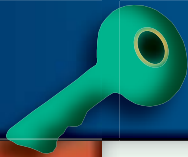


LESSON 5



First Aid



Quick Write

Suppose you witnessed a car accident. List the actions you would take to provide help, and the order in which you would take them.



Learn About

- what is first aid?
- how to recognize and treat common emergencies
- when minutes count: severe emergencies

"I may be compelled to face danger, but never fear it, and while our soldiers can stand and fight, I can stand and feed and nurse them."

Clara Barton, nurse and founder of the Red Cross

What Is First Aid?

Even with precautions, accidents and injuries will still happen, whether it's falling and scraping your knee or a serious car accident. Millions of people are injured every day, and how you handle the situation often determines how well you or someone else will recover. In an emergency, knowing and applying first aid skills can possibly save a life, or at least ease a person's pain and personal suffering. **First aid** is the immediate emergency care given to a sick or injured person before professional medical care can be provided. If you ever find yourself in a position where someone needs first aid assistance, knowing what to do during certain common emergencies can prevent further injury and may even speed the person's recovery. Equally important, though, is knowing what *not* to do. In serious cases, providing the correct first aid can make the difference between life and death.

Ways to Prepare for an Emergency Situation

First aid might be needed anywhere, at any time, and without warning. The first key to preparation is learning basic first aid skills. These skills will help you handle most common emergencies.

Another way to be prepared is to keep a list of emergency numbers near all landline phones or entered into the contacts lists for cell phones—on speed dial, if possible. A study conducted by New York's Albany Medical Center found that many emergency medical facilities often have difficulty



Vocabulary

- first aid
- universal precautions
- Human Immunodeficiency Virus (HIV)
- hepatitis
- sprain
- fracture
- open fracture
- closed fracture
- heat cramps
- heat exhaustion
- heatstroke
- Heimlich Maneuver
- shock
- tourniquet
- cardiopulmonary resuscitation (CPR)
- sudden cardiac arrest (SCA)
- arrhythmias
- ventricular fibrillation (v-fib)

contacting family members in cases where the victim is unconscious. A very simple remedy is to put the word “ICE” beside the name of any individual or family member you want called in an emergency. ICE stands for “in case of emergency.”

All family members should know where family health records are kept. If a family member has certain allergies, for example, that information may be needed during an emergency. You can enter them into a cell phone’s text message inbox as a note, or in some other easily reachable database.

It is also highly recommended that you keep first aid supplies at home and in the car, and that you know how to use them. You can assemble your own first aid kit or buy a packaged kit. The box titled “First Aid Supplies” provides suggestions for basic first aid supplies. If a family member has a medical condition, specific medicines may need to be added to the kit.

Universal Precautions for First-Aid Providers

Universal precautions are actions taken to prevent the spread of disease by treating all blood as if it were contaminated. These actions include wearing protective gloves when treating a victim. People infected with HIV or hepatitis carry the virus in their blood. Because these diseases are easily transferred, touching contaminated blood carries a risk. For this reason, it is important to protect yourself when giving first aid.

Human Immunodeficiency Virus (HIV) is a virus that infects and destroys cells of the immune system. **Hepatitis** is a disease that can cause inflammation of the liver and sometimes be fatal. It is especially important to wear disposable gloves, if you have them available. Many first aid kits contain gloves.

Other universal precautions include using a facemask or shield when giving first aid for breathing emergencies. Also, cover any open wounds on your body with sterile dressings. Avoid touching any object that had contact with the victim’s blood. In addition, always wash your hands thoroughly after giving first aid.

keys to LEADERSHIP

The most important quality you can display any time first aid is needed is remaining calm. Doing so will allow you to better help the victim.

First Aid Supplies

Keeping a first aid kit in your home will help your family be prepared for emergencies.

What other supplies might you add to this kit?

- **Instruments**

Tweezers, scissors

- **Equipment**

Thermometer, cotton swabs, blanket, cold pack

- **Medications**

Antiseptic ointment, sterile eyewash, activated charcoal, hydrogen peroxide, aspirin

- **Dressings**

Gauze pads, adhesive tape, adhesive bandages, triangular bandage

- **Miscellaneous**

Small flashlight, tissues, hand sanitizers, disposable gloves, face mask, biohazard waste bags



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The Basic Guidelines for First Aid

Every emergency situation is unique. However, there are four steps to take for most emergency situations, as recommended by the American Red Cross. The following guidelines should be followed when administering first aid.

