

CHAPTER 14

FIRST AID AND HEALTH

If you do something once, people call it an accident. If you do it twice, they call it coincidence. But do it a third time and you've just proven a natural law.

—Rear Admiral Grace Murray Hopper

In this chapter, you will learn some guidelines on giving first aid in an emergency. You won't be an expert or even qualify to administer first aid. You will learn why first aid is important and the results of properly administered first aid. You will also learn the measures you should take for the treatment of shock, bleeding, burns, and fractures; methods of resuscitation; and methods of moving injured persons.

Personal hygiene is also important, not only to you, the individual, but to the entire ship's company. In this chapter, you will receive pointers for maintaining cleanliness of the body, clothing, and bedding. You will also learn the effects of sexually transmitted diseases.

FIRST AID—ITS PURPOSE, LIMITATIONS, AND GENERAL RULES

Learning Objective: When you finish this chapter, you will be able to—

- Recognize the purpose, general rules, and limitations of first aid.

First aid is the emergency care you give to sick or injured persons until medical care is available. In addition to knowing what to do for a victim, it's just as important to know what not to do.

Your knowledge of first-aid measures and their proper application may mean the difference between life and death, between rapid recovery and long hospitalization, or between temporary disability and permanent injury.

PURPOSE AND LIMITATIONS

The objectives of first aid are to save life, prevent further injury, and limit infection. However, first aid isn't a substitute for proper medical treatment. Keep in mind the objectives of first aid. Everyone in the Navy must know when and how to apply first-aid measures

and must be prepared to give assistance to persons injured in battle, collision, fire, and other mishaps.

In administering first aid, you have three primary tasks:

1. Maintain breathing
2. Stop bleeding/maintain circulation
3. Prevent or treat for shock

The first step, of course, is to determine the victim's injuries. When you treat a victim, first consideration usually must be given to the most serious injury. In general, the order of treatment is to restore breathing, stop bleeding, and treat for shock.

Work quickly, but don't rush around frantically. Don't waste time looking for ready-made materials. Do the best you can with whatever is at hand. Send for medical help as soon as possible.

GENERAL FIRST-AID RULES

Although each case involving injury or sickness presents its own special problems, some general rules apply to practically all situations. Before you go on to learn first-aid treatment for specific types of injuries, learn with the following basic rules:

1. Keep the victim lying down; head level with the body, until you have found out what kind of injury has occurred and how serious it is. However, if the victim shows one of the following difficulties, follow the rule given for that specific problem:

- a. Vomiting or bleeding about the mouth and semiconsciousness: If the victim is in danger of sucking in blood, vomited matter, or water, place the victim on his or her side or back with the head turned to one side and lower than the feet.

- b. Shortness of breath: If the victim has a chest injury or breathing difficulties, place the victim in a sitting or semisitting position.
- c. Shock: If the victim is in shock, place the victim on his or her back with the head slightly lower than the feet. (Shock is explained later in this chapter.)

2. Move the victim no more than is absolutely necessary. To determine the extent of the victim's injuries, carefully rip or cut the clothing along the seams. Removal of clothing in the normal way may make injuries worse, especially if fracture injuries are involved. Shoes may also be cut off to avoid causing pain or increasing an injury. When the clothing is removed, make sure the victim does not become chilled.

3. Keep the victim reassured and as comfortable as possible. If possible, don't let the victim see his or her injuries. The victim can endure pain and discomfort better if he or she is confident of your abilities.

4. Don't touch open wounds or burns with fingers or other objects except when sterile compresses or bandages aren't available and it's absolutely necessary to stop severe bleeding.

5. Don't try to give an unconscious person any solid or liquid substance by mouth. The person may vomit and get some of the material into the lungs when he or she breathes, causing choking and possibly death.

6. If a bone is broken or you suspect that one is broken, don't move the victim until you have immobilized the injured part. That may prove lifesaving in cases of severe bone fractures or spinal cord injuries, for the jagged bone may sever nerves and blood vessels, damage tissues, and increase shock. Of course, threat of fire, necessity to abandon ship, or other similar situations may require that you move the victim. But always keep in mind the principle that moving the victim could do further damage; always weigh the risk of moving the victim against other factors.

7. When transporting an injured person, always see that the litter is carried feet forward no matter what the injuries are. Carrying the litter this way lets the rear

bearer observe the victim for any respiratory obstruction or stoppage of breathing.

8. Keep the injured person comfortably warm—warm enough to maintain normal body temperature.

Very serious and mutilating injuries may require heroic first-aid measures on your part. However, the greater the number of injuries, the more judgment and self-control you must exhibit to prevent yourself and well-intentioned bystanders from trying to do too much.

REVIEW 1 QUESTIONS

Q1. Describe the primary purpose of first aid.

Q2. List the primary tasks when administering first aid.

a.

b.

c.

Q3. Describe the general first-aid rule for the following conditions:

a. Shock

b. Broken bones

c. Transporting injured personnel

ARTIFICIAL VENTILATION

Learning Objective: When you finish this chapter, you will be able to—

- Recall the procedures used to administer artificial ventilation.

Student Notes:

A person who has stopped breathing may not be dead but is in immediate critical danger. Life depends on oxygen that is breathed into the lungs and then carried by the blood to every body cell. Since body cells can't store oxygen and the blood can hold only a limited amount (and only for a short time), death will result from a continued lack of oxygen.

The heart may continue to beat and the blood may still be circulated to the body cells for some time after breathing has stopped. For a short time, blood will contain a small supply of oxygen; therefore, the body cells won't die immediately. **For a very few minutes, there's a chance that the person's life may be saved.** A person who's stopped breathing but who is still alive is in a state of *respiratory failure*. The first-aid treatment for respiratory failure is *artificial ventilation*.

Artificial ventilation provides air exchange until natural breathing is reestablished. Artificial ventilation should be given only when natural breathing has stopped. **Never give artificial ventilation to any person who is still breathing.**

Don't assume breathing has stopped if a person is unconscious or if a person has been rescued from the water, from poisonous gas, or from contact with an electrical wire. **Remember, never give artificial ventilation to a person who is breathing naturally.** If the victim doesn't begin spontaneous breathing (breaths by himself/herself) after using the head or jaw tilt techniques (discussed later) to open the airway, give artificial ventilation immediately. If a blocked airway prevents ventilation, one of the "thrust" methods (discussed later) to clear the airway must be performed, followed by another attempt at artificial ventilation.

MOUTH TO MOUTH

To perform mouth-to-mouth ventilation, take the following steps:

1. Clear the victim's mouth of obstructions (false teeth and foreign matter).
2. Place the heel of one hand on the victim's forehead, and use the other hand placed under the chin to tilt back the head to open the airway.

3. Using the thumb and index finger, pinch the nostrils shut.
4. Take a deep breath, cover the victim's mouth with your own, and blow.
5. Then remove your mouth from the victim to allow him or her to exhale.

Observe the victim's chest for movement. If the victim hasn't started to breathe normally, start artificial ventilation with four quick ventilations in succession, letting the lungs inflate only partially. If the victim still doesn't respond, then you must fully inflate the victim's lungs at the rate of 12 to 15 ventilations per minute, or one breath every 5 seconds.

MOUTH TO NOSE

Mouth-to-nose ventilation is effective when the victim has extensive facial or dental injuries or is very young. Mouth-to-nose ventilation creates an effective air seal.

To administer this mouth-to-nose ventilation—

1. Place the heel of one hand on the victim's forehead and use the other hand to lift the jaw.
2. After sealing the victim's lips, take a deep breath, place your lips over the victim's nose, and blow.

