SAVE A LIFE

Bleeding Control (B-Con) Basic

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THE COMMITTEE ON TRAUMA

AMERICAN COLLEGE OF SURGEONS
Inspiring Quality:
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SAVE A LIFE

What everyone should know to **control bleeding**

Bleeding Control Basic v. 1.0

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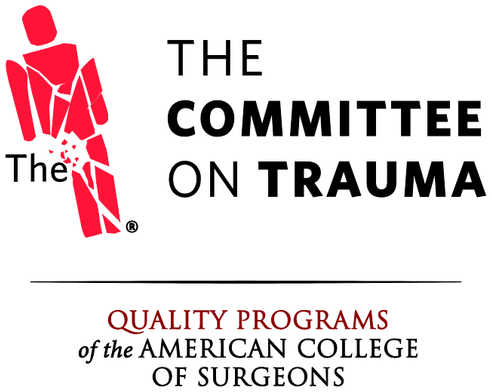
This educational program is the product of a cooperative effort by:

The Hartford Consensus



The American College of Surgeons Committee on Trauma

The Committee on Tactical Combat Casualty Care

The National Association of Emergency Medical Technicians

STOP THE BLEED℠

SAVE A LIFE

- **The focus of this program is on:**
  - **The immediate response to bleeding**
  - **Recognize life-threatening bleeding**
  - **Appropriate ways to stop the bleeding**
- **The help given by an immediate responder can often make the difference between life and death, even before professional rescuers arrive.**

With the right training, YOU can help save lives!

WARNING! **Some of the images shown during this presentation are graphic and may be disturbing to some people.**

Why Do I Need This Training?

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

Primary Principles of Immediate Response

- Ensure your own safety
- The ABCs of Bleeding

A – Alert – call 9-1-1

B – Bleeding – find the bleeding injury

C – Compress – apply pressure to stop the bleeding by:

1. Covering the wound with a clean cloth and applying pressure by pushing directly on it with both hands, OR
2. Using a tourniquet, OR
3. Packing (filling) the wound with gauze or a clean cloth and then applying pressure with both hands

Primary Principles:

Safety

- **Before you offer any help, you must remain safe**
- **If you become injured, you will not be able to help the victim**
- **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**
- **Protect yourself from blood-borne infections by wearing gloves, if available**

ABCs of Bleeding

A • Alert

Get help

- Call 9-1-1 yourself, OR
- Tell someone to call 9-1-1

Alerting 9-1-1 will notify and get emergency medical responders and, depending on the situation, police officers to respond to the scene

B • Bleeding

Find where the victim is bleeding from

- Open or remove the clothing so you can see the wound

Look for and identify “life-threatening” bleeding

- Blood that is spurting out of the wound
- Blood that won’t stop coming out of the wound
- Blood that is pooling on the ground
- Clothing that is soaked with blood
- Bandages that are soaked with blood
- Loss of all or part of an arm or leg
- Bleeding in a victim who is now confused or unconscious

B • Bleeding (continued)

What is “life-threatening” bleeding?

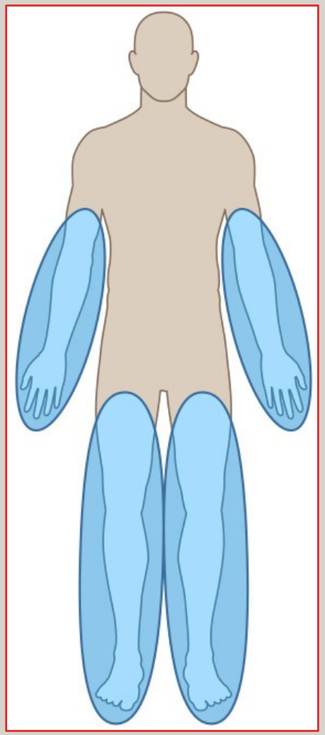
Blood spurting out of a wound

Blood soaking the sheet or clothing

Photo courtesy of Norman McSwain, MD, FACS, NREMT-P.

