

► Ready for Review

- Rapid blood loss of 1 quart or more can lead to shock and death.
- External bleeding can be classified into three types according to the type of blood vessel that is damaged: artery, vein, or capillary.
- Regardless of the type of bleeding or the type of wound, the first aid is the same. First, and most important, you must control the bleeding.

► Vital Vocabulary

arterial bleeding Bleeding from an artery; this type of bleeding tends to spurt with each heartbeat.

capillary bleeding Bleeding that oozes from a wound steadily but slowly.

hemorrhage A large amount of bleeding in a short time.

venous bleeding Bleeding from a vein; this type of bleeding tends to flow steadily.

► Assessment in Action

You are enjoying a bike ride on a paved trail with your friend. As she rounds the next bend, her bike tires slide out on the gravel and she falls to the ground. She gets up but has a large scrape on her knee and part of her lower leg. Blood is oozing from the wound.

Directions: Circle Yes if you agree with the statement; circle No if you disagree.

- Yes No 1. This victim is experiencing capillary bleeding.
- Yes No 2. This type of bleeding is the most common type.
- Yes No 3. This type of bleeding is difficult to control and usually does not clot and stop by itself.
- Yes No 4. Direct pressure will control this type of bleeding.

► Check Your Knowledge

Directions: Circle Yes if you agree with the statement; circle No if you disagree.

- Yes No 1. Most cases of bleeding require more than direct pressure to stop the bleeding.
- Yes No 2. Remove any blood-soaked dressings before applying additional ones.
- Yes No 3. Applying a pressure bandage over a wound can allow you to attend to another injury or another injured victim.
- Yes No 4. If a bleeding arm wound is not controlled through direct pressure, apply pressure to the brachial artery.
- Yes No 5. Dressings are placed directly on a wound.
- Yes No 6. Internal bleeding is normal.
- Yes No 7. Dressings should be sterile or as clean as possible.
- Yes No 8. Clotting is the body's way of stopping bleeding.
- Yes No 9. If the victim feels sick to the stomach and may vomit, roll him or her onto the left side.
- Yes No 10. It is important to remove impaled objects because they could be driven in deeper.

Wounds

chapter *at a glance*

- ▶ **Open Wounds**
- ▶ **Amputations**
- ▶ **Blisters**
- ▶ **Impaled (Embedded) Objects**
- ▶ **Closed Wounds**
- ▶ **Wounds That Require Medical Care**
- ▶ **Dressings and Bandages**

▶ **Open Wounds**

An open wound is a break in the skin's surface resulting in external bleeding. It may allow bacteria to enter the body, causing an infection. There are several types of open wounds. Recognizing the type of wound helps you give proper first aid. With an **abrasion**, the top layer of skin is removed, with little or no blood loss **Figure 1**. Abrasions tend to be painful because the nerve endings often are abraded along with the skin. Ground-in debris may be present. This type of wound can be serious if it covers a large area or becomes embedded with foreign matter. Other names for an abrasion are scrape, road rash, and scuff.

A **laceration** is cut skin with jagged, irregular edges **Figure 2**. This type of wound is usually caused by a forceful tearing away of skin tissue. **Incisions** tend to have smooth edges and resemble a surgical or paper cut **Figure 3**. The amount of bleeding depends on the depth, the location, and the size of the wound. **Punctures** are usually deep, narrow wounds in the skin and underlying organs such as a stab wound from a nail or a knife **Figure 4**. The entrance is usually small, and the risk of infection is high. The object causing the injury may remain impaled in the wound.

With an **avulsion**, a piece of skin and/or underlying tissue is torn loose and is hanging from the body or completely removed. This type of wound can bleed heavily. If the flap is still attached, lay it flat and realign it into its normal position. Avulsions most often involve ears, fingers, and hands **Figure 5**. An **amputation** involves the cutting or



Figure 1

Abrasion.



Figure 3

Incision.



Figure 2

Laceration.



Figure 4

Puncture.



Figure 5

Avulsion.

tearing off of a body part, such as a finger, toe, hand, foot, arm, or leg.

Care for Open Wounds

1. Protect yourself against disease by wearing exam gloves. If they are not available, use several layers of gauze pads, clean cloths, plastic wrap or bags, or waterproof material. If none of these are available, you can have the victim apply pressure with his or her hand. Your bare hand should be used only as a last resort.
2. Expose the wound by removing or cutting away the clothing to find the source of the bleeding.
3. Control the bleeding by using direct pressure and, if needed, other methods described in the chapter entitled Bleeding.

Cleaning a Wound

A victim's wound should be cleaned to help prevent infection. Wound cleaning usually restarts the bleeding by disturbing the clot, but it should be done anyway for shallow wounds. For wounds with a high risk for infection, leave the pressure bandage in place because medical personnel will clean the wound.

1. Scrub your hands vigorously with soap and water. Put on exam gloves, if available.
2. Expose the wound.
3. Clean the wound.
 - *For a shallow wound:*
 - Wash inside the wound with soap and water.
 - Flush the wound with water (use water that is clean enough to drink) **Figure 6**. Run water directly into the wound and allow the water to run over the wound

CAUTION

DO NOT clean large, extremely dirty, or life-threatening wounds. Let the hospital emergency department personnel do the cleaning.