Observe the chest for movement and place your ear next to the victim's nose to listen for or feel air exchange. Again, you must continue your efforts at the rate of 12 to 15 ventilations per minute, or one breath every 5 seconds, until the victim can breathe without assistance.

Sometimes during artificial ventilation air enters the stomach instead of the lungs. This condition is called *gastric distention*. It can be relieved by moderate pressure exerted with a flat hand between the navel and the rib cage. Before applying pressure, turn the victim's head to the side to prevent choking on the stomach contents that are often brought up during the process.

BACK PRESSURE/ARM LIFT

The back pressure/arm lift method is an alternate technique used when other methods are not possible. To

Student Notes:

perform the back pressure/arm lift method, do the following steps:

1. Place the victim on the stomach, face to one side, neck hyper extend, with hands under the head.
2. Quickly clear the mouth of any foreign matter.
3. Kneel at the victim's head and place your hands on the victim's back so that the heels of the hands lie just below a line between the armpits, with thumbs touching and fingers extending downward and outward.
4. Rock forward, keeping your arms straight, and exert pressure almost directly downward on the victim's back, forcing air out of the lungs.
5. Then rock backward, releasing the pressure and grasping the arms just above the elbows.
6. Continue to rock backward, pulling the arms upward and inward (toward the head) until resistance and tension in the victim's shoulders are noted. That expands the chest, causing active intake of air (inspiration).
7. Rock forward and release the victim's arms. That causes passive exiting of air (expiration).

Repeat the cycle of **press, release, lift, and release** 10 to 12 times a minute until the victim can breathe naturally.

CARDIAC ARREST AND CARDIOPULMONARY RESUSCITATION

Learning Objective: When you finish this chapter, you will be able to—

- Recall the procedures to administer cardiopulmonary resuscitation (CPR).

Cardiac arrest is the complete stoppage of heart function. If the victim is to live, action must be taken immediately to restore heart function. The immediate administration of cardiopulmonary resuscitation (CPR) by a rescuer using correct procedures greatly increases the chances of a victim's survival. CPR consists of external heart compression and artificial ventilation.

The compression is performed on the outside of the chest, and the lungs are ventilated either by mouth-to-mouth or mouth-to-nose techniques. **To be effective, CPR must be started within 4 minutes of the onset of cardiac arrest.** The victim should be lying on a firm surface.

CAUTION

A rescuer who has not been properly trained should not attempt CPR. (To learn CPR, you should take an approved course from a qualified CPR instructor.) Improperly done, CPR can cause serious damage. Therefore, it is **never** practiced on a healthy individual for training purposes; a training aid is used instead.

ONE-RESCUER TECHNIQUE

In an unwitnessed cardiac arrest, don't assume that an arrest has occurred solely because the victim is lying on the floor and appears to be unconscious. Before beginning CPR, you should—

1. Try to arouse the victim (shake the victim's shoulders and shout to try to obtain a response).
2. Lie the unconscious victim on his/her back.
3. Kneel at the shoulders and establish an open airway, using the procedures outlined previously in artificial ventilations.
4. Check for breathing by looking, listening, and feeling.
 - a. Look to see if the chest is rising and falling.
 - b. Listen for air coming from the mouth.
 - c. Check close to the victim's mouth and feel for air coming out.
5. If the victim isn't breathing, seal the nose, take a deep breath, and blow four quick breaths into the victim without allowing time for the lungs to deflate fully.
6. Quickly remove your mouth and allow the victim to exhale by himself/herself.
7. Check the carotid pulse as shown in figure 14-1. If no pulse is present, start CPR immediately.

Student Notes:



Figure 14-1.—Feeling for the carotid pulse.

To start **external cardiac compression**—

1. Place the victim on his/her back, establish an open airway, and kneel at right angles to the victim's body.
2. Then locate the victim's sternum (breastbone) by—
 - a. Baring the chest and locating the sternum by drawing an imaginary line from one nipple to the other to identify the proper area of the sternum, which is darkened in figure 14-2.
 - b. Locating the lower tip of the sternum with the index and middle fingers, placing the heels of your hands above your fingers in the darkened area.

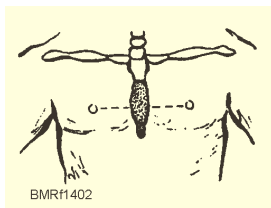


Figure 14-2.—Locating the sternum.

NOTE

There is a small piece of cartilage at the lower end of the sternum (fig. 14-2). A

fracture of this area can damage the liver, causing hemorrhage (heavy bleeding) and death. When you place the heels of your hands on the victim's chest, stay above the tip of the sternum.

3. Place the heel of one hand directly on the sternum, and the heel of the other on top of the first. Figure 14-3, view A, shows this technique. Interlock your fingers, and **keep them off the victim's chest!**
4. Lean or rock forward with elbows locked, and apply vertical pressure to depress the sternum (adult) 1 ½ to 2 inches (fig. 14-3, view B).
5. Then release the pressure, keeping the hands in place.
6. Administer 60 to 80 compressions per minute.

You won't get as tired if you use the proper technique, and you will be more effective. Ineffective compression occurs when the elbows are not locked, the rescuer is not directly over the sternum, or the hands are improperly placed on the sternum.

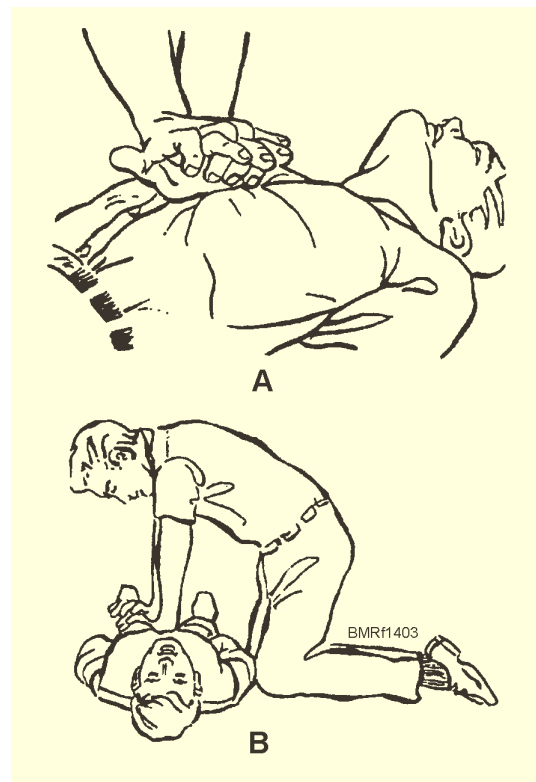


Figure 14-3.—Position for cardiac compression.

Student Notes:

When one rescuer performs CPR, as shown in figure 14-4, the ratio of compressions to ventilations is 15 compressions to 2 ventilations (or 15 to 2). This ratio must continue for four full cycles. Then check for pulse and breathing. If there are still no signs of recovery, continue CPR until the victim can breathe unassisted or you are relieved by medical personnel.

Before reviewing the next technique, let's go over the steps to take in an unwitnessed cardiac arrest involving one rescuer.

