

Lesson 4

Treating for Shock and Immobilizing Fractures



Key Words

clammy
closed fracture
dislocation
fainting
ligament
open fracture
splint
sprain
strain
trauma

What You Will Learn to Do

- Determine first aid treatment for shock, fractures, strains and sprains

Linked Core Abilities

- Do your share as a good citizen in your school, community, country, and the world

Skills and Knowledge You Will Gain Along the Way

- Explain causes and effects of shock
- Identify the signs of shock
- Demonstrate how to treat for shock
- Distinguish between closed and open fractures
- Identify procedures for immobilizing fractures using splints and slings
- Distinguish between strains and sprains
- Define the key words contained in this lesson

Introduction

Whenever you treat someone for a severe injury, you must also treat them for shock. Even if an injured person shows no signs of shock, treat them for shock anyway, since shock can follow all major injuries. By treating for shock, you lessen its severity. If left untreated, shock can become life threatening. There are cases of people who died from shock even though their injuries would not have killed them; therefore, knowing how to deal with shock is a very important part of first aid.

After treating for shock, take care of broken bones or suspected broken bones. If there is a question of whether or not a bone is broken, treat it as if it were broken. Follow the first aid procedures for splinting a fracture carefully because more damage can occur if a fracture is handled improperly.

Shock

Shock from an injury is different from electric shock, although it can be brought on by electric shock, as well as blood loss, burns, psychological **trauma**, heart attack, and other injuries involving pain. Shock disrupts circulation. In an attempt to correct damage from an injury and to protect its blood supply, the body routes blood away from outer tissues to organs inside the body. This may keep adequate blood, and therefore oxygen, from reaching the brain. In severe cases, the injured person can lose consciousness and blood supply to vital organs like the heart, causing death.

Shock usually occurs within the first hour after a severe injury. How severe shock becomes depends upon several factors including the type of injury, how much blood is lost, and characteristics of the injured person's nervous system. Increased pain, rough handling, delayed treatment, and emotional reactions such as fear and panic can worsen shock.

Signs of Shock

When a victim is in shock, the skin is pale or bluish and cold to the touch. For a victim with dark skin, check the color of the mucous membranes on the inside of the mouth or under the eyelids, or check under the nail beds. The skin may be **clammy** from perspiration. Other signs that may develop in the early stages of shock include the following:

- **Restlessness or nervousness**
- **Thirst**
- **Bleeding**
- **Confusion or loss of awareness**
- **Breathing rapidly**
- **Nausea and/or vomiting**
- **Blotchy or bluish skin around the mouth and lips**
- **Fainting**

Key Note Term

trauma – a behavioral state resulting from mental or emotional stress or physical injury that has a lasting effect on the mind; a physical wound or injury

Key Note Term

clammy – damp, soft, sticky, and unusually cool

Key Note Term

fainting – to lose consciousness briefly because of temporary decrease in the amount of blood that flows to the brain

Fainting, or blacking out, is a mild form of shock caused by a lack of blood to the brain. Fright, bad news, breathing polluted air, or standing too long can result in fainting. Before fainting occurs, a shock victim may turn pale, shake, or suddenly fall to the ground.

Treating Shock

Procedures for treating shock include improving circulation of the blood, ensuring an adequate supply of oxygen, and maintaining normal body temperature. To treat a victim for shock, follow these steps:

1. **Position the victim on his or her back, unless a sitting position allows easier breathing. If the victim is vomiting, position that person on the side to let fluid drain from the mouth.**
2. **Elevate the victim's feet higher than the heart, unless the victim has an abdominal or chest wound or an unsplinted leg fracture.**
3. **Loosen clothing that may bind around the neck and waist.**
4. **Keep the victim from becoming cold or overheating.**
5. **Reassure the victim and do not give him or her any food or drink; however, if you know that help is not going to arrive for over an hour, give the victim small amounts of fluids at room temperature every 15 minutes. Add an eighth of a teaspoon of salt, if available, to each half glass of fluid. This will help the victim retain more fluids in his or her system.**

Key Note Terms

closed (simple) fracture – a fracture in which the broken bone does not push through the skin's surface

open (compound) fracture – a fracture in which the broken end of a bone pierces the skin

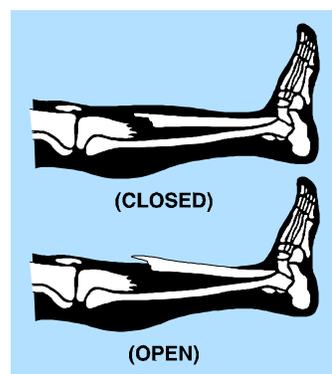
Fractures

Bone fractures resulting from falls are common injuries. A **closed or simple fracture** is a break in the bone that does not penetrate the skin. An **open or compound fracture** occurs if the sharp edges of a splintered bone have cut through the skin. Both types of fractures are shown in Figure 2.4.1.