DO NOT scrub a wound. The benefit of scrubbing a wound is debatable, and it can bruise the tissue.

and out, thus carrying the dirty particles away from the wound. Flushing with water needs pressure (at least 5 to 8 psi) to cleanse the tissue adequately. Water from a faucet provides sufficient pressure and quantity. Pouring water through the wound will not generate enough force for adequate cleaning. Irrigation with water is the most

FYI

A study compared the effectiveness of tap water with saline solution for irrigating simple skin lacerations to remove bacteria. The results showed no significant difference between bacterial counts in wounds irrigated with normal saline and those irrigated with tap water. The removal of bacteria from a wound depends more on the mechanical effects (speed and pressure) than on the type of solution. Tap water has these advantages over saline—it is readily available; it is more continuous and, therefore, takes less time; it is less expensive; and it does not require other materials such as sterile syringes or splash guards. Other irrigation solutions with antibacterial properties and detergents have an anticellular effect that impairs wound healing and/or resistance to infection. Irrigation pressures more than the 20 to 30 psi range are discouraged because the higher pressure can damage tissue.

Source: Moscatti R, Mayrose J, Fincher L, Jehle D. 1996. Comparison of normal saline with tap water for wound irrigation. *Am J Emerg Med* 164(4):379-381.



Figure 6

Irrigate a wound with water under pressure.

FYI**High-Risk Wounds**

These types of wounds have a high potential for infection:

- Bite wounds
- Very dirty, contaminated wounds
- Crushing, ragged wounds
- Wounds over injured bone, joint, or tendon
- Puncture wounds

important factor in preventing infection.

- *For a wound with a high risk for infection (such as an animal bite, a very dirty or ragged wound, or a puncture), clean the wound and then seek medical care for additional wound cleaning. If you are in a remote setting (more than 1 hour from medical care), clean the wound as best you can.*
4. Remove small objects not flushed out with sterile tweezers, if available. A dirty abrasion or other wound that is not properly cleaned will leave a “tattoo” on the victim’s skin.
 5. If bleeding restarts, apply direct pressure over the wound.

FYI**Wound Care: What the Medical Literature Says**

- Soaking wounds is not effective.
- The benefit of scrubbing wounds is debatable.
- Irrigating wounds requires a minimum pressure of 5 to 8 psi for tissue cleansing.
- Not closing a wound (for example, with butterfly bandages, elastic skin closures), especially a dirty wound, reduces the risk of infection.
- Applying antiseptic solutions such as Merthiolate, Mercurochrome, iodine, isopropyl alcohol, and hydrogen peroxide can injure wounded tissues.
- Applying an antibiotic ointment such as Neosporin or Polysporin reduces the risk of infection in shallow wounds or abrasions.

Source: Howell JM, Chisholm CD. 1992. Outpatient wound preparation and care: a national survey. *Ann Emerg Med* 21(8):976-981.

Covering a Wound

1. If the wound is small and does not require sutures, cover it with a thin layer of antibiotic ointment. These ointments can kill many bacteria and rarely cause allergic reactions. No physician prescription is needed.
2. Cover a small or large wound with a sterile dressing. Do not close gaping or dirty wounds with tape or butterfly bandages. Bacteria may remain, leading to a greater chance of infection. Large, deep, or contaminated wounds should be managed by a medical professional.
3. If a wound bleeds after a dressing has been applied and the dressing becomes stuck, leave it on as long as the wound is healing. Pulling the scab loose to change the dressing retards healing and increases the chance of infection. If you must remove a dressing that is sticking, soak it in warm water to help soften the scab and make removal easier.
4. If a dressing becomes wet or dirty, change it. Dirt and moisture are both breeding grounds for bacteria.

CAUTION

DO NOT irrigate a wound with full-strength iodine preparations such as povidone iodine (10%) or isopropyl alcohol (70%). They kill body cells as well as bacteria and are painful. Also, some people are allergic to iodine.

DO NOT use hydrogen peroxide. It does not kill bacteria well, it adversely affects capillary blood flow, and it extends wound healing.

DO NOT use antibiotic ointment on wounds that require sutures or on puncture wounds (the ointment may prevent drainage). Use an antibiotic ointment only on abrasions and shallow wounds.

DO NOT soak a wound to clean it. No evidence supports the effectiveness of soaking.

DO NOT close gaping wounds with tape such as butterfly tape. Infection is more likely when bacteria are trapped in the wound. If a wound requires closure, this should be done by medical personnel. Extremity wounds are best sutured within 6 hours of the injury.

DO NOT breathe or blow on a wound or the dressing.

Dressings and bandages are two different kinds of first aid supplies. A **dressing** is applied over a wound to control bleeding and prevent contamination. A **bandage** holds the dressing in place. Dressings should be sterile or as clean as possible; bandages need not be.

When to Seek Medical Care

High-risk wounds should receive medical care. Examples of high-risk wounds include those with embedded foreign material (such as gravel), animal and human bites, puncture wounds, and ragged wounds. Large or deep wounds should receive medical care. Any wound where edges do not come together spontaneously should receive medical care. Any wounds that have visible bone, joint, muscle, fat, or tendons and wounds that may have entered a joint or body cavity should receive medical care. A particularly high-risk wound is the “fight bite,” a wound over the knuckle caused by punching a person in the teeth. Sutures, if needed, are best placed within 6 to 8 hours after the injury. Anyone who has not had a tetanus vaccination within 10 years (5 years in the case of a dirty wound) should seek medical attention within 72 hours to update his or her tetanus inoculation status.

Wound Infection

Any wound, large or small, can become infected. Once an infection begins, damage can be extensive, so prevention is the best way to avoid the problem. A wound should be cleaned using the procedures described earlier in this chapter.

Q&A

When should wounds be closed by a physician?