1. Determine whether the victim is conscious.
2. Check the vital signs.
3. Ventilate four times. (You may have to remove an airway obstruction at this time.)
4. Again check the vital signs; if none—
 - a. Begin compression-ventilation rate of 15 to 2 for four complete cycles;
 - b. Check pulse, breathing, pupils; if no change,

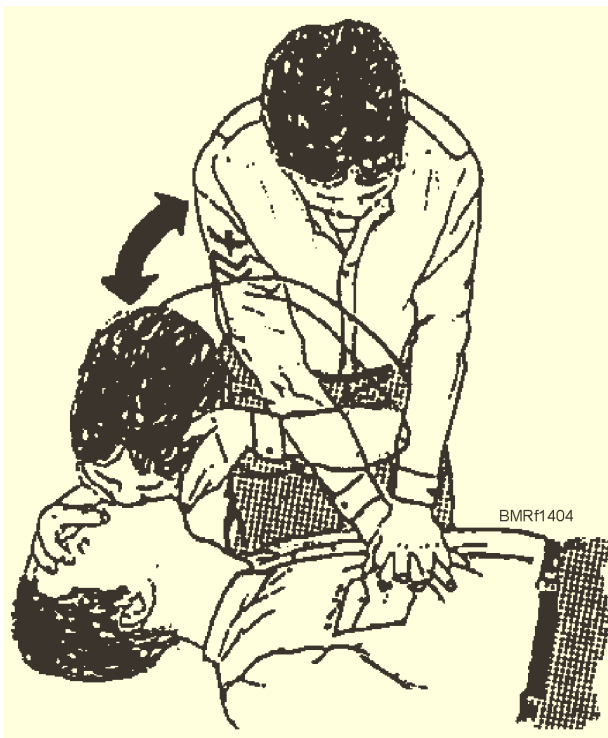


Figure 14-4.—One-rescuer CPR technique.

- c. Continue compression—ventilation rate of 15 to 2 until victim is responsive or you are relieved by medical personnel.

TWO-RESCUER TECHNIQUE

If two people trained in CPR are on the scene, one performs compressions while the other performs artificial ventilation. The compression-ventilation ratio for two-person CPR is 5 compressions to 1 ventilation (5 to 1). One rescuer is positioned at the chest area and the other beside the victim's head. The rescuers should be on opposite sides of the victim.

To avoid confusion, one rescuer is designated the leader. The leader makes the preliminary checks of the victim's vital signs and performs the initial four ventilations. The second rescuer will perform the compressions.

When CPR is started, the compressions should be given in a constant, methodical rhythm. The rescuer giving the compressions counts them out loud. As the fifth compression is released, the other rescuer ventilates the victim. Do not stop the compressions while ventilation is being given.

AIRWAY BLOCKAGE

Learning Objective: When you finish this chapter, you will be able to—

- Recall the procedures used to clear an airway passage.

Obstruction in the upper airway (throat) is often caused by attempting to chew food and talk at the same time. One of the most reliable indications of an airway obstruction is the inability of the victim to speak. Other indicators are the victim's grasping or pointing at his or her throat, exaggerated breathing efforts, and the skin turning a bluish color. Your first action upon encountering a victim with this problem is to clear the mouth of any food particles, foreign objects, or loose dentures. If that is not effective, you should use one of the following procedures:

Student Notes:

PROCEDURE	STEPS
Standing abdominal thrust	<ol style="list-style-type: none"> 1. Stand behind the victim and wrap your arms around the victim's waist (fig. 14-5). 2. Grasp your wrist and place the thumb side of your fist against the victim's abdomen, above the navel and just below the rib cage (fig. 14-6). 3. Give four quick upward thrusts to the victim. The obstruction should pop out like a champagne cork. If unsuccessful, repeat until the obstruction is dislodged.
Reclining abdominal thrust	<ol style="list-style-type: none"> 1. Position yourself for the thrust by either straddling the victim at the hips, straddling one leg, or kneeling at the victim's hips. 2. Place your hands one on top of the other in the area between the lower end of the sternum and the navel, and give four quick upward thrusts into the abdomen, as shown in figure 14-7.
Standing chest thrust	<ol style="list-style-type: none"> 1. Bring your arms under the arms of the victim and encircle the lower chest, as shown in figure 14-8. 2. Grasp your wrist, keeping the thumb side close to the victim's chest. (Keep your fist on the middle, not the lower part, of the sternum.) 3. Press the chest with a sharp, backward thrust.
Reclining chest thrust	<ol style="list-style-type: none"> 1. Kneel at either side of the victim, place hands in same position as used for CPR. 2. Deliver thrusts slowly and downward on the sternum (fig. 14-9).

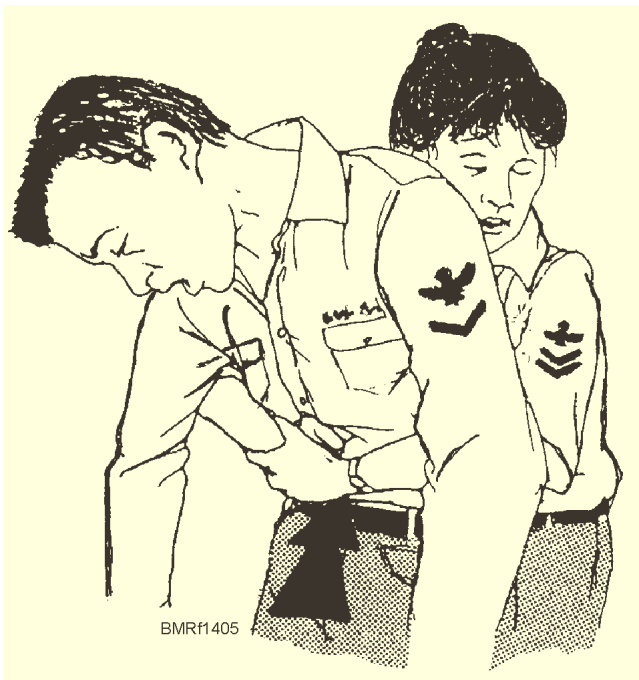


Figure 14-5.—Position for standing abdominal thrust.

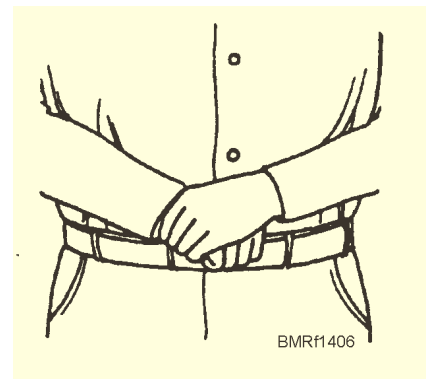


Figure 14-6.—Correct hand positioning.

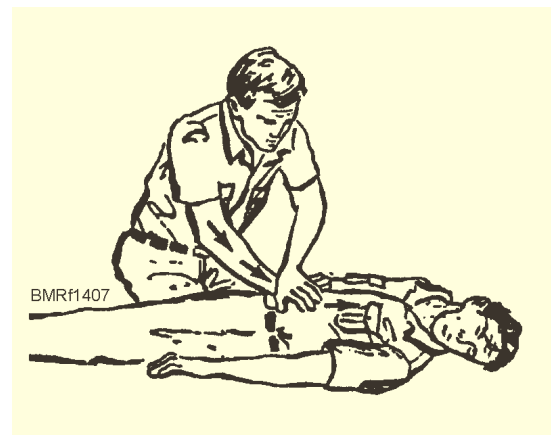


Figure 14-7.—Position for reclining abdominal thrust.



Figure 14-8.—Position for standing chest thrust.

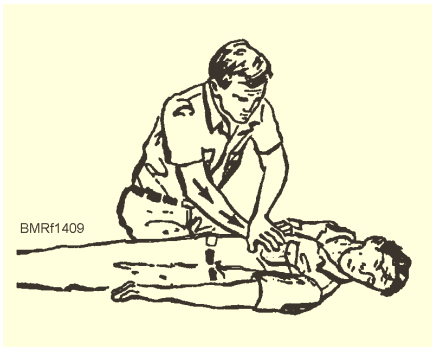


Figure 14-9.—Position for reclining chest thrust.