B • Bleeding (continued)

Wounds That Can Lead to Death from Bleeding (1 of 3)



Arm and Leg Wounds

- Most frequent cause of preventable death from injury
- Bleeding from these wounds can be controlled by direct pressure or a tourniquet

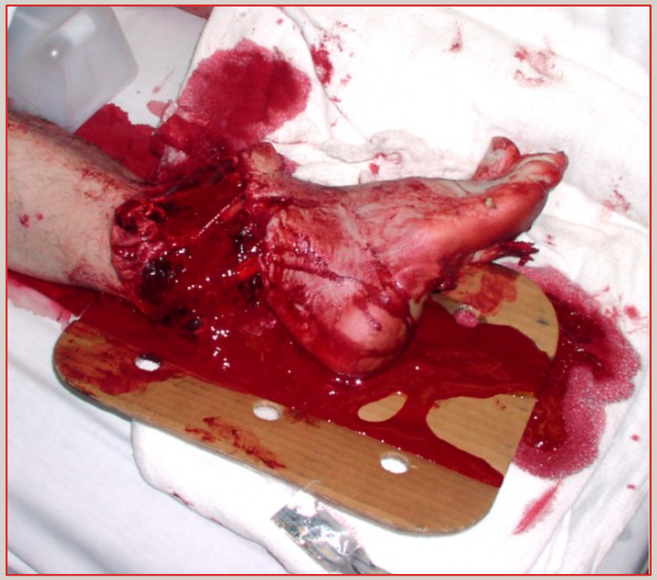
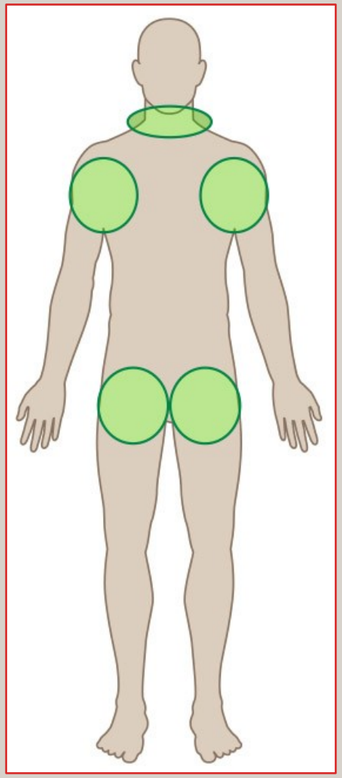


Photo courtesy of Peter T. Pons, MD, FACEP.

B • Bleeding (continued)

Wounds That Can Lead to Death from Bleeding (2 of 3)

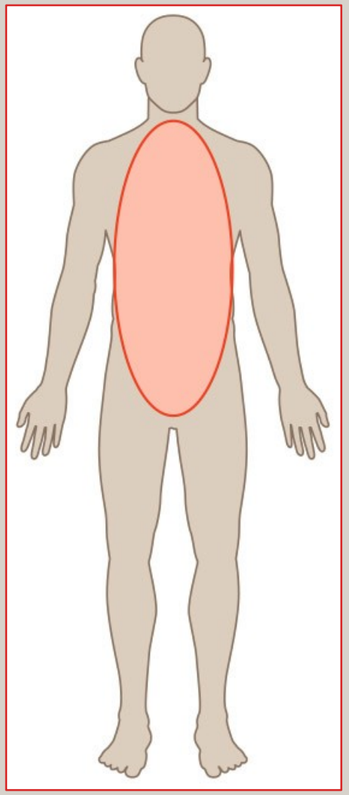


Torso Junctional Wounds

- Neck, shoulder, and groin
- Bleeding can be controlled by direct pressure and wound packing

B • Bleeding (continued)

Wounds That Can Lead to Death from Bleeding (3 of 3)



Chest and Abdominal Injuries

- Front, back, or side
- Usually cause internal bleeding

- This bleeding CANNOT be stopped outside the hospital
- These victims need rapid transport to a trauma center
- Identify these patients to EMS providers when they arrive

Multiple gunshot wounds

Photo courtesy of Peter T. Pons, MD, FACEP.

C • Compression: Stop the Bleeding

Ensure your safety.

Look for **life-threatening bleeding.**

Is a **trauma first-aid kit** available?

C • Compression: Stop the Bleeding

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Look for **life-threatening bleeding.**

Is a **trauma first-aid kit** available?

No

Primary Principles:

ABCs of Bleeding

C • Compression: Stop the Bleeding

Ensure your safety.

Look for **life-threatening bleeding.**

Is a **trauma first-aid kit** available?

No

▼

Use any **clean cloth or gauze.**

▼

Apply **steady pressure** directly on the wound.