Recognize the Signs of an Emergency

Your senses of hearing, sight, and smell will alert you to most emergencies. Be alert and aware. Look around your immediate surroundings to see if there are any dangers to either you or the injured person. Listen closely if you hear people calling out. Are they in trouble? Be aware of sudden loud or unusual noises, such as shattering glass or explosions.

Sometimes the first sign of an emergency is an odor, such as the smell of smoke. Be especially aware of any strong smell that makes your eyes sting, causes you to cough, or makes breathing difficult. These sensations can signal a chemical spill or toxic gas release.

In any event, before you decide to take action, make sure the emergency scene is safe for you, the victim, and anyone nearby who may be watching out of curiosity.

Your first responsibility is to protect your own safety. Move the injured person only in case of immediate danger, such as a fire or oncoming traffic. Never put your own life in danger to help someone else. Be sure to consider your own strengths and limitations. For example, unless you are trained as a rescue swimmer or lifeguard, don't dive into a lake to rescue someone who is drowning. Instead, throw the person a life preserver or some other object that floats.

Decide to Act

Once you have considered the situation, it's time to act. Find out if the person is conscious, or awake. Tap them on the shoulder. You can also loudly ask if the person is all right. Ask permission to give help. Check the person's whole body for injuries. If the person is not conscious, do not leave, unless you are also in danger. Ask someone to go for help. Check for any medical identification, such as a bracelet, or card. The identification will tell you if the person has any medical problems or allergies to medicines.

Check the person for bleeding. If you have latex gloves, put them on. Latex gloves are very thin gloves made of a special type of rubber. The latex gloves protect from any viruses or diseases in the blood. After putting on the gloves, press down on any bleeding wound. This will help stop the bleeding. If no gloves are available, use several layers of cloth or a sheet of plastic to protect yourself from the blood.

You should not hesitate to help others because you are afraid of doing something wrong. Almost all states have Good Samaritan laws, which protect rescuers from legal action when they act responsibly.

Call for Help

In an emergency, you can always call for help, which is often the best and only action for you to take. This alone can possibly save a life. So when in doubt, make the call. If you are alone, quickly make the call. If you have to leave the area to make a call, return to the injured person as soon as possible.

In the United States, the number to call for all emergencies is **911**. Dialing **0** for the operator is also an option and may be necessary in some small towns. When you call, stay calm. Be ready to tell the emergency operator the following information:

- Nature of the emergency
- The street address or the closest intersection or landmark if the address is not known (you may be able to get your location from the map function on a cell phone)
- Whether the emergency is ongoing
- Who is involved (including descriptions, if possible)
- The number of victims (so that the correct number of ambulances can be sent)
- Status of the victims (are they breathing, bleeding, or conscious)
- Whether any weapons were involved

The operator will notify the police, fire department, or emergency medical services. Stay on the phone until the operator has the necessary information and tells you that you can hang up.



It's a good idea to take along a first-aid kit; you never know when you will need it.

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Provide Care Until Help Arrives

Once you have called for help, stay with the injured person. Keeping the victim quiet may protect the person from further injury. Helping the person maintain normal body temperature is also important. If you can provide a coat or blanket, that will help. You should also carefully loosen any tight clothing, and provide shade from the sun if necessary. Reassure the victim that help is on the way.

In general, you should not try to move a victim because it could cause pain or further injury. Wait for professional help to arrive. Remember, the only situation in which a victim should be moved is if he or she is in danger, such as in the path of fire or oncoming traffic.

If the victim is unconscious and unresponsive, cardiopulmonary resuscitation (CPR) may be needed. This technique for dealing with life-threatening emergencies is described later in this lesson.

How to Recognize and Treat Common Emergencies

Sprains, bruises, and broken bones are a few of the common emergencies you may encounter. Others include insect bites, burns, poisoning, foreign objects in the eye, nosebleeds, fainting, heat cramps, and heatstroke. Learn how to treat these conditions properly. Also recognize the difference between a minor condition that you can treat, and a more serious condition that needs professional medical assistance.

Sprains

A **sprain** is a condition in which the ligaments that hold the joints in position are stretched or torn. Sprains usually result from a sudden force, often a twisting movement. Ankles and knees are the most commonly sprained joints. You can often recognize sprains by swelling and bruising around the injured area. A medical professional should treat serious sprains. However, you can treat minor sprains by using the R.I.C.E. method:

- **Rest**—Rest the affected joint for 24 to 48 hours.
- **Ice**—Apply ice to reduce swelling and pain. Place a cloth between the skin and the bag of ice in order to reduce discomfort.
- **Compression**—Compress the injured part by wrapping it in an elastic bandage.
- **Elevation**—Elevate, or raise, the injured part above the level of the heart to reduce swelling.