REVIEW 2 QUESTIONS

Q1. What is the first-aid treatment for respiratory failure?

Q2. When should artificial ventilation be administered?

Q3. List the three types of artificial ventilation.

- a.
- b.
- c.

Q4. What is cardiac arrest?

Q5. To be effective, CPR must be started within how many minutes of the onset of cardiac arrest?

Q6. When you use the one-rescuer technique of CPR, what is the ratio of compressions to ventilations?

Q7. When you use the two-rescuer technique of CPR, what is the ratio of compressions to ventilations?

Q8. List the symptoms of airway blockage.

- a.
- b.
- c.

Q9. List the four methods you can use to clear a person's airway.

- a.
- b.
- c.
- d.

Student Notes:

HEMORRHAGE AND METHODS OF CONTROLLING BLEEDING

Learning Objective: When you finish this chapter, you will be able to—

- Recall the procedures used to control external bleeding.

Blood is circulated throughout the body by three different kinds of blood vessels.

1. Arteries, which are large vessels that carry the blood away from the heart
2. Veins, which are large vessels that carry the blood back to the heart
3. Capillaries, which form a connecting network of smaller vessels between the arteries and the veins

Hemorrhage (escape of blood) occurs whenever there is a break in the wall of one or more blood vessels. In most small cuts, only capillaries are injured. Deeper wounds result in injury to veins or arteries. Bleeding severe enough to endanger life seldom occurs **except** when arteries or veins are cut.

The average adult body contains about 5 quarts (4.75 liters) of blood. One pint of blood can usually be lost without harmful effect—in fact, that’s the amount usually given by blood donors. However, the loss of 2 pints (0.95 liter) will usually cause shock, and shock becomes greater as the amount of blood loss increases. (Shock will be discussed later in this chapter.) If half the blood in the body is lost, death almost always results.

Capillary blood is usually brick red in color. If capillaries are cut, the blood oozes out slowly. Blood from the veins is dark red. If a vein is cut, the blood escapes in a steady, even flow. If an artery near the surface is cut, the blood will gush out in spurts that are synchronized with the heartbeats; but if the cut artery is deeply buried, the bleeding will appear to be a steady stream. Arterial blood is usually bright red in color.

In actual practice, you might find it difficult to decide whether bleeding was from a vein or an artery; but the distinction is not usually important. A person can bleed to death quickly from a cut artery; prolonged bleeding from any large cut can, of course, have the

same effect. The important thing to know is that **all** bleeding must be controlled as quickly as possible.

The only way to stop serious bleeding is by the application of pressure. In practically all cases, bleeding can be stopped if **pressure** is applied **directly to the wound**. If direct pressure doesn’t stop the bleeding, pressure should be applied at the appropriate pressure point. In those very rare cases where bleeding is so severe that it cannot be controlled by either of these methods, pressure can be applied by a tight constricting band. The actual procedures you should use to stop bleeding are shown in chart on pages 14-10 and 14-11.

CAUTION

Never put on a constricting band unless the hemorrhage is so severe that it cannot be controlled in any other way. Once a constricting band has been applied, it should be released only by medical personnel.

BATTLE DRESSINGS

Learning Objective: When you finish this chapter, you will be able to—

- Recall the procedures used to apply battle dressings.

A battle dressing is a combination compress and bandage, in which a sterile gauze pad is fastened to a gauze, muslin, or adhesive bandage. Most Navy first-aid kits contain both large and small battle dressings. Battle dressings are also supplied at battle dressing stations located throughout the ship. Any part of a dressing that is to come into direct contact with a wound should be absolutely sterile. The dressing you find in Navy first-aid kits have been sterilized. Never touch a battle dressing with your fingers, clothing, or any other unsterile object.

When applying a battle dressing, make sure the dressing is the proper size so that it covers the wound completely. Some wounds, such as protruding abdominal wounds, require the dressing to be moistened in sterile water. Battle dressing should be applied so it doesn’t allow the dressing to move or slip

Student Notes:

PROCEDURE	STEPS
Direct pressure	<p>In most cases, bleeding can be stopped by the application of pressure directly on the wound.</p> <ul style="list-style-type: none"> • Place a dressing (sterile or clean, if possible) over the wound and firmly fasten it in position with a bandage. • If bleeding doesn't stop, firmly secure another dressing over the first, or apply direct pressure with your hand to the dressing (fig. 14-10). • In cases of severe hemorrhage, don't worry too much about the danger of infection. The basic problem is to stop the flow of blood. If no material is available, simply place your hand firmly on the wound. Remember, direct pressure is the first method to use when you are trying to control hemorrhage.
Pressure points	<p>Bleeding from a cut artery or vein may often be controlled by applying pressure to the appropriate pressure point. A pressure point is a place where the main artery to the injured part lies near the skin surface and over a bone. Pressure at such a point is applied with the fingers (digital pressure) or with the hand; no first-aid materials are required. The object of the pressure is to compress the artery against the bone, shutting off the flow of blood from the heart to the wound. There are 10 principal points (fig. 14-11) on each side of the body where hand or finger pressure can be used to stop hemorrhage. You should memorize these pressure points so that you will know immediately which point to use for hemorrhage from a particular part of the body. The correct pressure point you should use is the one that is—</p> <ol style="list-style-type: none"> 1. Nearest the wound. 2. Between the wound and the main part of the body, or between the wound and the heart. <p>Applying finger pressure is very tiring, and it can seldom be maintained for more than 15 minutes. Pressure points are recommended for use while direct pressure is being applied to a serious wound. While pressure is being applied at the appropriate pressure point, an assistant can bandage the wound (or wounds). If available, a battle dressing should be used. After opening the dressing, be careful not to contaminate it. Place the compress portion over the wound, then bind it tightly in place with the attached straps (fig. 14-12). If bleeding continues to be severe even after direct pressure and pressure points have been used, you may have to apply a constricting band.</p>
Constricting band	<p>A constricting band is a band used to cut off the supply of blood to an injured limb. It can't be used to control bleeding from the head, neck, or body because its use in these locations would result in greater injury or death. Only use a constricting band when hemorrhage can't be controlled by other means.</p> <p>A constricting band consists of a pad, a band, and a device for tightening the band so that the blood vessels will be compressed. There are several different kinds of ready-made constricting bands. A variety of materials can be used to improvise constricting bands. Any round, smooth pressure object may be used for the pad (such as a compress, a roller bandage, a stone, or a rifle shell), and any long, flat material may be used as the band. Remember, the band must be flat! Belts, stockings, flat strips of rubber, or neckerchiefs can be used; but rope, wire, string, or very narrow pieces of cloth shouldn't be used because they will cut into the flesh. A short stick may be used to twist the band, tightening the constricting band.</p>