Generally, a wound should be closed by one of several options (eg, sutures, staples, topical skin adhesives) when: (1) the edges of the skin do not fall together and/or (2) the cut is more than an inch long and is deep. Closing the wound speeds the healing process, lessens the risk of infection, and lessens scarring.

If sutures are needed, they should be made by a physician within 6 to 8 hours of the injury.



Figure 7

Infected wound.

It is important to know how to recognize and treat an infected wound (Figure 7). The signs and symptoms of infection include the following:

- Swelling and redness around the wound
- A sensation of warmth
- Throbbing pain
- Pus discharge
- Fever
- Swelling of lymph nodes
- One or more red streaks leading from the wound toward the heart

The appearance of one or more red streaks leading from the wound toward the heart is a serious sign

FYI

Using Topical Antibiotics to Improve Wound Healing

The use of topical triple-antibiotics significantly decreases infection rates in minor wounds that are contaminated. Topical antibiotics are effective for minor wounds, but not for major wounds.

Many studies support the use of topical antibiotics on wounds that are clean. Topical bacitracin zinc (Bacitracin); a triple ointment of neomycin sulfate, bacitracin zinc, and polymyxin B sulfate (Neosporin); and silver sulfadiazine (Silvadene) were compared with petrolatum as a control in patients with minor wounds. Wound infection rates were 17.6% for petrolatum, 5.5% for Bacitracin, 4.5% for Neosporin, and 12.1% for Silvadene.

Source: Diehr S, Hamp A, Jamieson B. 2007. *The Journal of Family Practice*. 56(2):140-144.

FYI**Myths About Wound Care**

Myth: Wounds should be kept dry.

Fact: Healing is faster and infection rates are lower when wounds are kept moist. Keep them moist by applying an antibiotic ointment and a dressing.

Myth: Redness is a sign of an infected wound.

Fact: Although redness can signal an infected wound, it does indicate an inflammatory reaction. When you see it, check the other signs and symptoms of infection: fever and pus coming from the wound.

Myth: Saline solution should be used instead of tap water to irrigate a wound.

Fact: Saline solution is no more effective in preventing wound infections than tap water.

Myth: Don't cover a cut—let it “breathe.”

Fact: If a cut is not covered, it dries out and scabs over. Scabs hinder healing. Keep a cut moist and prevent a scab from forming. Apply an antibiotic ointment and cover with a dressing.

that the infection is spreading and could cause death. If chills and fever develop, the infection has reached the circulatory system. Seek immediate medical care.

Factors that increase the likelihood for wound infection include the following:

- Dirty and foreign material left in the wound
- Ragged or crushed tissue
- Injury to an underlying bone, joint, or tendon
- Bite wounds (human or animal)
- Hand and foot wounds
- Puncture wounds or other wounds that cannot drain

In the early stages of an infection, a physician may allow a wound to be treated at home. Such home treatment would include the following:

- Keeping the area clean
- Soaking the wound in warm water or applying warm, wet packs
- Elevating the infected portion of the body
- Applying antibiotic ointment
- Changing the dressings daily
- Seeking medical care if the infection persists or becomes worse



Figure 8

Guillotine amputation.

► Amputations

In many cases, an amputated extremity can be successfully replanted (reattached). It is generally attempted for only upper extremities. Amputations usually involve fingers, hands, and arms rather than legs **Figure 8**.