C • Compression: Stop the Bleeding (continued)

Direct Pressure (1 of 3)

- **Use your hand or fingers**
  - **Use two hands, if at all possible**
- **Effective most of the time for external bleeding**
  - **Direct pressure can stop even major arterial bleeding**
- **Bleeding control requires very firm, continuous pressure until relieved by medical responders**
- **To be effective, apply pressure with the victim on a firm surface to provide support**
- **Don't release pressure to check the wound**

C • Compression: Stop the Bleeding (continued)

Direct Pressure (2 of 3)

- **Use any clean cloth (for example, a shirt) to cover the wound**
- **If the wound is large and deep, try to "stuff" the cloth down into the wound**

Photos courtesy of Adam Wehrle, NREMT-P.

C • Compression: Stop the Bleeding (continued)

Direct Pressure (3 of 3)

- **Apply continuous pressure with both hands directly on top of the bleeding wound**
- **Push down as hard as you can**
- **Hold pressure until relieved by medical responders**

Photo courtesy of Adam Wehrle, NREMT-P.

C • Compression: Stop the Bleeding (continued)

Ensure your safety.

Look for **life-threatening bleeding.**

Is a **trauma first-aid kit** available?

Yes

C • Compression: Stop the Bleeding (continued)

Ensure your safety.

Look for **life-threatening bleeding.**

Is a **trauma first-aid kit** available?

Yes

Where is the wound?

Arm or leg

C • Compression: Stop the Bleeding (continued)

Ensure your safety.

Look for **life-threatening bleeding.**

Is a **trauma first-aid kit** available?

Yes

Where is the wound?

Arm or leg

Is a tourniquet available immediately?

Primary Principles:

ABCs of Bleeding

C • Compression: Stop the Bleeding (continued)

Ensure your safety.

Look for **life-threatening bleeding.**

Is a **trauma first-aid kit** available?

Yes

Where is the wound?

Arm or leg

Is a tourniquet available immediately?

Yes

Primary Principles:

ABCs of Bleeding

C • Compression: Stop the Bleeding (continued)

Ensure your safety.

Look for **life-threatening bleeding.**

Is a **trauma first-aid kit** available?

Yes

Where is the wound?

Arm or leg

Is a tourniquet available immediately?

Yes

- Apply above the bleeding site.
- Tighten until the bleeding stops.

C • Compression: Stop the Bleeding (continued)

The Tourniquet

- A tourniquet is a device that stops the flow of blood
- If applied correctly, the tourniquet will stop blood flow into the extremity and out of the wound
- Limiting blood loss may prevent the patient from going into shock or dying

Photo courtesy of Norman McSwain, MD, FACS, NREMT-P.

C • Compression: Stop the Bleeding (continued)

Tourniquet Application

- **Apply immediately if life-threatening bleeding is seen from an arm or a leg**
- **The tourniquet can be placed right on top of clothing, if necessary**
- **Place 2 to 3 inches above the bleeding wound (higher on the arm or leg)**
  - **BUT…**
    - **DO NOT apply directly over the knee or elbow joints**
      - The bones of the joint will prevent the tourniquet from compressing the artery, so you won't stop the bleeding
    - **DO NOT apply directly over a pocket that contains bulky items**
      - Anything in a pocket that is underneath a tourniquet will interfere with the function of the tourniquet
- **Tighten the tourniquet until bleeding stops**

C • Compression: Stop the Bleeding (continued)

Tourniquet Types

Military research has shown these three tourniquets work the best to control bleeding

Photo courtesy of Peter T. Pons, MD, FACEP

Combat Application Tourniquet (C.A.T.)

Photo courtesy of Peter T. Pons, MD, FACEP

Photo courtesy of Peter T. Pons, MD, FACEP

SOF Tactical Tourniquet (SOFTT)

Photo courtesy of Delfi Medical Innovations, Inc.

Emergency and Military Tourniquet (EMT™)

C • Compression: Stop the Bleeding (continued)

C.A.T. Tourniquet

The C.A.T. tourniquet is the military's preferred tourniquet because it is easy to use and can be rapidly applied

Photo courtesy of Composite Resources, Inc.

C • Compression: Stop the Bleeding (continued)

Application of a C.A.T. Tourniquet (1 of 8)

Step 1. Insert the wounded extremity (arm or leg) through the C.A.T.

Photo courtesy of Peter T. Pons, MD, FACEP.

