The average-size adult has 5 to 6 quarts (10–12 pints) of blood and can safely donate a pint during a blood donation. However, rapid blood loss of 1 quart or more can lead to shock and death. A child who loses 1 pint of blood is in extreme danger.

Types of External Bleeding

External bleeding refers to blood coming from an open wound. The term *hemorrhage* refers to a large amount of bleeding in a short time. External bleeding can be classified into three types according to the type of blood vessel that is damaged: an artery, vein, or capillary. In arterial bleeding, blood spurts (up to several feet) from the wound. *Arterial bleeding* is the most serious type of bleeding because a large amount of blood can be lost in a very short period of time. Arterial bleeding also is less likely to clot because blood can clot only when it is flowing slowly or not at all. However, unless a very large artery has been cut, it is unlikely that a person will bleed to death before the flow can be controlled. Nevertheless, arterial bleeding is dangerous and must be controlled.

In *venous bleeding*, blood from a vein flows steadily or gushes. Venous bleeding is easier to control than arterial bleeding. Most veins collapse when cut. Bleeding from deep veins, however, can be as massive and as hard to control as arterial bleeding. In *capillary bleeding*, the most common type of bleeding, blood oozes from capillaries. It usually is not serious and can be controlled easily. Quite often,
this type of bleeding will clot and stop by itself. Each type of blood vessel—artery, vein, or capillary—contains blood of a different shade of red. An inexperienced person may have difficulty detecting the difference but identifying the type of bleeding by its color is not important. The body naturally responds to bleeding in the following way:

- **Blood vessel spasm.** Arteries contain small amounts of muscle tissue in their walls. If a blood vessel is completely severed, it draws back into the tissue, constricts its diameter, and slows the bleeding dramatically. If an artery is only partially cut across its diameter, however, constriction is incomplete. The vessel may not contract and the loss of blood may not slow as dramatically.

- **Clotting.** Special elements (platelets) in blood form a clot. Clotting serves as a protective covering for a wound until the tissues underneath can repair themselves. In a healthy person, initial clot formation normally takes about 10 minutes. Clotting time is longer in people who have lost a great deal of blood over a prolonged period of time, are taking aspirin or anticoagulants, are anemic, or have hemophilia or severe liver disease.

### Care for External Bleeding

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:

1. Protect yourself against disease by wearing medical exam gloves. If they are not available, use several layers of gauze pads, clean cloths, plastic wrap, a plastic bag, or waterproof material. If those are unavailable, you can have the victim apply pressure on the wound with his or her hand.

2. Expose the wound by removing or cutting the victim’s clothing to find the source of the bleeding.

3. Place a sterile gauze pad or a clean cloth such as a handkerchief, washcloth, or towel over the entire wound and apply direct pressure with your fingers or the palm of your hand (Skill Drill Step 1). Hold steady, firm, and uninterrupted pressure on the wound for at least 5 minutes. The gauze or cloth allows you to apply even pressure. Direct pressure stops most bleeding. Applying direct pressure to the wound compresses the sides of the torn vessel and helps the body's natural clotting mechanisms to work. Be sure the pressure remains constant, is not too light, and is applied to the bleeding source. Do not remove blood-soaked dressings; simply add new dressings over the old ones.

4. If the bleeding is from an arm or leg, elevate the injured area above the level of the heart to reduce blood flow as you continue to apply pressure (Skill Drill Step 2). Elevation allows gravity to make it more difficult for the body to pump blood to the affected extremity. Elevation alone, however, will not stop bleeding and must be used in combination with direct pressure over the wound.

5. To free you to attend to other injuries or victims, use a pressure bandage to hold the dressing on the wound. Wrap a roller gauze bandage tightly over the dressing and above and below the wound site (Skill Drill Step 3).

6. If the bleeding continues, apply pressure at a pressure point to slow the flow of blood as you continue putting direct pressure over the wound (Skill Drill Step 3).

7. A pressure point is where an artery near the skin’s surface passes close to a bone, against which it can be compressed. The most accessible pressure points on both sides of the body are the brachial point on the inside of the upper arm and the femoral point in the groin. Using pressure points requires skill, because unless the exact location of the pulse point is used, the pressure-point...
Skill Drill 8-1 Care for External Bleeding

1. Put on medical exam gloves and expose the wound.

2. Apply direct pressure.

3. Elevate an injured extremity above heart level while keeping pressure on the wound.

4. Apply a pressure bandage over the dressing and above and below the wound.

5. If bleeding cannot be controlled, use a brachial femoral pressure point.
technique is useless. Many first aiders have difficulty finding the precise pressure-point location. Remember, however, that direct pressure stops most bleeding.

8. When direct pressure cannot be applied, such as in the case of a protruding bone, skull fracture, or embedded object, use a doughnut-shaped (ring) pad to control bleeding. To make a ring pad, wrap one end of a narrow bandage (roller or cravat) several times around your four fingers to form a loop. Pass the other end of the bandage through the loop and wrap it around and around until the entire bandage is used and a ring has been made.