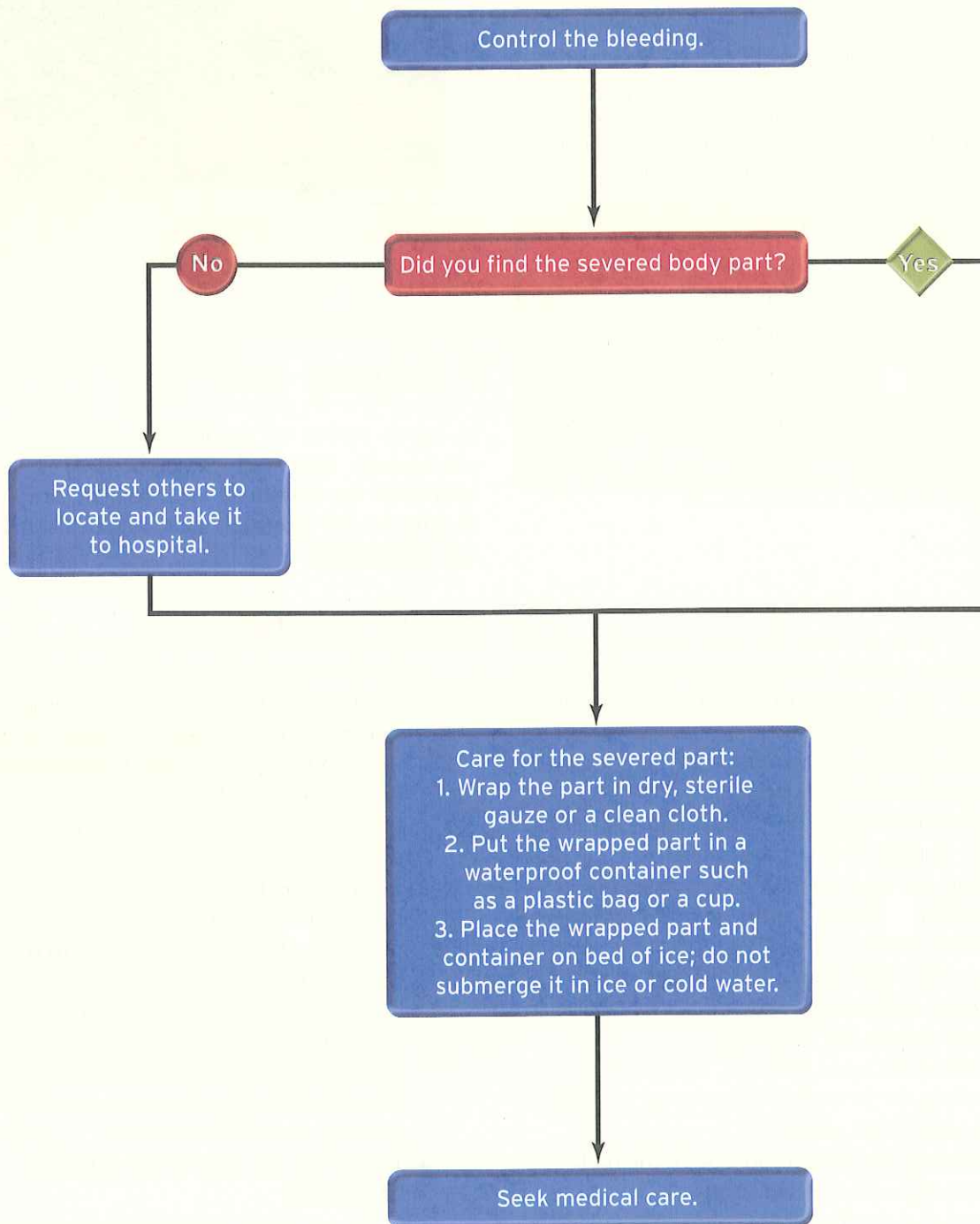
Care for Amputation

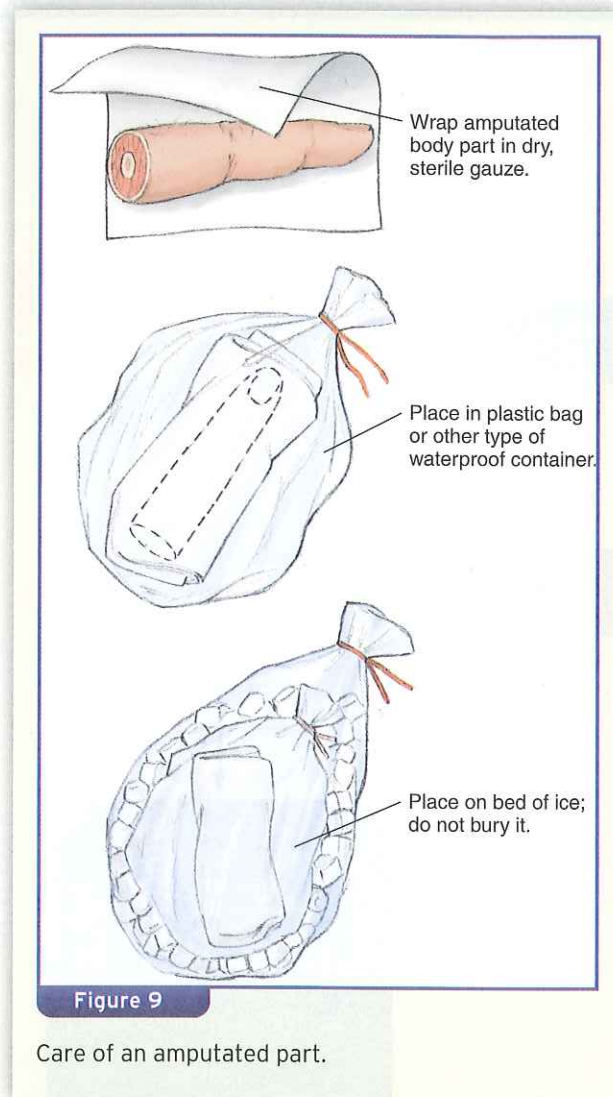
1. Control the bleeding with direct pressure. Apply a dry dressing or bulky cloths. Be sure to protect yourself against disease by following standard precautions. If bleeding cannot be controlled with direct pressure, a tourniquet may be required to prevent shock or death from blood loss.
2. Treat the victim for shock.
3. Recover the amputated part and, whenever possible, take it with the victim to the hospital. In multicasualty cases, in reduced lighting conditions, or when untrained people transport the victim, however, someone may be requested to locate and take the severed body part to the hospital after the victim's departure.
4. To care for the amputated body part

Figure 9

- Do not clean the amputated portion.
- Wrap the amputated part with dry, sterile gauze or other clean cloth.

Amputations





- Put the wrapped amputated part in a plastic bag or other waterproof container.
 - Place the bag or container with the wrapped part on a bed of ice. Keep the amputated part cool, but do not freeze.
5. Seek medical care immediately.

► Blisters

A blister is a collection of fluid in a “bubble” under the outer layer of skin. (Note: This section applies only to friction blisters and does not apply to blisters from burns, frostbite, drug reactions, insect or snake bites, or contact with a poisonous plant.)

Repeated rubbing of a small area of the skin will produce a blister **Figure 10**.



Care for Blisters

When caring for a friction blister, try to (1) avoid the risk of infection, (2) minimize the victim’s pain and discomfort, (3) limit the blister’s development, and (4) promote a fast recovery. The best care for a particular blister is determined mainly by its size and location.