PROCEDURE	STEPS
<p>Constricting band (Continued)</p>	<p>A constricting band must always be applied above the wound; that is, toward the body, and it must be applied as close to the wound as practicable.</p> <p>The best object to be used for the pad is either a pad, compress, or similar pressure object. The pad goes under the band. Place it directly over the artery, or it will actually decrease the pressure on the artery and allow greater flow of blood. If a constricting band placed over a pressure object doesn't stop the bleeding, the pressure object is probably in the wrong place. If that occurs, shift the object around until the constricting band, when tightened, controls the bleeding. If no suitable pressure object is available, use the constricting band without it.</p> <p>To apply an emergency constricting band (fig. 14-13) made from something like a neckerchief—</p> <ol style="list-style-type: none"> 1. Wrap the material (which is a minimum of 2 inches wide) at least twice around the limb and tie an overhand knot. 2. Place a short stick on the overhand knot and tie a square knot over it. Then twist the stick rapidly to tighten the constricting band. The stick may be tied in place with another strip of material. <p>To be effective, a constricting band must be tight enough to stop the blood flowing to the limb. If the pressure from the constricting band is less than the arterial pressure, arterial bleeding will continue. Also, insufficient constricting band pressure may actually increase the amount of bleeding from the veins. So be sure to draw the constricting band tight enough to stop the bleeding. However, don't make it any tighter than necessary.</p> <p>After you have brought the bleeding under control with the constricting band, apply a sterile compress or dressing to the wound, and fasten it in position with a bandage.</p> <p>Some points to remember about using a constricting band are as follows:</p> <ul style="list-style-type: none"> • Don't use a constricting band unless you can't control the bleeding by any other means. • Don't use a constricting band for bleeding from the head, face, neck, or body. Use one only on the limbs. • Always apply a constricting band above the wound and as close to the wound as possible. • Be sure you draw the constricting band tight enough to stop the bleeding, but don't make it any tighter than necessary. • Don't loosen a constricting band after it has been applied. <p>Don't cover a constricting band with a dressing. If it's necessary to cover the injured person in some way, make sure all other people concerned with the case know about the constricting band. Using a crayon, skin pencil, or blood, make a large <i>T</i> on the victim's forehead or on a medical tag attached to the wrist, and note the time the constricting band was applied.</p>

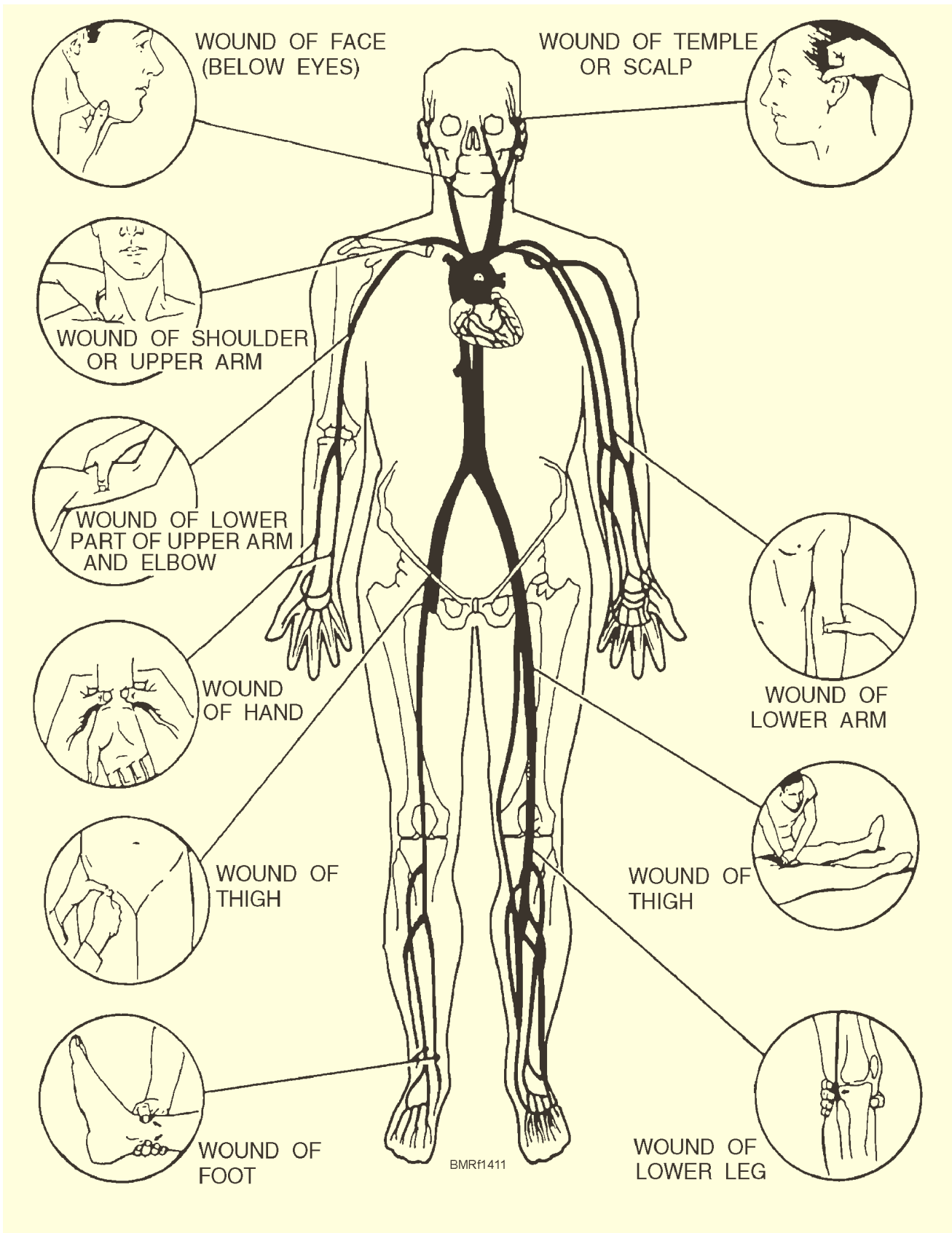


Figure 14-11.—Pressure points for control of bleeding.

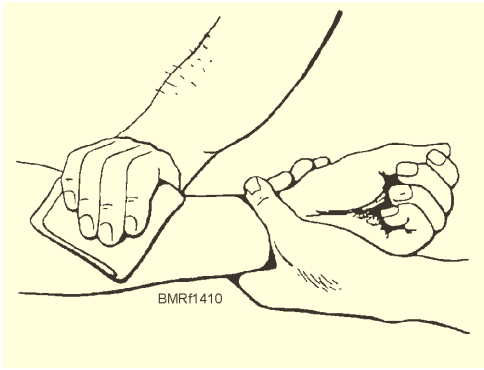


Figure 14-10.—Direct pressure.

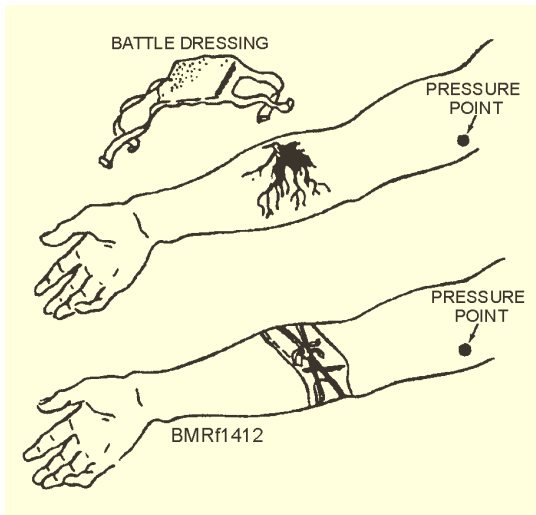


Figure 14-12.—Battle dressing.

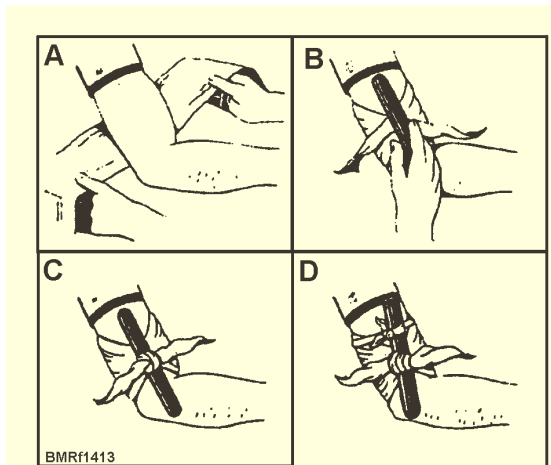


Figure 14-13.—Applying a constricting band.

off the wounded area. Once a battle dressing has been applied to a wound, it shouldn't be removed except by medical personnel. Each ship in the Navy holds periodic training on first aid. There are always new and updated techniques on how to administer first-aid procedures, including how to apply battle dressings. Pay particular attention to these training sessions and learn as much as you possibly can.