Broken Bones

A **fracture** is a break in a bone. Fractures are common; the average person has two in a lifetime. Fractures occur when the physical force exerted on the bone is stronger than the bone itself. Although fractures are common in young people, they usually are not serious and can heal properly when the correct treatment is applied. As you get older, however, your bones become more brittle and you are more likely to suffer fractures from falls.

An **open fracture** is a complete break, with one or both sides of the bone piercing the skin. A **closed fracture** is a break that does not pierce the skin and may be difficult to identify. Some of these hard-to-identify fractures are called *hairline fractures*.

With a closed fracture, there are telltale signs. These include pain, swelling, and a deformed appearance. Sometimes, however, a broken bone causes no immediate pain. The only way to be sure a bone is broken is to have it X-rayed.

Insect Bites and Stings

Insect bites or stings often cause pain and swelling at the site of the bite or sting. However, for a person who is allergic to them, the situation is much more serious—possibly life-threatening. If a rash develops, or if there is difficulty breathing, signs of shock, or a history of being allergic to stings, the victim needs professional medical help immediately.

First aid for insect bites involves washing the affected area and applying a special lotion for bites. For insect stings, you first need to remove the stinger by scraping against it with your fingernail. If you have ever had a splinter under the skin, it is a similar process. Once the stinger is out, apply ice or a cold pack to relieve pain and prevent swelling.



Ankles and knees are the most commonly sprained joints.

© Alexander Raths/Fotolia.com

If you frequently travel to or live in a wooded area where ticks are common, caution must be taken to prevent tick bites. Some ticks transmit bacteria that cause illnesses such as Lyme disease or Rocky Mountain spotted fever. Ticks attach to the skin and draw blood. Although ticks can attach to any part of the body, they are often found in hard-to-see areas such as the groin, armpits, or scalp.

Lyme disease is commonly transmitted through the bite of the blacklegged tick or deer tick. Most humans are infected through the bites from the immature blacklegged ticks, called nymphs. Nymphs are very small (less than 2 mm), or the size of the letter “D” on a dime. The nymphs must be attached for 36 to 48 hours for the Lyme disease to be transferred. Although adult deer ticks can also transmit Lyme disease, they are much larger and easier to detect.

Rocky Mountain spotted fever is another disease that can be transmitted by ticks. Rocky Mountain spotted fever can be a severe or even fatal illness if not treated in the first few days of symptoms.

The best prevention from tick diseases is awareness. Avoid wooded or bushy areas with high grass. Walk in the center of trails. Use insect repellents on exposed skin and clothing for protection that lasts up to several hours. Use products that contain permethrin to treat clothing and gear such as boots, pants, socks, and tents. Be sure to use insect repellents that are safe for human use and registered with the Environmental Protection Agency.

Bathe or shower within two hours after coming inside to wash off or easily find ticks that may be crawling on you. Conduct a full-body check of yourself after returning from tick-infested areas. Also check clothing, pets, and equipment. Tumble dry your clothing, if possible, on high heat for one hour to kill ticks hiding in your clothing.

If a tick is attached to your skin, there’s no need to panic. Remove the tick very carefully following the procedures provided in Figure 3.16.

Animal Bites

Animals, including even small pets, carry bacteria that can cause illness after a bite or deep scratch. People who are bitten sometimes react with a fever and other symptoms after such an incident.

To provide first aid for an animal bite, first control any bleeding. Then, wash the wound with soap and water as soon as possible, and apply an antiseptic such as hydrogen peroxide. Then cover the wound with a sterile dressing or bandages.

If you find a tick on your body, have an adult follow the method shown to remove it.

- 1 Using a pair of pointed, smooth-tipped tweezers, grasp the tick by the head or mouthparts right where they enter the skin. Do not grasp the tick by the body.
- 2 Without jerking or twisting, pull firmly and steadily directly upward.
- 3 Place the tick in alcohol to kill it. Clean the bite wound with disinfectant.
- 4 If possible, seal the tick in a container and place in freezer. Your doctor may want to see the tick if you develop symptoms.