If an area on the skin becomes a “hot spot” (painful, red area), snugly apply a piece of tape (adhesive or duct). You could also cut a hole in several pieces of moleskin or molefoam in layered stacks around the blister, make a doughnut-shaped pad, and apply it over the blister.

If a blister on a foot is closed and not very painful, a conservative approach is to tape the blister with

CAUTION

DO NOT try to decide whether a body part is salvageable or too small to save—leave that decision to a physician.

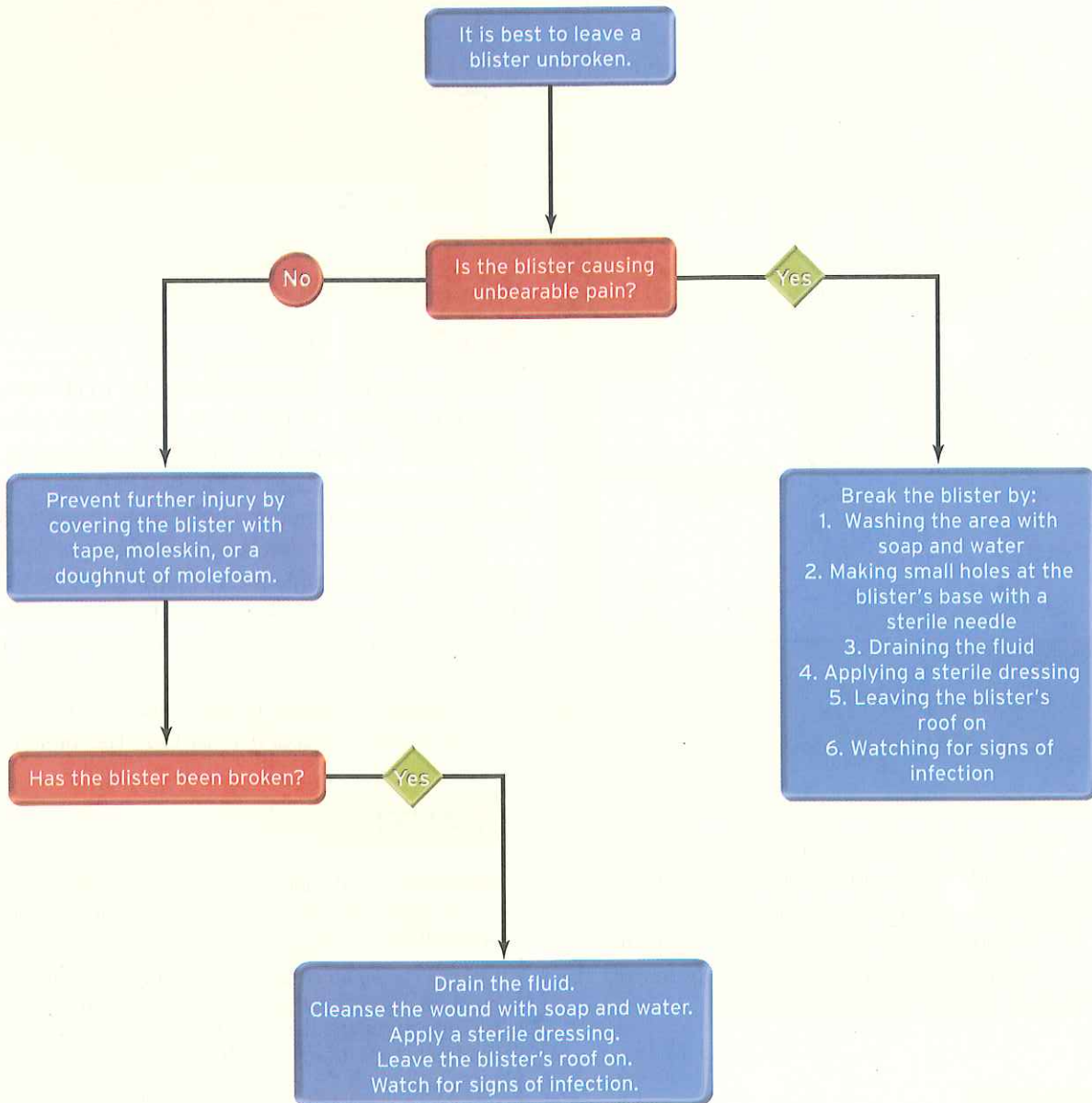
DO NOT wrap an amputated part in a wet dressing or cloth. Using a wet wrap on the part can cause waterlogging and tissue softening, which will make reattachment more difficult.

DO NOT bury an amputated part in ice—place it on ice. Reattaching frostbitten parts is usually unsuccessful.

DO NOT use dry ice.

DO NOT cut a skin “bridge,” a tendon, or other structure that is connecting a partially attached part to the rest of the body. Instead, reposition the part in the normal position, wrap the part in a dry, sterile dressing or clean cloth, and place an ice pack on it.

Blisters



duct tape or waterproof adhesive tape. The tape must remain on the blister for several days; removing it may tear off the blister's "roof" and expose unprotected skin. Unfortunately, the tape may become damp and contaminated and have to be replaced, risking a tear. Small blisters, especially on weight-bearing areas, generally respond better if left intact.

With a few exceptions, the blister's roof (which is the best and most comfortable "dressing") should be removed only when an infection is present. Once a blister has been opened, the area should be washed with soap to prevent further infection. For 10 to 14 days, or until new skin forms, a protective bandage or other cover should be used.