REVIEW 3 QUESTIONS

- Q1. List the three types of blood vessels the body uses to circulate blood.
 - a.
 - b.
 - c.
- Q2. Under what condition is hemorrhage (bleeding) severe enough to endanger life?
- Q3. A loss of how many pints of blood will usually cause shock?
- Q4. What color is blood carried by (a) capillaries, (b) veins, and (c) arteries?
 - a.
 - b.
 - c.
- Q5. What is the only way to stop serious bleeding?

Student Notes:

Q6. What is a constricting band?

Q7. When a battle dressing is applied, what person should release or remove it?

Q8. What is a battle dressing?

Q9. How should you apply a battle dressing?

SHOCK

Learning Objective: When you finish this chapter, you will be able to—

- Recognize the symptoms, prevention, and treatment of shock.

If you've ever hit your finger with a hammer and felt—in addition to the pain—weak, dizzy, and nauseous, then you have experienced a mild form of shock. In this case, the symptoms appeared immediately after the injury, but they may not show up for several hours.

Shock is a condition in which blood circulation is seriously disturbed. Crushed or fractured bones, burns, prolonged bleeding, and asphyxia all cause shock. Shock may be slight or it may be severe enough to cause death. Because all traumatic injuries result in some form of shock, you should learn its symptoms and know how to treat the victim.

HOW TO RECOGNIZE SHOCK

A person who is going into shock may show quite a few signs or symptoms, some of which are indicated in figure 14-14, and are discussed in the following paragraphs. Remember, that signs of shock don't always appear at the time of the injury; and, in many

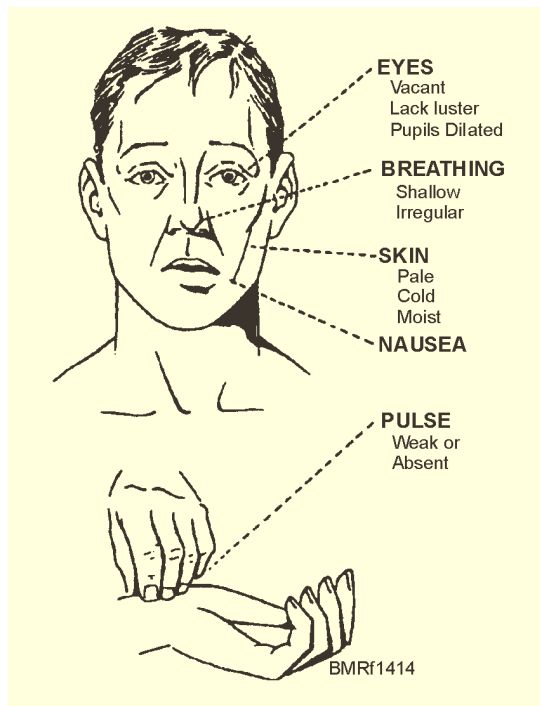


Figure 14-14.—Symptoms of shock.

very serious cases, symptoms may not appear until hours later.

The symptoms of a person suffering from shock are caused, directly or indirectly, by the disturbance of the circulation of the blood. Symptoms of shock include the following:

- The pulse is weak and rapid.
- Breathing is likely to be shallow, rapid, and irregular, because the poor circulation of the blood affects the breathing center in the brain.
- The temperature near the surface of the body is lowered because of the poor blood flow; so the face, arms, and legs feel cold to the touch.
- Sweating is likely to be very noticeable.
- A person in shock is usually very pale, but, in some cases, the skin may have a bluish or reddish color. In the case of victims with dark skin, you may have to rely primarily on the color of the mucous membranes on the inside of the mouth or under the eyelid or under the nail bed. A person in or going into shock has a bluish color to these membranes instead of a healthy pink.

Student Notes:

- The pupils of the eyes are usually dilated (enlarged).

- A conscious person in shock may complain of thirst and have a feeling of weakness, faintness, or dizziness. The victim may feel nauseous, restless, frightened, and/or anxious. As shock deepens, these signs gradually disappear and the victim becomes less and less responsive to what is going on. Even pain may not arouse the shock victim. Finally, the victim may become unconscious.

You will not likely see all the symptoms of shock in any one case. Some of them may appear only in late stages of shock when the disturbance of the blood flow has become so great that the person's life is in serious danger. Sometimes the signs of shock may be disguised by other signs of the injury. You must know what symptoms indicate the presence of shock, but don't ever wait for symptoms to develop before beginning the treatment for shock. **Remember, every seriously injured person is likely to develop serious shock!**

PREVENTION AND TREATMENT OF SHOCK

You should begin treatment for shock as soon as possible. Prompt treatment may prevent shock or, if it has already developed, prevent its reaching a critical point. Keep the victim lying down and warm. If conscious, the victim should be encouraged and assured that expert medical help will arrive soon.

Keep an injured person warm enough for comfort, but do not let the victim become overheated.

The best position to use to prevent or to treat shock is one that encourages the flow of blood to the brain. If possible, place the injured person on his or her back on a bed, a cot, or a stretcher. Raise the lower end of the support about 12 inches so that the feet are higher than the head (fig. 14-15). If you can't do that and it's possible, raise the feet and legs enough to help the blood flow to the brain. Sometimes it's possible to take advantage of a natural slope of ground and place the victim so that the head is lower than the feet.

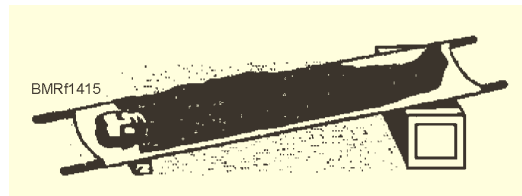


Figure 14-15.—Position for the treatment of shock.

Of course in every case, you'll have to consider what type of injury is present before you can decide on the best position. Here are some examples:

- If a person has a chest wound, he/she may have so much trouble breathing that you will have to raise the head slightly.
- If the face is flushed, rather than pale, or if you have any reason to suspect a head injury, don't raise the feet. Instead, you should keep the head level with or slightly higher than the feet.
- If the person has broken bones, you will have to judge what position would be best both for the fractures and for shock. A fractured spine must be immobilized before the victim is moved at all, if further injuries are to be avoided.

If you have any doubts about the correct position to use, have the victim lie flat on his/her back. **The basic position for treating shock is one in which the head is lower than the feet.** Do the best you can under the particular circumstances to get the injured person into this position. In any case, never let a seriously injured person sit, stand, or walk around.

Administer liquids sparingly, and not at all if medical attention will be available within a short time. If necessary, small amounts of warm water, tea, or coffee may be given to a victim who is conscious. Persons having serious burns are an exception. Burn victims require large amounts of fluids. Water, tea, fruit juices, and sugar water may be given freely to a victim who is conscious, able to swallow, and has no internal injuries. Slightly salted water is also beneficial. **Never give alcohol to a person in shock.**

An injured person may or may not be in pain. The amount of pain felt depends in part on the person's physical condition and the type of injury. Extreme pain, if not relieved, can increase the degree of shock. Make

Student Notes:

the victim as comfortable as possible. Fractures should be immobilized and supported. Immobilization greatly reduces, and sometimes eliminates, pain.