In the case of an open fracture, it is obvious that a bone is broken. In the case of a closed fracture, indications of a broken bone include swelling, discoloration, and unusual positioning of the limb in question.

Figure 2.4.1: Closed (simple) and open (compound) fractures.

Courtesy of CACI and the U.S. Army.



Do's and Don'ts

When treating fractures, what you do is important, and what you don't do is equally as important.

- **Do** call for medical assistance immediately.
- **Do** keep the victim from moving.
- **Do** treat for shock while waiting for medical assistance.
- **Don't** try to set the bone.
- **Don't** put the victim in a car to rush him or her to a hospital. That is the easiest way of turning a closed fracture into an open one.
- **Don't** give stimulants if there is severe bleeding.

Splints

The most important action to take when dealing with a fracture is to immobilize the injured bone to prevent further damage. The best way to immobilize bones is with a **splint**, shown in Figure 2.4.2.

For open fractures, control the bleeding before splinting. Keep the exposed bone moist by covering it with a moist, sterile dressing. The rules of splinting are as follows:

1. Pad all splinting material. Make splints from sticks, boards, cardboard, rolled newspaper, or any other unbendable material.
2. Splint the broken leg or arm in the position in which you found it. Do not try to straighten or reposition the fracture. In most cases, support an arm from above and below and a leg from the sides.
3. Use splinting material that is long enough to immobilize the joint above and below the break. For example, immobilize the ankle and the knee for a fracture in the vicinity of the calf.
4. Tie the splints above and below the suspected fracture. Make two ties above and two below the break. Never make a tie directly over the break.
5. Tie all knots on the outside of the splints.
6. Check that circulation is not restricted by splints tied too tightly.

Key Note Term

splint – to support and immobilize a body part with a stiff material

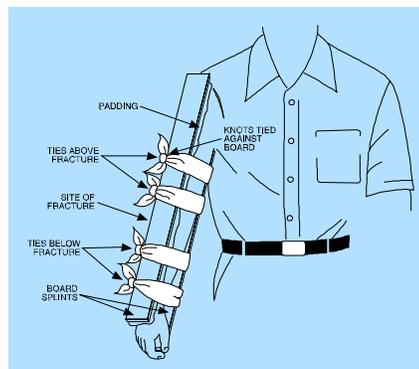
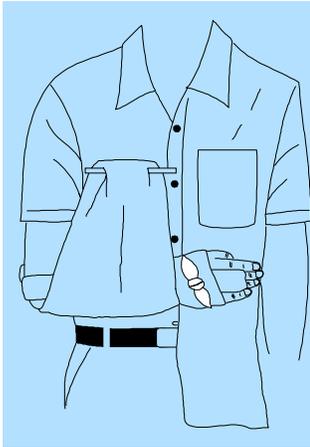


Figure 2.4.2: Splints help immobilize bones to prevent further injury.

Courtesy of CACI and the U.S. Army.



If no splinting material is available, immobilize a leg fracture by placing padding between the injured leg and the uninjured leg and tying them together. Using the uninjured leg as the splint, draw two ties above and two below the suspected break.

Slings

For arm fractures in which the entire arm is not splinted, use a **sling** (see Figure 2.4.3) to support the weight of the arm. If necessary, pin the victim's shirttail up to serve as a field expedient sling.

Joint Injuries

Joint injuries occur when excess stress or strain is placed on the joint. This can happen during normal activities such as walking or running and is common in sports activities. Dislocations and sprains are the most common joint injuries.