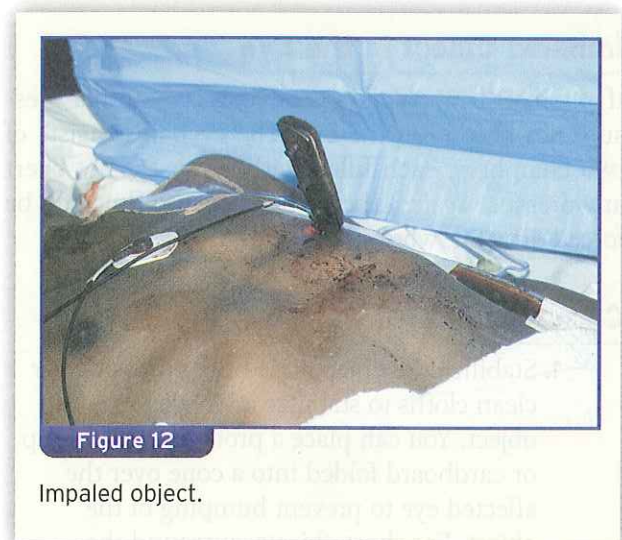
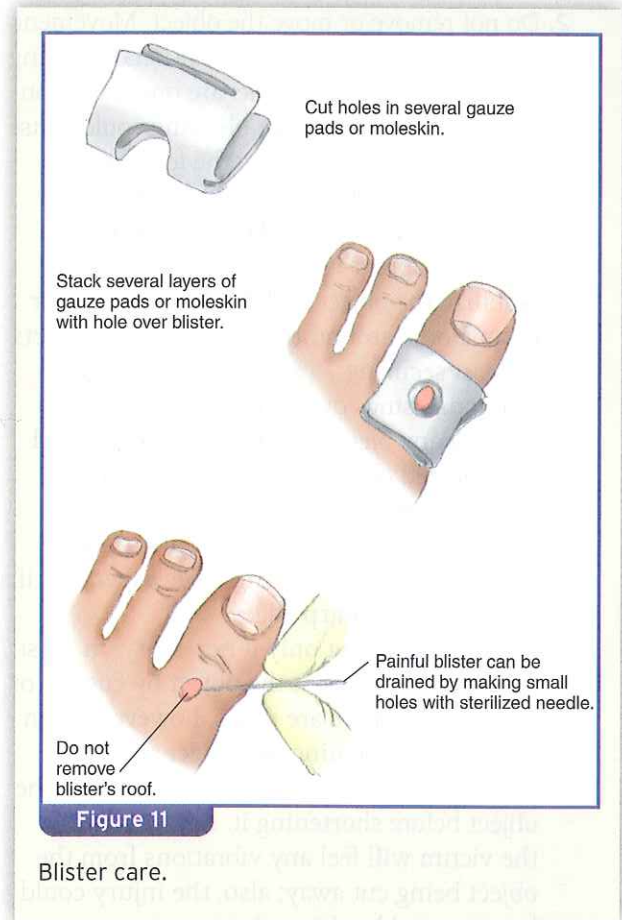
Even with no evidence of infection, consider removing the blister's roof when a partially torn blister roof may tear skin adjacent to the blister site, resulting in an even larger open wound. In such cases, use sterilized scissors to remove the loose skin of the blister's roof up to the edge of the normal tissue. Treat it the same as for an open blister. Rubbing alcohol is effective for sterilizing instruments such as needles or scissors.

If a blister on the foot is open or a very painful closed blister affects walking or running:

1. Clean the area with soap and water.
2. Drain all fluid out of the blister by making several small holes at the base of the blister with a sterilized needle. Press the fluid out. Do not remove the roof of a blister unless it is torn and it may tear adjacent skin, or if there is an infection.
3. Apply several layers of moleskin or molefoam cut in a doughnut shape on top of each other **Figure 11**. Another option is to apply a commercial callus or corn pad over the blister.
4. Apply antibiotic ointment in the hole and cover it securely with tape. The pressure dressing ensures that the blister's roof sticks to the underlying skin and that the blister does not refill with fluid after it has been drained.

► Impaled (Embedded) Objects

Impaled objects come in all shapes and sizes, from pencils and screwdrivers to knives, glass, steel rods, and fence posts **Figure 12**. Proper first aid requires that the impaled object be stabilized because there can be significant internal damage.



Care for Impaled Objects

1. Expose the area. Remove or cut away any clothing surrounding the injury. If clothes cover the object, leave them in place; removing them could cause the object to move.

2. Do not remove or move the object. Movement of any kind could produce additional bleeding and tissue damage. Cheeks are one exception because the object or the bleeding could cause an airway obstruction. See the following section on impaled objects in the cheek for more information. Small objects such as splinters (splinters) can be safely removed.
3. Stabilize the object with bulky dressings or clean cloths around the object. Some experts suggest securing 75% of the object with bulky dressings or cloths to reduce motion.
4. Control any bleeding with pressure around the impaled object. Apply pressure on the dressing surrounding the object. Do not press directly on the object or along the wound next to the cutting edge, especially if the object has sharp edges.
5. Shorten the object only if necessary. In most cases, do not shorten the object by cutting or breaking it. There are times, however, when cutting or shortening the object allows for easier transportation. Be sure to stabilize the object before shortening it. Remember that the victim will feel any vibrations from the object being cut away; also, the injury could be worsened by this action.

Impaled Object in the Eye

If an object is impaled in the eye, it is vital that pressure not be put on the eye. The eyeball consists of two chambers, each filled with fluid. Do not exert any pressure against the eyeball because fluid can be forced out of it, worsening the injury.