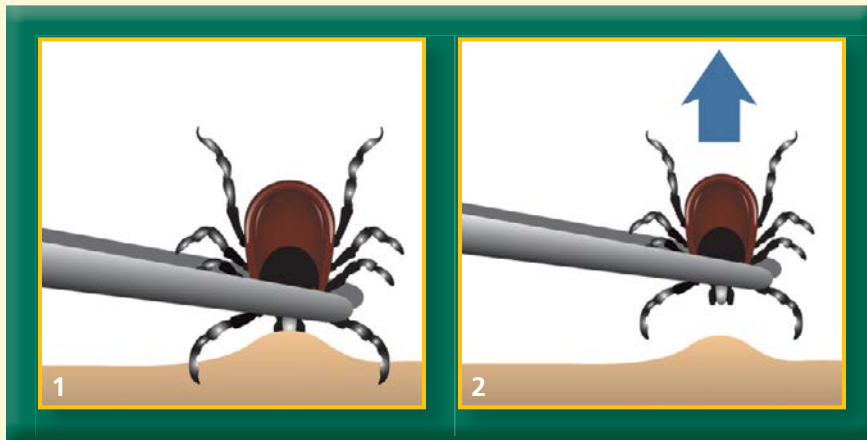


FIGURE 3.16

How to Remove a Tick

Courtesy of the National Institute of Environmental Health Sciences/<http://ehp.niehs.nih.gov>

A person who is bitten by an animal with rabies is at risk of suffering severe nervous system reactions if not treated soon after the bite. Call the local animal control facility and pinpoint the location of the incident. Don't try to catch the animal yourself. You or the victim should follow up with animal control soon after the incident to see if the animal was caught and had rabies. Further treatment may be needed if the animal is not located. If bitten by any animal and it is not known whether the animal has rabies, you should be seen by a medical professional as soon as possible.

Burns

First aid for burns depends on the amount of skin burned, the location, and the depth of the burn. Burns to the eye or airway and burns caused by chemicals or electricity require special first aid procedures, which are not covered here. Table 3.6 explains how to recognize and treat three classifications of burns. Treatment for burns depends on the severity of the burn.

Table 3.6 Three Degrees of Burns

Type of Burn	Description	Treatment
First-Degree	<ul style="list-style-type: none"> • Affects only the outer layer of the skin. • The skin is usually red, but the outer layer has not been burned through. • There may be swelling and pain. 	<ul style="list-style-type: none"> • Cool the burn with running water. • Immerse the burn in cold water, or apply cold compresses for at least 15 minutes. • Cover the burn with a sterile bandage.
Second-Degree	<ul style="list-style-type: none"> • Burns through the first layer of skin and burns the second layer of skin. • Blisters develop and the skin looks red and splotchy. • Usually there is severe pain and swelling. 	<ul style="list-style-type: none"> • A burn no larger than 2 to 3 inches in diameter can be treated as a first-degree burn. • If the burn is larger, or is on the hands, feet, face, groin, buttocks, or a major joint, get medical assistance immediately. • Do not use ice or put any type of bandage on the burn.
Third-Degree	<ul style="list-style-type: none"> • Involves all layers of skin and muscle; affects fat and bone. • The burned area may be charred, burned black, or appear dry and white. • There may be little or no pain felt at this stage. 	<ul style="list-style-type: none"> • Call 911 for medical assistance immediately. • While you are waiting, treat the victim for shock. • Do not remove clothing. • Cover the area of the burn with a cool, moist, sterile bandage or clean cloth. • Do not apply cold water to the burns. • Elevate the burned area, above heart level if possible. • Keep the victim still and help him or her to sip fluids.

Poisoning

Poisons can cause severe bodily harm. They can be swallowed, inhaled, absorbed through the skin, or injected. About half of all poisonings involve medicines or household products. Anyone who has been poisoned needs immediate treatment. If a victim indicates having been poisoned, you should call the nearest poison control center. This is a 24-hour hot line that provides emergency medical advice on treating these victims. Be prepared to give information about the individual and about the suspected poison. The person at the poison control center will tell you what action

to take. You may be instructed to give the victim large amounts of water or milk to dilute the poison. Or you may need to give the victim activated charcoal; this helps prevent the poison from being absorbed into the stomach lining.

If the victim's skin comes into direct contact with a poisonous chemical such as a pesticide or household cleaning agent, remove any clothing that has come into contact with it. Remove as much of the chemical from the surface of the skin as you can by flooding the area with water for 15 minutes. While the skin is being flooded, call the nearest poison control center.

Foreign Object in the Eye

Something that gets into your eye can be as common as an eyelash or something more severe. If you get a foreign object in your eye, do not rub the eye. Rubbing can possibly cause injury. Your first action should be to try to flush the object out of your eye with clean water. Hold the rim of a small, clean glass filled with water against the base of your eye socket. Keeping your eye open, gently pour the water into the eye. If the object isn't washed out, repeat the process. If you cannot clear your eye after several attempts, it is best to get assistance.