9. When bleeding stops, use procedures found in Chapter 9 for wound care.

10. Some people panic when they see even the smallest amount of blood. The sight of more than a couple of tablespoonfuls of blood generally is enough to frighten victims and bystanders. Take time to reassure the victim that everything possible is being done. Do not belittle the victim’s concerns.

Recognizing Internal Bleeding

The signs of internal bleeding may be seen in either injured or suddenly ill victims:

- Bright red blood from the mouth or rectum or blood in the urine
- Nonmenstrual vaginal bleeding
- Vomited blood; may be bright red, dark red, or look like coffee grounds
- Black, foul-smelling, tarry stools
- Pain, tenderness, bruising, or swelling
- Broken ribs, bruises over the lower chest, or a rigid abdomen

Care for Internal Bleeding

For severe internal bleeding, follow these steps:

1. Monitor breathing.
2. Expect vomiting. If vomiting occurs, keep the victim lying on his or her left side to allow drainage and to prevent inhalation (aspiration) of vomitus and expulsion of vomit from the stomach.
3. Treat for shock by raising the victim’s legs 6 to 12 inches and covering the victim with a coat or blanket for warmth. See Chapter 7 for when to use other body positions.
4. Treat suspected internal bleeding in an extremity by applying a splint.
5. Seek immediate medical care.

Internal Bleeding

Internal bleeding occurs when the skin is not broken and blood is not seen. It can be difficult to detect and can be life threatening. A person with bleeding stomach ulcers, a lacerated liver, or a ruptured spleen may lose a considerable amount of blood into the abdomen with no outward sign of bleeding other than the presence of shock. Broken bones can also cause serious internal blood loss. A broken femur can easily result in a loss of 1 or more quarts of blood.

Bruises are a form of internal bleeding, but they are not life threatening. To treat bruises:

1. Apply an ice pack over the injury for 20 minutes.
2. If the bruise is on an arm or leg, raise the limb if it is not broken.
3. If an arm or a leg is involved, apply an elastic bandage for compression.
Bleeding

Apply direct pressure over wound.
- Place a sterile dressing or the cleanest cloth available over the wound.
- Protect yourself from coming in contact with blood (e.g., use medical exam gloves).
- Do not remove an impaled object.

Has the bleeding stopped?

Elevate the extremity above the victim's heart and continue pressing on the wound.

Has the bleeding stopped?

Locate a pressure point and apply pressure.
Keep pressure over the wound.
Treat for shock.

Has the bleeding stopped?

Is the victim bleeding from an arm or a leg?

Yes

Treat for shock.
Care for the wound.
Seek medical care if needed.

No

Apply a tourniquet only as a last resort.

Seek medical care.
External bleeding

1. Protect against blood contact.
2. Place sterile dressing over wound and apply pressure.
3. Elevate the injured area if possible.
4. Apply a pressure bandage.
5. If bleeding cannot be controlled, apply pressure to a pressure point.

Internal bleeding

Minor internal bleeding:
Use RICE procedures:
   R = Rest
   I = Ice
   C = Compress the area with elastic bandage
   E = Elevate the injured extremity.

Serious internal bleeding:
   Call 9-1-1
   Care for shock.
   If vomiting occurs, roll the victim onto the side.
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: an 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

A 25-year-old construction worker has been badly cut on his thigh by a circular power saw. The cut is approximately 5 inches long, and blood is spurting from the wound.

**Directions**: Circle Yes if you agree with the statement or believe the answer to the question is yes, and circle No if you disagree or believe the answer to the question is no.

1. This victim is experiencing venous bleeding.
2. You should be certain to wash this wound with soap and water.
3. Direct pressure should stop the bleeding.
4. Treat the victim for shock.
5. The type of bleeding experienced by this man is the most common type.

Answers: 1. No; 2. No; 3. Yes; 4. Yes; 5. No

Check Your Knowledge

**Directions**: Circle Yes if you agree with the statement or believe the answer to the question is yes, and circle No if you disagree or believe the answer to the question is no.

1. Most cases of bleeding require more than direct pressure to stop the bleeding.
2. Remove any blood-soaked dressings before applying additional ones.
3. Whenever elevating an arm or leg to control the bleeding, you should also keep applying pressure on the wound.
4. If a bleeding arm wound is not controlled through direct pressure, elevation, and pressure bandaging, apply pressure to the brachial artery.
5. Dressings are placed directly on a wound.
6. Internal bleeding is normal.
7. Dressings should be sterile or as clean as possible.
8. Clotting is the body's way of stopping bleeding.
9. If the victim feels sick to the stomach, roll her on her back.
10. It is important to remove impaled objects because they could be driven in deeper.