Care for Impaled Object in the Eye

1. Stabilize the object. Use bulky dressings or clean cloths to stabilize a long, protruding object. You can place a protective paper cup or cardboard folded into a cone over the affected eye to prevent bumping of the object. For short objects, surround the eye—without touching the object—with a doughnut-shaped (ring) pad held in place with a roller bandage.
2. Cover the undamaged eye. Most experts suggest that the undamaged eye should be covered to prevent sympathetic eye movement (that is, the injured eye moves when the undamaged eye does, thus aggravating

the injury). Remember that the victim is unable to see when both eyes are covered and may be anxious. Make sure you explain to the victim everything you are doing.

3. Seek immediate medical care.

► Closed Wounds

A closed wound happens when a blunt object strikes the body. In other words, the skin is not broken, but tissue and blood vessels beneath the skin's surface are crushed, causing bleeding within a confined area.

Care for Closed Wounds

1. Control bleeding by applying an ice pack over the area for no more than 20 minutes. Place a cloth between the ice pack and the skin to prevent frostbite.
2. If the injury involves a limb, apply an elastic bandage for compression. A splint may help make the victim more comfortable.
3. Check for a possible fracture.
4. Elevate an injured extremity above the victim's heart level to decrease the pain and swelling.

► Wounds That Require Medical Care

At some point, you will probably have to decide whether medical care is needed for a wounded victim. As a guideline, seek medical care for the following conditions as offered by the American College of Emergency Physicians:

- Wounds that will not stop bleeding after 15 minutes of applying direct pressure
- Long or deep cuts that need stitches
- Cuts over a joint
- Cuts that may impair function of a body area such as an eyelid or lip
- Cuts that remove all of the layers of the skin; such as those from slicing off the tip of a finger
- Cuts from an animal or human bite
- Cuts that have damaged or may have damaged underlying nerves, tendons, or joints
- Cuts over a possible broken bone
- Cuts caused by a crushing injury
- Cuts with an object embedded in them
- Cuts caused by a metal object or a puncture wound

Call 9-1-1 immediately if:

- Bleeding from a cut does not slow during the first 15 minutes of steady pressure
- Signs of shock occur
- Breathing is difficult because of a cut to the neck or chest
- A deep cut to the abdomen causes moderate to severe pain
- A cut occurs to the eyeball
- A cut amputates or partially amputates an extremity

Sutures

If sutures (stitches) are needed, they usually should be placed by a physician within 6 to 8 hours of the injury. Suturing wounds allows faster healing, reduces infection, and lessens scarring. Some wounds do not usually require sutures:

- Wounds in which the skin's cut edges tend to fall together
- Shallow cuts less than 1 inch long

Rather than close a gaping wound with butterfly bandages or elastic skin closures, cover the wound with sterile gauze. Closing the wound might trap bacteria inside, resulting in an infection. In most cases, a physician can be reached in time for sutures to be placed; if not, a wound without sutures will still heal but with scars. Scar tissue can be attended to later by a plastic surgeon.

► Dressings and Bandages

First aid kits include dressings and bandages to be used when controlling bleeding and caring for wounds. Wounds heal better with less infection if they are covered with a clean dressing. A dressing is a covering that is placed directly over a wound to help absorb blood, prevent infection, and protect the wound from further injury. Dressings come in different shapes, sizes, and types. Dressings can be gauze pads (eg, 2- or 4-inch square or larger) used to cover larger wounds, or adhesive strips, such as Band-Aids, which are dressings combined with a bandage for small cuts or scrapes **Figure 13**.

A bandage, such as a roll of gauze, is often used to cover a dressing, to keep it in place on the wound and to apply pressure to help control the bleeding. Like dressings, bandages also come in different shapes, sizes, and material **Figure 14**. Elastic bandages can be used to provide support and stability for an extremity or joint and to decrease swelling, but they are not usually used to cover wounds.

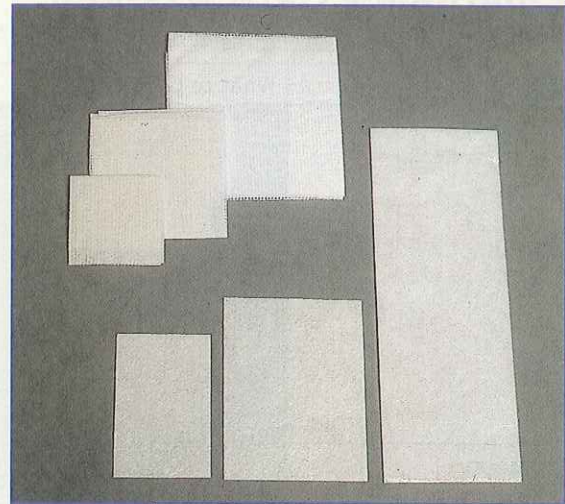


Figure 13

Gauze pads.

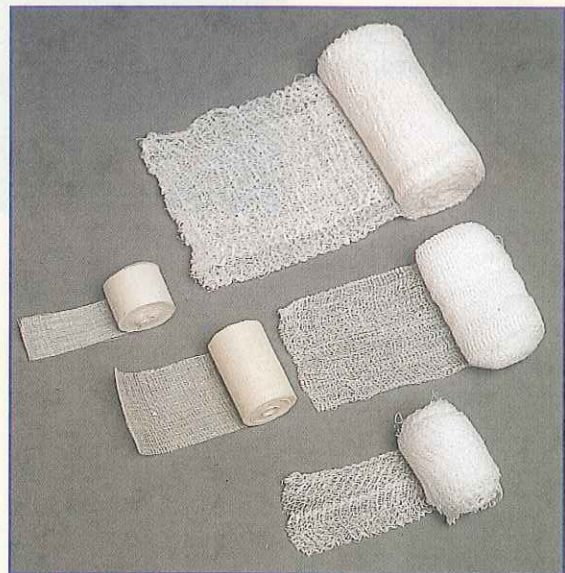


Figure 14

Self-adhering conforming bandages and gauze bandages of various sizes.