To help somebody else who has a foreign object in the eye, you should first locate the object. Gently pull the lower lid downward while the person looks up. If you do not see the object, hold the upper lid open and examine the eye while the person looks down. If the object is floating on the surface of the eye, lightly touch the object with a moistened cotton swab or the corner of a clean cloth. If you cannot remove the object or the victim is too sensitive to direct contact with his or her eye, seek medical assistance immediately.

Nosebleed

Nosebleeds are fairly common. They can be caused by an injury, by being in a very dry place, or even by a cold. If you experience a nosebleed, sit upright and lean forward; this will reduce pressure on the veins in your nose. Pinch your nose shut with your thumb and index finger and breathe through your mouth. Keep the nose pinched for 5 to 10 minutes. If bleeding lasts more than 20 minutes, there is a lot of blood, or the nosebleed was caused by an injury such as a fall, get medical assistance immediately.

Fainting

Have you ever stood up too fast and felt lightheaded? Fainting occurs when the brain's blood supply is cut off for a short amount of time. Someone who faints loses consciousness briefly. If you feel faint, lie down or place your head between your knees if sitting down.

To help someone else who faints:

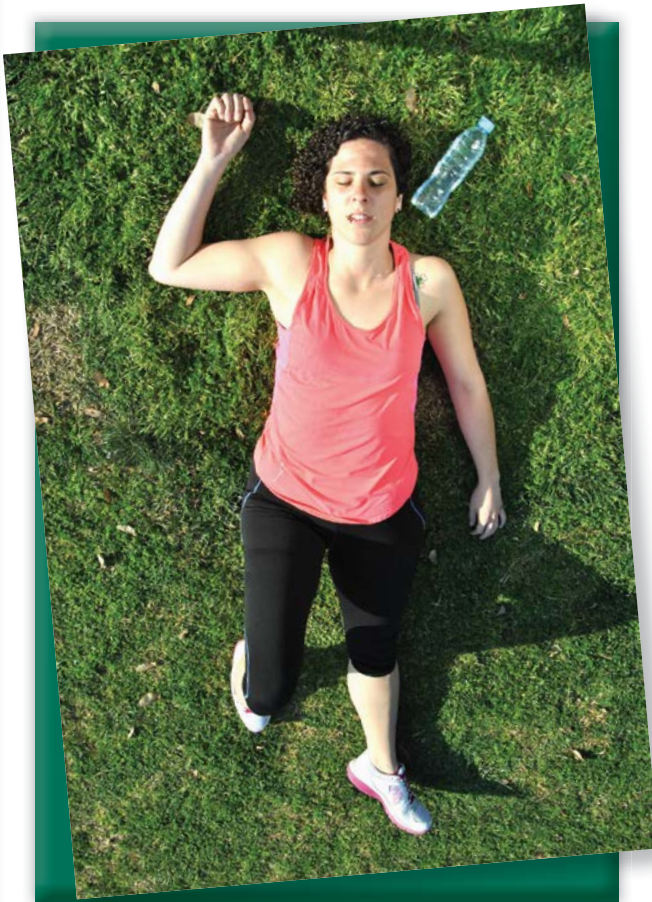
- Leave the victim lying down. Check the airway. If the person is breathing, raise the legs above the level of the head.
- Loosen any tight clothing. Sponging the face with cool water may also help.
- If the person does not regain consciousness in one to two minutes, call for help.
- If the person is not breathing, call for help and start CPR if you are trained (see the end of this lesson).

Losing consciousness after a head injury is not fainting—call for help or 911 if this occurs. Immediate CPR is needed if there are no signs of breathing.

Heat-Related Illnesses

Heat-related illnesses include heat cramps, heat exhaustion, and heatstroke.

Heat cramps are *painful, involuntary muscle spasms that usually occur during heavy exercise in hot weather*. People who experience heat cramps should rest, cool down, and as you learned from Lesson 2, drink water or a replenishment drink that contains electrolytes. Gentle stretching exercise and gentle massage may help relieve the cramps.



It is important to cool down, rest, and drink water when suffering heat cramps.

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Heat exhaustion is a condition characterized by *faintness, nausea, rapid heartbeat, and hot, red, dry, cold, pale, and clammy skin or heavy sweating*.