Photo courtesy of Peter T. Pons, MD, FACEP.

C • Compression: Stop the Bleeding (continued)

Application of a C.A.T. Tourniquet (2 of 8)

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

BE SURE TO REMOVE ALL **SLACK**.

Photo courtesy of Peter T. Pons, MD, FACEP.

C • Compression: Stop the Bleeding (continued)

Application of a C.A.T. Tourniquet (3 of 8)

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

Photo courtesy of Peter T. Pons, MD, FACEP.

Photo courtesy of Peter T. Pons, MD, FACEP.

C • Compression: Stop the Bleeding (continued)

Application of a C.A.T. Tourniquet (4 of 8)

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

Photo courtesy of Peter T. Pons, MD, FACEP.

C • Compression: Stop the Bleeding (continued)

Application of a C.A.T. Tourniquet (5 of 8)

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

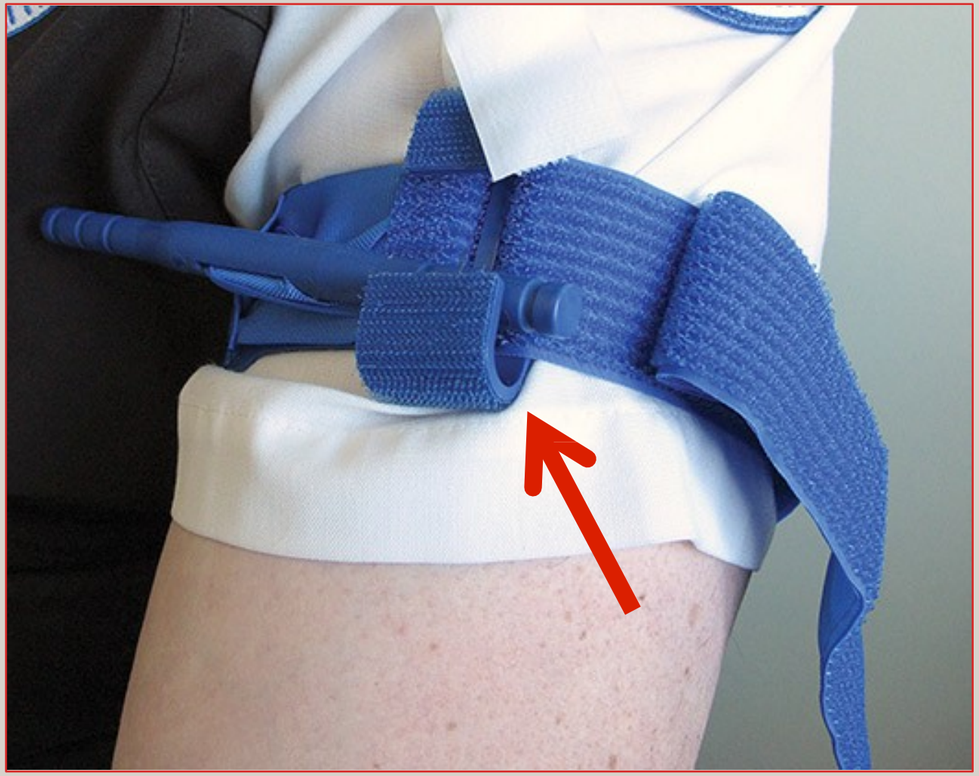


Photo courtesy of Peter T. Pons, MD, FACEP.

C • Compression: Stop the Bleeding (continued)

Application of a C.A.T. Tourniquet (6 of 8)

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

Photo courtesy of Peter T. Pons, MD, FACEP.

C • Compression: Stop the Bleeding (continued)

Application of a C.A.T. Tourniquet (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.