When commercial bandages are unavailable, improvise bandages from neckties, bandannas, or strips of cloth torn from a sheet or other similar material.

When applying a bandage, do not apply it so tightly that it restricts blood circulation. The signs that a bandage is too tight include:

- Blue tinge to the fingernails or toenails
- Blue or pale skin
- Tingling or loss of sensation
- Coldness of the arm or leg

► Emergency Care Wrap-up

Condition	What to Look For	What to Do
Open wound	Break in the skin's surface External bleeding	Wash with soap and water. Flush with running water under pressure. Remove remaining small object(s). If the bleeding restarts, apply pressure on the wound. Apply antibiotic ointment if wound is shallow. Cover with sterile or clean dressing. For wounds with a high risk for infection, seek medical care for cleaning, possible tetanus booster, and closing.
Amputation	Body part (eg, finger, toe, hand, foot, arm, leg) completely cut or torn off the body	Call 9-1-1. Control bleeding. Care for shock. Recover amputated part(s) and wrap in sterile or clean dressing. Place wrapped part(s) in a plastic bag or waterproof container. Keep part(s) cool.
Embedded (impaled) object	Foreign object penetrating a body part	Do not remove object. Stabilize the object with bulky dressings or clean cloths. Control bleeding with pressure around the object.

► Ready for Review

- An open wound is a break in the skin's surface resulting in external bleeding.
- Knowing what type of open wound the victim has will help you in providing first aid.
- In many cases, an amputated extremity can be successfully replanted.
- A blister is a collection of fluid in a bubble under the outer layer of skin.
- Proper first aid of an impaled object requires that the object be stabilized because significant internal damage can occur.
- A closed wound happens when a blunt object strikes the body. Although the skin remains unbroken, the tissue and blood vessels beneath the skin's surface are crushed, causing bleeding within a confined area.
- Wounds that require medical care include:
 - Wounds that will not stop bleeding after 15 minutes of applying direct pressure
 - Long or deep cuts that need stitches
 - Cuts over a joint
 - Cuts that may impair function of a body area such as an eyelid or lip
 - Cuts that remove all of the layers of the skin such as those from slicing off the tip of a finger
 - Cuts from an animal or human bite
 - Cuts that have damaged or may have damaged underlying nerves, tendons, or joints
 - Cuts over a possible broken bone
 - Cuts caused by a crushing injury
 - Cuts with an object embedded in them
 - Cuts caused by a metal object or a puncture wound
- Call 9-1-1 immediately if:
 - Bleeding from a cut does not slow during the first 15 minutes of steady pressure
 - Signs of shock occur
 - Breathing is difficult because of a cut to the neck or chest
 - A deep cut to the abdomen causes moderate to severe pain
 - A cut occurs to the eyeball
 - A cut amputates or partially amputates an extremity

prep
kit

► Vital Vocabulary

abrasion An injury consisting of the loss of the partial thickness of skin from rubbing or scraping on a hard, rough surface.

amputation Complete removal of an appendage.

avulsion An injury that leaves a piece of skin or other tissue either partially or completely torn away from the body.

bandage Used to cover a dressing to keep it in place on the wound and to apply pressure to help control bleeding.

dressing A sterile gauze pad or clean cloth covering that is placed over an open wound.

incisions Wounds usually made deliberately in connection with surgery; clean-cut as opposed to a laceration.

laceration A wound made by the tearing or cutting of body tissues.

punctures Deep, narrow wounds in the skin and underlying organs.

prep kit

► Assessment in Action

You are helping your mother prepare for a barbeque on a Saturday afternoon. She is slicing tomatoes with a very dull kitchen knife. She is startled by something and cuts into her finger. The wound is bleeding and you can see the bone in the wound.

Directions: Circle Yes if you agree with the statement; circle No if you disagree.

- Yes No 1. This type of wound is called an avulsion.
- Yes No 2. You should not be concerned about infection because she was using a clean knife.
- Yes No 3. You should cover the wound with a sterile dressing but do not close the wound with tape or butterfly bandages.
- Yes No 4. You decide to take her to the emergency department for possible sutures. However, both you and your mother want to wait until the next day because you don't want to miss the barbeque.

► Check Your Knowledge

Directions: Circle Yes if you agree with the statement; circle No if you disagree.

- Yes No 1. An open wound may allow bacteria to enter the body, causing an infection.
- Yes No 2. A laceration is cut skin with smooth, straight edges.
- Yes No 3. A dressing is applied over a wound to control bleeding and prevent contamination.
- Yes No 4. A bandage is also applied over a wound to hold a dressing in place.
- Yes No 5. Any wound can become infected.
- Yes No 6. The signs and symptoms of an infection include swelling and redness around the wound, throbbing pain, and a lack of fever.
- Yes No 7. A bite wound is more likely to become infected.
- Yes No 8. Impaled objects should be removed immediately.
- Yes No 9. Tetanus is communicable from one person to another.
- Yes No 10. In many cases, an amputated extremity can be successfully reattached.