If you are with someone who shows signs of heat exhaustion, take the person to a shady or air-conditioned place. Have the person lie down and slightly elevate the feet. Loosen clothing. Have the person drink cold, but not iced, water. Cool the person by spraying him or her with cool water and by fanning. Keep careful watch. Heat exhaustion can quickly become heatstroke, which is the most serious form of heat illness because it is potentially life threatening. **Heatstroke** is a serious condition that results from heat exhaustion that remains untreated and the victim continues to overheat. Heatstroke can cause the body's normal processes for regulating heat to be impaired or to shut down. The most serious symptom of heatstroke is a body temperature that rises to 104 degrees or higher. Signs of heatstroke may also include dizziness or vertigo, fatigue, or convulsions. Move the victim to a cooler location or shady area immediately. The victim may have hot, red, dry, or moist skin,

and a rapid and strong pulse. The victim may be unconscious, or have a severe headache or rapid and shallow breathing. Heat stroke is a medical emergency and you should call 911 immediately. Try to reduce the person's body temperature with cool cloths or even a cold bath until medical help arrives. Do not give the victim any liquids if they are vomiting or unconscious.



If you think someone may have heatstroke, immediately call for emergency medical help (911), while treating the victim.

When Minutes Count: Severe Emergencies

In a life-threatening emergency, a person may have only minutes to live unless the right treatment is provided. If you can provide appropriate first aid in such a situation, you may save a life. For all life-threatening emergencies, your first actions are to stay calm, and call for help.

Remember, when you encounter an emergency, make sure the area around you is safe for you and the victim. Life-threatening conditions you should look for are: severe bleeding, unconsciousness, or difficulty breathing.

Choking

More than 4,600 people die from choking every year. Choking occurs when a person's airway becomes blocked by a piece of food or some other object. Choking prevents oxygen from getting to the lungs and the brain. If this situation lasts for more than four minutes, and the object is not removed, it may result in brain damage or death. It is important for you to recognize and know how to handle choking both at home and in public places. A choking person usually has an expression of fear and may clutch his or her throat—the universal sign for choking. He or she may wheeze or gasp, turn reddish purple, have bulging eyes, and become unable to speak. If the person can speak or cough, it is not a choking emergency.

A choking person needs immediate help. You may be able to clear the object from an adult's or child's throat by using the technique shown in Figure 3.17. The technique shown is the Heimlich maneuver. Dr. Henry Heimlich is credited with inventing the maneuver in 1974. Dr. Heimlich was a Navy surgeon who developed the Heimlich maneuver as a way to save choking victims. This is an emergency procedure used to treat choking victims that is responsible for saving thousands of lives each year. The **Heimlich maneuver** is a series of abdominal thrusts to force out an obstruction blocking the airway. It is done by applying pressure under the diaphragm in a thrusting motion, inward and upward to dislodge the object. The first aid procedure for a choking infant is different from the adult technique. If you have infants in your household, check with a first aid manual to learn how to help infants.

Before you perform the Heimlich maneuver, or abdominal thrusts, on someone you think is choking, you should first determine if the person is actually choking by asking the individual if he or she can speak.

A Stand behind the person who is choking. Wrap your arms around the person's waist and tip the person slightly forward. Make a fist with one hand. Place the fist just above the person's navel but below the breastbone and diaphragm. Position the fist so the thumb side is against the victim's abdomen. Grasp your fist with your other hand.

B Quickly, thrust inward and upward. The motion is similar to one you would use if you were trying to lift the person off the ground. Repeat thrusts until the food or object is dislodged. If the person becomes unresponsive, call for medical help and begin CPR.



FIGURE 3.17

First Aid for a Choking Adult or Older Child Abdominal Thrusts—The Heimlich Maneuver

Courtesy of www.nlm.nih.gov

If you are alone and find yourself choking, you can use the Heimlich maneuver on yourself. There are two ways to do this. First, make a fist and position it slightly above your navel. Grasp your fist with your other hand and thrust inward and upward into your abdomen until the object pops out. The second technique is to lean over a firm object, such as the back of a chair, and press your abdomen into it.

Shock

Shock is a life-threatening condition in which the circulatory system fails to deliver enough blood to vital tissues and organs. A person can go into shock when they suffer an injury, burn, severe infection, heat illness, poisoning, blood loss, broken bones, and heart attack. Because shock can result from a medical emergency, you should look for signs of it when providing first aid. Watch for cool, clammy, pale, or gray skin; weak and rapid pulse; and slow, shallow breathing. The person's pupils may be dilated or enlarged, and the eyes may have a dull look or seem to stare. If conscious, the shock victim may feel faint, weak, confused, and anxious. If you think the victim is in shock or in danger of going into shock, call 911 for medical help and take these precautions.

- Have the person lie down on his or her back. Raise the victim's feet higher than the head. Try to keep the person from moving.
- Loosen tight clothing.
- Keep the person warm. Use a blanket, coat, or whatever is available as a cover.
- Do not give the person anything to drink.
- If the person vomits or bleeds from the mouth, roll the person to his or her side to help prevent choking.