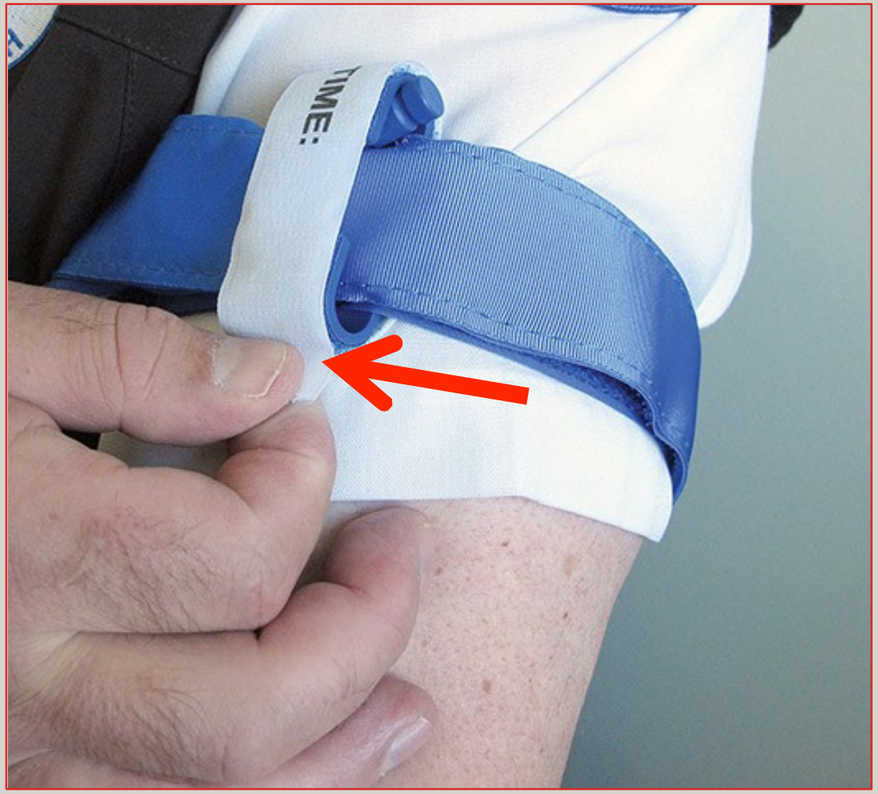


Photo courtesy of Peter T. Pons, MD, FACEP.

C • Compression: Stop the Bleeding (continued)

Application of a C.A.T. Tourniquet (8 of 8)

Step 8. Note the time the tourniquet was applied. If you have a marker, you can write it directly on the tourniquet.

The patient is now ready for transport.

Photo courtesy of Peter T. Pons, MD, FACEP.

C • Compression: Stop the Bleeding (continued)

Key Points (1 of 2)

- **Using one of the recommended tourniquets is a safe procedure**
  - **Improvised (homemade) tourniquets are much less effective than commercially available tourniquets such as the C.A.T. and are difficult to make and apply without extensive practice**
- **If the bleeding is not stopped with one tourniquet and it is as tight as you can get it, place a second one, if available, just above the first and tighten as before**

C • Compression: Stop the Bleeding (continued)

Key Points (2 of 2)

- **No amputations have been caused by a tourniquet when left in place for fewer than two hours**
  - **BUT… it is best to get the patient to a trauma center as soon as possible so the bleeding can be completely controlled and the tourniquet removed**
- **Better to risk damage to the arm or leg than to have a victim bleed to death**
- **Training (practice) tourniquets should NOT be used during a real patient incident**
  - **Repetitive use during training exercises may cause the tourniquet to fail**

C • Compression: Stop the Bleeding (continued)

Tourniquet Pain

- **Tourniquets HURT when applied effectively (they HURT A LOT)**
  - **Explain this fact to the victim**
- **Pain *DOES NOT* mean you put on the tourniquet incorrectly**
- **Pain *DOES NOT* mean you should take the tourniquet off**
- **Once paramedics arrive, they will treat the pain with medication**

C • Compression: Stop the Bleeding (continued)

Common Mistakes

- Not using a tourniquet or waiting too long to apply it when there is life-threatening bleeding
- 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—DO NOT LOOSEN
- Removing a tourniquet
  - Only a paramedic or physician should loosen or remove it

C • Compression: Stop the Bleeding (continued)

Questions about tourniquets?

C • Compression: Stop the Bleeding (continued)

Tourniquet Practice

C • Compression: Stop the Bleeding (continued)

Ensure your safety.

Look for **life-threatening bleeding.**

Is a **trauma first-aid kit** available?

Yes

Where is the wound?

Arm or leg

Is a tourniquet available immediately?

C • Compression: Stop the Bleeding (continued)

Ensure your safety.

Look for **life-threatening bleeding.**

Is a **trauma first-aid kit** available?

Yes

Where is the wound?

Arm or leg

Is a tourniquet available immediately?

No

C • Compression: Stop the Bleeding (continued)

Ensure your safety.