Dislocations

A **dislocation** occurs when a joint comes apart and stays apart with the bone ends no longer in contact. The shoulders, elbows, fingers, hips, kneecaps, and ankles are the joints most frequently affected. Dislocations have signs and symptoms similar to those of a fracture: severe pain, swelling, and the inability of the victim to move the injured joint. The main sign of a dislocation is deformity; its appearance will be different from that of a comparable uninjured joint. The procedures for treating a dislocation include the following:

1. **Do not try to set the joint. Immobilize and support the injured joint as if treating for a fracture.**
2. **Use the RICE procedures (discussed later in this lesson).**
3. **Seek medical attention.**

Sprain

A **sprain** is an injury to a joint in which the **ligaments** and other tissues are damaged by violent stretching or twisting. Attempts to move or use the joint increase the pain. The skin about the joint may be discolored because of bleeding from torn tissues. It is often difficult to distinguish between a severe sprain and a fracture, because their signs and symptoms are similar. If you are not sure whether an injury is a sprain or a fracture, treat it like a fracture. It is better to immobilize a sprain than to take the chance of a victim sustaining further damage from an unsplinted closed fracture. Treatment for a sprain consists of **Rest, Ice, Compression, and Elevation (RICE)**. Seek medical attention.

Muscle Injuries

Muscle injuries are as common as joint injuries. These can be very painful and need treatment as soon as possible after the injury occurs. The most common muscle injury is a strain.

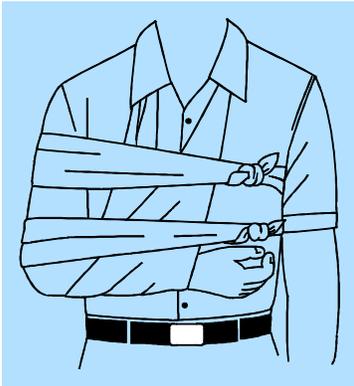


Figure 2.4.3: Placing a sling on an injured arm can support the injury.

Illustration courtesy of CACI and the U.S. Army.

Key Note Terms

dislocation – the separation of a bone from its joint

sprain – an injury caused by twisting a ligament or tendon around a joint

ligament – a fibrous band of tissue that holds bones together at a joint

Strain

A muscle **strain**, or muscle pull, occurs when a muscle is stretched beyond its normal range of motion, resulting in the muscle tearing. Signs and symptoms include: sharp pain, extreme tenderness when the area is touched, slight swelling, and difficulty moving or using the affected part. Treatment for a strain consists of rest, ice, compression, and elevation (rice).

RICE: Procedures for Bone, Joint, and Muscle Injuries

As discussed earlier in this lesson, RICE is the acronym for the first aid procedures—rest, ice, compression, and elevation—for bone, joint, and muscle injuries. What is done in the first 48–72 hours following such an injury can greatly affect the recovery.

1. **Rest.** Injuries heal faster if rested. Rest means the victim stays off the injured part.
2. **Ice.** An ice pack should be applied to the injured area for 20–30 minutes every 2–3 hours during the first 24–48 hours. When the skin becomes numb, remove the ice pack.
3. **Compression.** Compression of the injured area may squeeze some fluid and debris out of the injury site. Compression limits the ability of the skin and of other tissues to expand. Applying compression may be the most important step in preventing swelling. The victim should wear an elastic bandage continuously for 18–24 hours.
4. **Elevation.** Gravity has an important effect on swelling. The force of gravity pulls blood and other tissue to the lower parts of the body. After fluids get to your hands or feet, they have nowhere else to go; therefore, those parts of the body tend to swell the most. Elevating the injured areas, in combination with ice and compression, limits circulation to that area, which in turn helps limit internal bleeding and minimize swelling. Whenever possible, elevate the injured part above the level of the heart for the first 24 hours after an injury.

Key Note Term

strain – an injury caused when a muscle or tendon is over-stretched

Conclusion

This lesson explained the first aid procedures for treating shock and fractures. Remember that shock can follow severe injuries and can be life threatening if left untreated. Treating a victim for shock involves improving circulation, ensuring an adequate oxygen supply, and maintaining normal body temperature. For fractures, the most important action to take is immobilizing the broken bone using splints. By following these first aid procedures, you can lessen the severity of shock caused by an injury and ensure that no further damage occurs to a victim because of a broken bone, sprain, or strain.

The next lesson covers first aid for burns. Burn injuries can happen anywhere, from the kitchen to the workplace, and knowing how to treat burns is a must.

Lesson Review

1. List one do and one don't when treating fractures.
2. What causes fainting?
3. What are the signs of shock?
4. Describe the differences between a strain and a sprain.