If you think a person is in shock or in danger of shock, check symptoms, and then call for medical help immediately.

© Warren Goldswain/Fotolia.com

Severe Bleeding

To stop severe bleeding, have the victim lie down. If possible, raise the location of the bleeding above the level of the heart. When treating anyone who is bleeding, use protective gloves whenever possible. Bleeding can usually be stopped by applying direct pressure to the wound, using a clean cloth. If that is unsuccessful, apply pressure to the artery that supplies blood to the area of the wound. See Figure 3.18. A last resort method to stop severe bleeding is to apply a tourniquet. A **tourniquet** is a constricting band placed around an arm or leg to control bleeding. The tourniquet should not be used unless applying pressure to the wound does not stop the bleeding. Using a tourniquet is very dangerous and should only be considered as a last resort.

This illustration shows the areas on arms and legs that can be pressed against a bone to stop circulation to the arm or leg.

Arm

Use four fingers to press on the inside of the upper arm at the area circled in the diagram. You will press the artery at this point against the arm bone. To find the artery, feel for a pulse below the round muscle of the biceps.



Leg

Keeping your arm straight, use the heel of your hand to press the groin at the area shown in the diagram. You will press the artery at this point against the pelvic bone. You may need to use both hands to apply enough pressure.



FIGURE 3.18

Pressure Point Bleeding Control

The ABCs of Cardiopulmonary Resuscitation (CPR)

The first steps of CPR involve assessment and rescue breathing. If you have an available breathing mask, follow the directions that came with the mask.

- 1 **Airway**—Look inside the victim’s mouth. If you see anything blocking the airway, remove it. Lay the person flat on a firm surface. Gently tilt the head back with one hand and lift the chin with the other. If you suspect head or neck injuries, do not move the victim’s head. Open the airway by lifting the jaw instead.
- 2 **Breathing**—Look, listen, and feel to find out if the victim is breathing. *Look* for chest movement. *Listen* at the victim’s mouth for breathing sounds. *Feel* for exhaled air on your cheek. If the victim is not breathing, begin rescue breathing. Pinch the person’s nostrils shut, take a normal breath, and place your mouth over the victim’s, forming a seal. Give two breaths, each about one second long. The victim’s chest should rise with each breath. If chest does not rise, reposition the head again and make sure air passageway is clear.
- 3 **Circulation**—Check for circulation by watching for some response to your rescue breaths, such as breathing, coughing, or movement. If there are no signs of circulation, a person trained in CPR should begin chest compressions immediately (see Figure 3.19). If the victim responds but is not breathing normally, give two rescue breaths after every 30 chest compressions.

What Is Cardiopulmonary Resuscitation (CPR)?

Based on the injuries and illnesses we have covered in this lesson, having to provide CPR for someone is a real possibility. Everyone should be trained to perform CPR and many states have required training prior to getting your driver’s license. You can also receive training for CPR through your local Red Cross, American Heart Association (AHA), or online from OnlineAHA.org or www.firstaidweb.com.

Imagine that you are in an emergency situation in which somebody loses consciousness. You gently shake the victim and shout, “Are you OK?” but the victim does not respond. If a victim is unresponsive and not breathing, he or she needs immediate CPR. **Cardiopulmonary resuscitation (CPR)** is a first aid procedure that combines rescue breaths with chest compressions to restore breathing and circulation. Only people who have received the proper training should perform CPR.

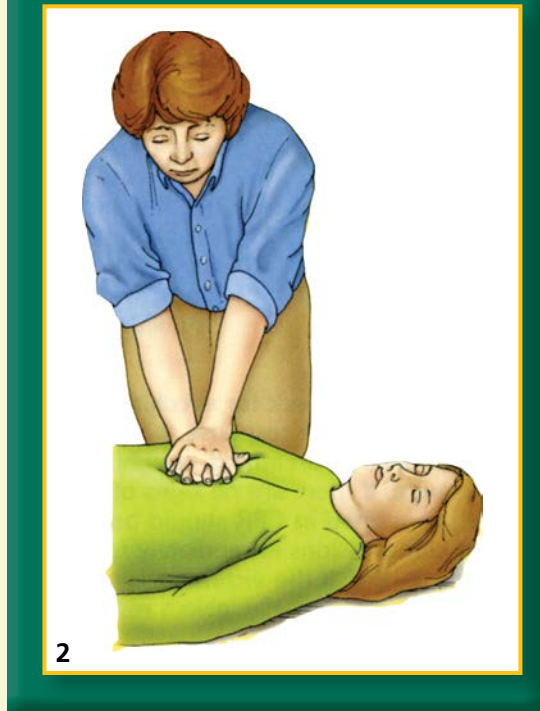
The first step in any emergency is to call 911 immediately. If there is someone else with you that can provide assistance, have them call or send them for help. The next step is to administer CPR. First check the ABCs—airway, breathing, and circulation, as recommended by the American Heart Association. If you have not received formal training for infant CPR check a first aid manual to learn how to help younger children and infants. Figure 3.19 illustrates the process for combining rescue breaths with chest compressions.