Look for **life-threatening bleeding.**

Is a **trauma first-aid kit** available?

Yes

Where is the wound?

Arm or leg

Is a tourniquet available immediately?

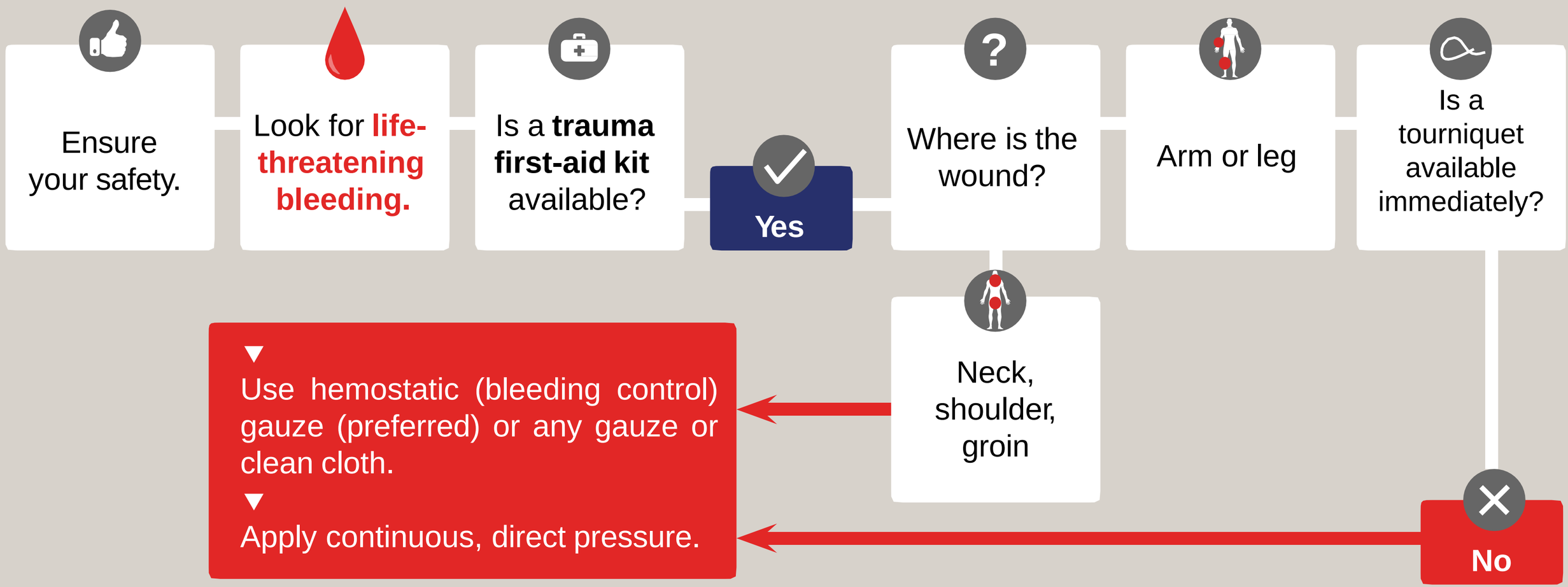
No

▼
Use hemostatic (bleeding control) gauze (preferred) or any gauze or clean cloth.
▼
Apply continuous, direct pressure.

Primary Principles:

ABCs of Bleeding

C • Compression: Stop the Bleeding (continued)



C • Compression: Stop the Bleeding (continued)

Hemostatic Dressings (Bleeding Control Dressings)

- **Hemostatic dressings are materials that help cause blood to clot**
- **Examples of hemostatic dressings include:**
  - **QuikClot (civilian) / Combat Gauze (military)**
  - **Celox**
  - **Celox Rapid**
  - **Chitoflex**
  - **Chitogauze**

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Photo courtesy of Peter T. Pons, MD, FACEP.

