
 - Shot in both thighs
 - Went into shock
 - Saved by Army medic who applied tourniquet on left thigh

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Tourniquet Application (1 of 2)

- **Apply immediately if life-threatening bleeding is seen on an arm or a leg.**
 - Only if blood spurts or pumps from wound
- You do not need to remove clothing.
- Place above the bleeding site.
- Tighten until bleeding stops.
- If bleeding is not controlled by applying the initial tourniquet, apply a second one just above the first.

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Tourniquet Application (2 of 2)

- Do not apply directly over the knee or elbow.
- Do not apply directly over a pocket that contains bulky items.
- **Ignore bleeding that is not spurting or pumping from a wound.**
 - Does not need a tourniquet

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Tourniquet Types

Courtesy of Peter T. Pons, MD, FACEP.
Combat Application Tourniquet (C-A-T)

Courtesy of Delt Medical Innovations, Inc.
Emergency and Military Tourniquet (EMT™)

Courtesy of Peter T. Pons, MD, FACEP.
1st Generation SOF Tactical Tourniquet (SOFTT)

Courtesy of Peter T. Pons, MD, FACEP.
2nd Generation SOFTT

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Parts of the Tourniquet

Windlass Clip Windlass Rod

Windlass Strap

Self-Adhering Band

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One-Handed Application to an Arm (1 of 8)

Courtesy of Peter T. Pons, MD, FACEP.
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Step 1. Insert the wounded extremity through the C-A-T.



One-Handed Application to an Arm (2 of 8)



Courtesy of Peter T. Pons, MD, FACEP

Step 2. Pull the self-adhering band tight, and securely fasten it back on itself.

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One-Handed Application to an Arm (3 of 8)



Courtesy of Peter T. Pons, MD, FACEP

Step 3. Adhere the band around the arm. Do not adhere the band past the clip.

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One-Handed Application to an Arm (4 of 8)



Courtesy of Peter T. Pons, MD, FACEP

Step 4. Twist the rod until the bleeding has stopped.

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One-Handed Application to an Arm (5 of 8)




Courtesy of Peter T. Pons, MD, FACEP

Step 5. Lock the rod in place in the windlass clip. Hemorrhage is now controlled.

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One-Handed Application to an Arm (6 of 8)



Courtesy of Peter T. Pons, MD, FACEP

Step 6. Adhere the self-adhering band over the rod and continue around the extremity as far as it will go.

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One-Handed Application to an Arm (7 of 8)

Step 7. Secure the rod and the band with the windlass strap. Grasp the strap, pull it tight, and adhere it to the opposite hook on the windlass clip. The patient is now ready for transport.



Courtesy of Peter T. Pons, MD, FACEP

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One-Handed Application to an Arm (8 of 8)

PHTLS Prehospital Trauma Life Support 

Tourniquet Application - Arm (C.A.T. Tourniquet)

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Application to a Leg (1 of 7)



Step 1. Route the self-adhering band around the leg. Pass the free-running end of the band through the inside slit of the friction adaptor buckle.

Courtesy of Peter T. Pons, MD, FACEP

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Application to a Leg (2 of 7)



Step 2: Pass the band through the outside slit of the buckle.

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 **Application to a Leg (3 of 7)**



Step 3. Pull the self-adhering band tight and securely fasten the band back on itself.

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 **Application to a Leg (4 of 7)**



Step 4. Twist the rod until bright red bleeding has stopped.

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 **Application to a Leg (5 of 7)**



Step 5. Lock the rod in place in the windlass clip. Bleeding should now be controlled.

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Application to a Leg (6 of 7)



Step 6: Secure the rod with the strap. Grasp the windlass strap, pull it tight, and adhere it to the opposite hook on the windlass clip. The patient is now ready for transport.

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Application to a Leg (7 of 7)




**Tourniquet Application - Leg
(C.A.T. Tourniquet)**


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Tourniquet Pain

- Tourniquets HURT when applied effectively.
 - You should explain this to the patient.
- Pain does not indicate a mistake in application.
- Pain does not mean you should take it off!
- Once EMS arrives, they will treat the pain with medication.


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Key Points (1 of 2)

- Damage to the arm or leg is rare if the tourniquet is applied for less than 2 hours.
 - No amputations have been caused by a tourniquet when left in place for fewer than 2 hours.
 - Tourniquets are often left in place for several hours during surgery.
- Better to risk damage to the arm or leg than to have a victim bleed to death.

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Key Points (2 of 2)

- Training tourniquets should never be used during a real patient incident.
- Repetitive training applications may cause tourniquet failure.

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Tourniquet Removal

- **NEVER REMOVE A TOURNIQUET.**
- Only a paramedic or a physician should loosen or remove tourniquet.