CPR involves both chest compressions and rescue breaths. It should be administered only by people who are properly trained.

- 1 Position your hands**—Prepare to start chest compressions by finding a spot on the lower half of the victim's breastbone. Place the heel of one hand on that point, and interlock the fingers with the fingers of the other hand. Do not allow your fingers to rest on the victim's ribs.



- 2 Begin chest compressions and rescue breathing**—Lean over the victim until your shoulders are over your hands. Lock your elbows, then press down firmly and release, allowing the chest to spring back. Without pausing, give 30 chest compressions at a rate of about 100 per minute. Pause to give two rescue breaths (see the box titled "The ABCs of Cardiopulmonary Resuscitation"). Check for signs of circulation after four cycles, then every few minutes as you continue. Give CPR until the victim revives or medical assistance arrives.



- 3** In 2010 the American Heart Association recommended the following actions if you are a bystander without CPR training. You can still provide compression-only CPR for an adult victim. The bystander positions both hands on the center of the chest, applying compressions at a rate of about 100 per minute without stopping until medical assistance arrives. Although not as effective as compressions and breaths, this method keeps blood circulating to the brain.

FIGURE 3.19

CPR for Adults

Courtesy of www.nlm.nih.gov

Automated External Defibrillator (AED)

A new life saving device used to revive victims of sudden cardiac arrest is the automated external defibrillator or AED. **Sudden cardiac arrest (SCA)** is a condition in which the heart suddenly and unexpectedly stops beating. Usually death will occur if not treated within minutes. Using the AED on someone who is having SCA may save the person's life.

The heart has an internal electrical system that controls the rate and rhythm of the heartbeat. With each heartbeat, an electrical signal spreads from the top of the heart to the bottom. As the signal travels through the heart, it causes the heart to contract and pump blood.

Problems with the internal electrical system can cause abnormal heart rhythms called **arrhythmias** (ah-RITH-me-ahs). During an arrhythmia, the heart can beat too fast, too slow, or with an irregular rhythm. Some arrhythmias can cause the heart to stop pumping blood to the body. These arrhythmias cause SCA.

The most common cause of SCA is an arrhythmia called **ventricular fibrillation (v-fib)**. In v-fib, the ventricles (the heart's lower chambers) don't beat normally. Instead, they quiver very rapidly and irregularly.

In people who have arrhythmias, an electric shock from an AED can restore the heart's normal rhythm. Doing CPR on someone having SCA can also improve his or her chance of survival.

AEDs are lightweight, battery-operated, portable devices that are easy to use. Each unit comes with instructions, and the device will even give you voice prompts to let you know if and when you should send a shock to the heart.



Using an AED could save someone's life.

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An AED can check the person's heart rhythm and determine whether an electric shock is needed to try to restore a normal rhythm.

You often find AEDs in places with many people, such as shopping malls, golf courses, businesses, airports, airplanes, casinos, convention centers, hotels, sports venues, and schools.

Learning how to use an AED and taking a CPR course are helpful. However, if trained personnel aren't available, untrained people also can use an AED to help save someone's life. Ninety-five percent of people who have SCA die from it within minutes. Rapid treatment of SCA with an AED provides the best chance for survival.

 **CHECKPOINTS**

Lesson 5 Review

Using complete sentences, answer the following questions on a sheet of paper.

1. What is first aid?
2. Name four universal precautions to take when giving first aid.
3. Give three examples of ways you can provide help to an injured person until professional help arrives.
4. How do you treat minor sprains?
5. Explain the process for removing a tick from a person's body.
6. What action should you take if you or someone else has a second-degree burn?
7. What action should you take for a victim of heat exhaustion?
8. What is the Heimlich maneuver?
9. List the ABCs of CPR.
10. What does the AED check prior to providing an electrical shock?

APPLYING YOUR LEARNING

11. A driver walks out after a car crash and says that he is all right. However, his skin is gray, his pupils are dilated, and his breathing is shallow. From what condition might the driver be suffering? What should you do?