An injured person's body heat must be conserved. Therefore, heat is important in the treatment of shock. Exposure to cold, with resulting loss of body heat, can cause shock to develop or to become worse. You will have to judge the amount of covering to use by considering the weather and the general circumstances of the accident. Often a light covering will be enough to keep the casualty comfortable. Wet clothing should be removed and dry covering provided, even on a hot day. Use blankets or any dry material to conserve body heat. Artificial means of warming (hot water bottles, heated bricks, heated sand) should not ordinarily be used. Artificial heat may cause loss of body fluids (by sweating), and it brings the blood closer to the surface, defeating the body's own efforts to supply blood to the vital organs and to the brain. Also, the warming agent may burn the victim.

REVIEW 4 QUESTIONS

Q1. What is shock?

Q2. List the symptoms of shock.

- a.
- b.
- c.
- d.
- e.
- f.
- g.

Q3. True or false. Keep an injured person warm enough for comfort, but do not let the victim become overheated.

Q4. If you suspect a person to be in shock, what is the best position for that person?

SUICIDE

Learning Objective: When you finish this chapter, you will be able to—

- Recognize suicidal tendencies and possible treatment.

Suicide among young adults is a serious and growing problem. Among Navy personnel, approximately 10% of the Navy's nonhostile active-duty deaths are caused by suicide. Among the leading causes of nonhostile deaths in the Navy, suicide ranks third behind accidents and heat-related causes. The most frequent suicide victims in the Navy are enlisted males between the ages of 17 and 24 and in paygrades E-1 to E-6.

Why suicide? There isn't a simple answer as to why people choose to kill themselves. Usually, some emotional trauma is so great they "just want to stop the pain." They feel helpless, hopeless, and worthless. They feel that suicide is the only way out.

CAUSES OF SUICIDE

Most suicides are caused by a combination of events that lead a person to believe that suicide is the only way out. The following are some common causes of suicide:

- The breakup of a close relationship with a loved one or difficulties in interpersonal relationships
- The death of a loved one, spouse, child, parent, sibling, friend, or even a pet
- The loss of social or financial status of the family

Student Notes:

- The compounding and disorienting effects of drugs and/or alcohol

DEPRESSION

Depression is often associated with suicide. In 75% to 80% of all suicides, depression is a contributing factor. Sadness and an occasional “case of the blues” are normal emotions. However, depression isn’t a normal emotional state. Depression is a deep sadness that’s present almost daily for at least 2 weeks.

WHAT TO DO

If you believe someone you know is suicidal, remember the following:

- Take all threats seriously
- Answer cries for help
- Confront the problem
- Tell the person you care
- Listen actively
- Get professional help
- Don’t leave the person alone

REVIEW 5 QUESTIONS

- Q1. In the Navy, who is the most frequent suicide victim?
- Q2. List the common causes of suicide.
- a.
 - b.
 - c.
 - d.
- Q3. What condition is often associated with suicide?

- Q4. List some actions you should take if someone you know might be suicidal.
- a.
 - b.
 - c.
 - d.
 - e.
 - f.
 - g.

BURNS

Learning Objective: When you finish this chapter, you will be able to—

- Recognize the symptoms of, classification of, and first-aid treatment for burns.

The seriousness of a burn depends on two factors—the extent of the burned area and the depth of the burn. Shock can be expected from burns involving 15% or more of the body. Burns involving 20% endanger life. Without adequate treatment, burns of over 30% are usually fatal. The depth of the injury determines whether it is a first-, second-, or third-degree burn.

First-degree burns. First-degree burns are mildest. Symptoms are slight pain, redness, tenderness, and increased temperature of the affected area.

Second-degree burns. Second-degree burns are more serious. The inner skin may be damaged, resulting in blistering, severe pain, some dehydration, and possible shock.

Student Notes:

Third-degree burns. Third-degree burns are worst of all. The skin is destroyed, and possibly also the tissue and muscle beneath it. The skin may be charred, or it may be white and lifeless (from scalds). After the initial injury, pain may be less severe because of destroyed nerve ends. There may be chilling of the body. Some form of shock will result.

Probably the most important aspect is the extent of the burned area. A first-degree burn covering a large area could be more serious than a small third-degree burn. A sunburn, for example, ranging from mild to serious, is easily obtained, particularly if you aren't accustomed to the exposure. If you fall asleep while sunbathing, possible second- or even third-degree burns might occur and could be fatal.

The most effective immediate treatment of burns and of pain is as follows:

1. If the burn area covers **less than 20% of the body**, immerse the burned area in cold water, or apply cold compresses if immersion is impracticable. Cold water not only minimizes pain but also reduces the burning effect in the deeper layers of the skin. Gently pat dry the area with lint-free cloth or gauze.

2. If the burn area covers **more than 20% of the body**, apply sterile, dry bandages. Aspirin is also effective for the relief of pain. Continue treatment until no pain is felt when the burned area is exposed to the air.

Burn victims require large amounts of water, which should be slightly salted. Because of the nature of the injury, most burns are sterile. Therefore, the best treatment for uninfected burns is merely to protect the area by covering it with the cleanest (preferably sterile) dressing available.

Some actions that should **not** be taken when dealing with burns are as follows:

- Never apply ointments to a burn or use petrolatum gauze.
- Don't attempt to break blisters or to remove shreds of tissue or adhered particles of charred clothing.

- Never apply a greasy substance (butter, lard, or Vaseline™), antiseptic preparations, or ointments. These may cause further complications and interfere with later treatment by medical personnel.

REVIEW 6 QUESTIONS

- Q1. Define the following types of burns:
- a. First-degree burn
 - b. Second-degree burn
 - c. Third-degree burn
- Q2. If a burn covers less than 20% of a victim's body, you should immerse the burned area in cold water or apply cold compresses. Why should you take these actions?
- Q3. If a burn covers more than 20% of a victim's body, what actions should you take?
- Q4. When treating burns, you should NEVER take which of the following actions?
- a. Apply petrolatum gauze
 - b. Break blisters
 - c. Apply butter, lard, or Vaseline™
 - d. Each of the above

HEAT-RELATED PROBLEMS

Learning Objective: When you finish this chapter, you will be able to—

- Recognize the symptoms of and first-aid treatment for heat-related illnesses.

Student Notes:

Look at figure 14-16. Here, you see a comparison of the symptoms of heatstroke and heat exhaustion. These are dangers you face when working or exposed to conditions that might cause heatstroke or heat exhaustion.

HEATSTROKE

Sunstroke is more accurately called *heatstroke* since it is not necessary for a person to be exposed to the sun for this condition to develop. It is a less common but far more serious condition than heat exhaustion, since heatstroke has a 20% mortality rate. The more important feature of heatstroke is the extremely high body temperature (105°F [41°C] or higher) that accompanies it. In heatstroke, the victim has a breakdown of the sweating mechanism and is unable to eliminate excessive body heat built up while exercising. If the body temperature rises too high, the brain, kidneys, and liver may be permanently damaged.

Signs and symptoms of heatstroke. Sometimes the victim may have preliminary symptoms such as headache, nausea, dizziness, or weakness. Breathing will be deep and rapid at first, later shallow and almost absent. Usually the victim will be flushed, very dry, and

very hot. The pupils will be constricted (pinpoint) and the pulse fast and strong.

Treatment of heatstroke. When you provide first aid for heatstroke, remember that this is a true life-and-death emergency. The longer the victim remains overheated, the higher the chances of irreversible body damage or even death. First-aid treatment for heatstroke is designed to reduce body heat and includes the following:

- Reduce body heat immediately by dousing the body with cold water, or applying wet, cold towels to the whole body.
- Move the victim to the coolest possible place and remove as much clothing as possible.
- Maintain an open airway.
- Place the victim on his or her back, with the head and shoulders slightly raised.
- If cold packs are available, place them under the arms, around the neck, at the ankles, and on the groin.