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Common Mistakes (1 of 2)

- Not using a tourniquet when life-threatening bleeding exists
- Waiting too long to apply a tourniquet
- Using a tourniquet for minor bleeding
- Putting the tourniquet on too high up on the extremity (too far from the wound)


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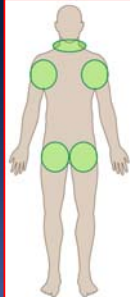
Common Mistakes (2 of 2)

- Taking the tourniquet off when the victim is in shock or has only a short transport time to the hospital
- Not making the tourniquet tight enough to stop the bleeding
- Not using a second tourniquet if needed
- Periodically loosening the tourniquet to allow blood flow to the injured extremity
 - Causes unacceptable additional blood loss

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Junctional Location Wounds (1 of 2)





- Groin, shoulder/arm/pit, or neck
- Cannot use a tourniquet
- Apply direct pressure
- Pack with hemostatic dressing or plain gauze roll
- This technique can control bleeding that might otherwise prove fatal

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Junctional Wounds (2 of 2)

- Pack the wound with a hemostatic dressing or a plain gauze roll and apply pressure.
- Hemostatic dressings are materials that will help cause blood to clot.
 - QuikClot
 - Combat Gauze
 - Celox-A
 - Chitosan






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Wound Packing (1 of 6)

- Open clothing around the wound.
- If possible, remove excess pooled blood from the wound while preserving any clots already formed in the wound.
- Locate the source of the most active bleeding.





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Wound Packing (2 of 6)

- Pack hemostatic dressing or gauze roll into wound and directly onto the source of bleeding.




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Wound Packing (3 of 6)




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Wound Packing (4 of 6)

- Quickly apply and hold direct pressure for 3 minutes if using a hemostatic dressing and 10 minutes if using plain gauze.
- Reassess to ensure bleeding is controlled.
- If initial packing fails to stop bleeding, pack a second gauze on top of the first and reapply pressure.




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Wound Packing (5 of 6)


- Leave packing in place.
- Wrap to secure the packing in the wound.
- The wound may be secured with any type of compression bandage or roll of gauze.



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Wound Packing (6 of 6)

PHTLS Prehospital Trauma Life Support 

Wound Packing / Topical Hemostatic Agent


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Direct Pressure


- Use your hand or fingers.
 - Effective most of the time for external bleeding
- Bleeding control requires very firm pressure for a minimum of 10 minutes.
- Don't release pressure to check the wound until the recommended time has passed.
- Direct pressure can stop major arterial bleeding, even in the neck and groin.

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Internal Bleeding

- Bleeding inside the chest or abdomen that results from wounds that penetrate those areas
- Cannot be controlled outside of a hospital
- Victim needs to be transported immediately to trauma center
- Identify these patients to EMS providers when they arrive




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Airway and Breathing Assessment (1 of 4)


- Tools: Look and listen.
- *Look* for obvious trauma to the air passages.
 - Nose, mouth, and neck (trachea)
- *Listen* for noisy respirations.
 - Noisy respirations = airway compromise or obstruction
 - Snoring, gurgling when breathing

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Airway and Breathing Assessment (2 of 4)

- If the victim is responsive:
 - Allow victim to assume any position that helps him or her to breathe and feel comfortable.

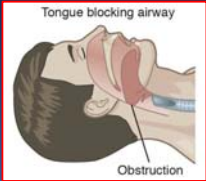


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Airway and Breathing Assessment (3 of 4)

- If the victim is not responsive:
 - The tongue may fall back and block the victim's airway.
 - The most common cause of airway obstruction is the tongue.
 - You will hear a "snoring" sound.




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Airway and Breathing Assessment (4 of 4)

- Opening the airway
 - Use the jaw-thrust maneuver.
 - The jaw thrust opens the airway without causing damage to the spine.
 - Place victim in recovery position.

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Jaw Thrust (1 of 3)



Courtesy of Peter T. Pons, MD, FACEP.

Place your fingers along the bottom and back side of the jawbone.

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Jaw Thrust (2 of 3)



Courtesy of Peter T. Pons, MD, FACEP.

Then, push the jawbone upwards toward the ceiling or sky.

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Jaw Thrust (3 of 3)



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Airway Support

- Place an unresponsive victim in the recovery position after the airway has been opened.




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Keep the Victim Warm (1 of 3)

- Blood clotting
 - Natural reaction in the body
 - Clotting slows down and eventually stops bleeding
- Blood loss = heat loss
- A low body temperature inhibits the body's ability to clot blood

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Keep the Victim Warm

(2 of 3)

- Patients who are bleeding should be kept warm.
- Keeping the patient warm is just as important as stopping blood loss.
- Hypothermia (decrease in body temperature) is much easier to prevent than to treat!

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Keep the Victim Warm

(3 of 3)

Prevent hypothermia:

- Minimize victim's exposure to the elements.
- Replace wet clothing with dry, if possible.
- Use dry blankets, sleeping bags, clothing, or anything that will retain heat and keep the patient warm and dry.

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Summary

- Direct pressure and packing will stop most bleeding.
- Stop life-threatening bleeding.
 - Use a tourniquet on arms and legs.
 - Ensure EMS has been called for rapid transport for internal hemorrhage.
- Open the airway.
 - Decreased level of consciousness
 - Noisy breathing or not breathing at all
- Keep victims warm.

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