C • Compression: Stop the Bleeding (continued)

Wound Packing (1 of 4)

- **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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C • Compression: Stop the Bleeding (continued)

Wound Packing (2 of 4)

- **Pack the wound**
  - **Hemostatic dressing, OR**
  - **Gauze roll, OR**
  - **Clean cloth**
- **Stuff right into the wound and directly onto the bleeding site**

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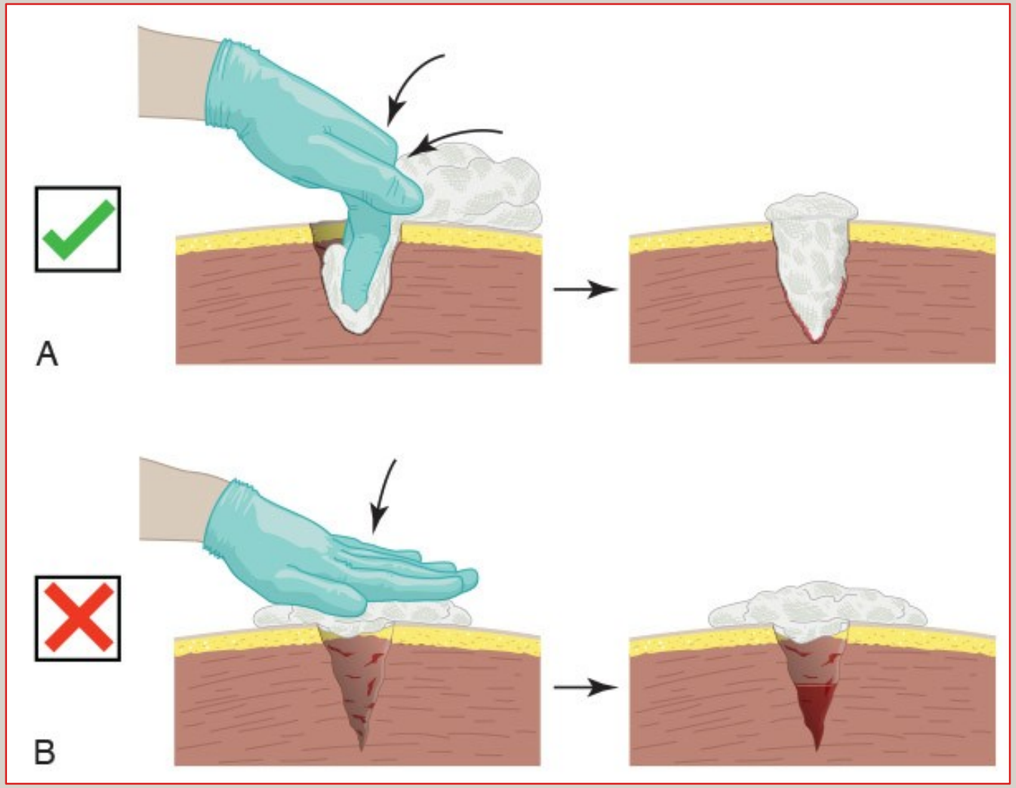
C • Compression: Stop the Bleeding (continued)

Wound Packing (3 of 4)



C • Compression: Stop the Bleeding (continued)

Wound Packing (4 of 4)

- **Quickly apply and hold pressure directly on the packed wound until relieved by medical responders**
- **If initial packing and direct pressure fail to stop the bleeding, pack a second gauze on top of the first and reapply pressure using increased force**

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C • Compression: Stop the Bleeding (continued)

Questions about wound packing and direct pressure?

C • Compression: Stop the Bleeding (continued)

Wound Packing Practice

Bleeding control in children

- In all but the extremely young child, the same tourniquet used for adults can be used in children.
- For the infant or very small child (tourniquet too big), direct pressure on the wound as described previously will work in virtually all cases.
- For large, deep wounds, wound packing can be performed in children just as in adults using the same technique as described previously.

Blood Exposure

- **After arrival of medical responders, if you have any blood on you:**
  - **Wash thoroughly with soap and water to remove all blood,**

    AND
  - **Notify medical responders of possible exposure**

Summary

- Ensure your own safety
- The ABCs of Bleeding

A – Alert – call 9-1-1

B – Bleeding – find the bleeding injury

C – Compress – apply pressure to stop the bleeding by:

1. Covering the wound with a clean cloth and applying pressure by pushing directly on it with both hands, OR
2. Using a tourniquet, OR
3. Packing (filling) the wound with gauze or a clean cloth and then applying pressure with both hands

Conclusion

The only thing more tragic than a death…
is a death that could have been prevented.

Thank you for your participation.
Questions?

Personal bleeding control kits

BLEEDINGCONTROL.ORG

Wall-mounted bleeding control kits

BLEEDINGCONTROL.ORG

For further information and additional resources, please visit

BLEEDINGCONTROL.ORG