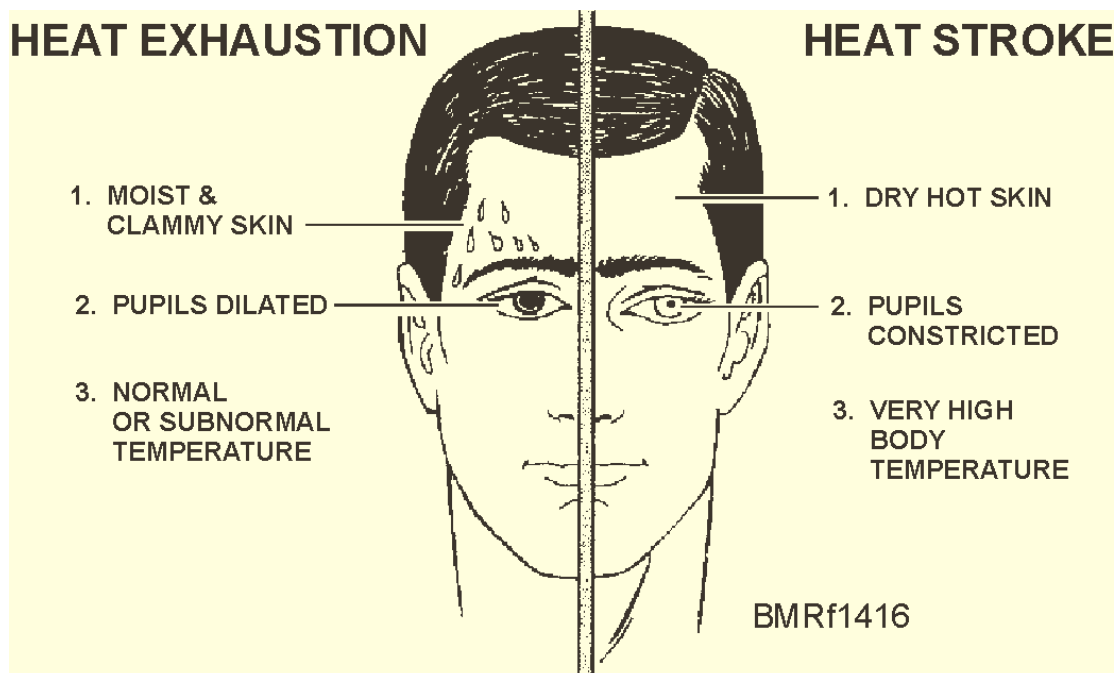


Figure 14-16.—Symptoms of heatstroke and heat exhaustion.

Student Notes:

- Expose the victim to a fan or air-conditioner since drafts will promote cooling.
- Immersing the victim in a cold water bath is also effective.
- Give the victim (if conscious) cool water to drink. Do not give any hot drinks or stimulants.
- Get the victim to a medical facility as soon as possible. Cooling measures must be continued while the victim is being transported.

HEAT EXHAUSTION

Heat exhaustion (heat prostration or heat collapse) is the most common condition caused by working or exercising in hot spaces. Heat exhaustion produces a serious disruption of blood flow to the brain, heart, and lungs. This disruption of blood flow causes the victim to experience weakness, dizziness, headache, loss of appetite, and nausea.

Signs and symptoms of heat exhaustion. Signs and symptoms of heat exhaustion are similar to those of shock: for example—

- The victim will appear ashen gray; the skin cold, moist, and clammy.
- The pupils of the eyes may be dilated (enlarged).
- The vital signs (blood pressure, temperature, pulse, and respiration) usually are normal; however, the victim may have a weak pulse together with rapid and shallow breathing.
- Body temperature may be below normal.

Treatment of heat exhaustion. To treat heat exhaustion victims, you should treat them as if they were in shock.

- Loosen the clothing; apply cool, wet cloths.
- Move the victim to either a cool or an air-conditioned area, and fan the victim.
- Do not allow the person to become chilled.

- If the victim is conscious, administer a solution of 1 teaspoon of salt dissolved in a quart of cool water.
- If the victim vomits, don't give any more fluids.
- Transport the victim to a medical facility as soon as possible.

REVIEW 7 QUESTIONS

- Q1. List the three most important signs of heatstroke.
- a.
 - b.
 - c.
- Q2. List the three most important signs of heat exhaustion.
- a.
 - b.
 - c.
- Q3. What is the most important action when treating someone who is showing signs of heatstroke or heat exhaustion?
- Q4. True or false. In case of heatstroke/heat exhaustion, you should transport the victim to a medical facility as soon as possible.

FRACTURES, SPRAINS, AND STRAINS

Learning Objectives: When you finish this chapter, you will be able to—

Student Notes:

- Recognize the classification of, symptoms of, and first-aid treatment for fractures.
- Recall the first-aid treatment for strains and sprains.

Simply put, a fracture is a broken bone. The severity of the injury depends on the part of the body affected, the type of fracture, and the amount of tissue damaged.

FRACTURES

In this section, you will learn about fractures—how they're classified and the first-aid you would give the victim. Additional information is given on how to transport victims.

Classification

Fractures may be classified in several ways. However, they are generally classified as either closed or open. A closed fracture is one in which the skin remains intact. An open fracture is one in which the bone protrudes from the skin. These fractures are shown in figure 14-17.

Symptoms

You can't always tell that a fracture has occurred. However, if the victim has been involved in some form of violence, you may suspect that one or more bones have been broken. The victim may even have heard the bone snap. Some symptoms of a fracture are as follows:

- Pain and tenderness
- Inability to use the part
- Creaking or cracking
- Motion at points other than joints
- Swelling
- Deformity
- Discoloration of skin

Treatment

If you are required to give first aid to a person who has suffered a fracture, you should follow these general rules:

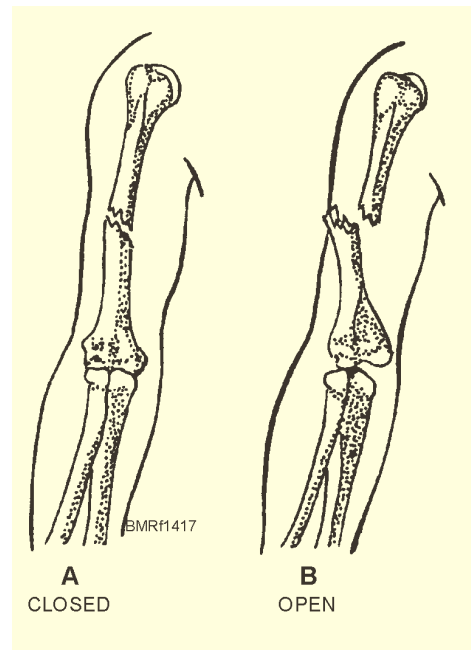


Figure 14-17.—Types of fractures.

- If there is any possibility that a fracture has been sustained, treat the injury as a fracture.
- Get medical aid at the first possible opportunity. All fractures require medical treatment.
- Don't move the victim until splints have been applied to the injured parts, unless the victim's life is in danger.
- Treat for shock.
- Don't attempt to locate a fracture by grating the ends of the bone together.
- Don't attempt to set a broken bone.
- When a long bone in the arm or leg is fractured, the limb should be carefully straightened so that splints can be applied. Pulling gently with your hands in the long axis of the limb is permissible, and it may be all that is necessary to get the limb back into position.
- Apply splints. Emergency splinting may be placed over clothing if the victim will be seen very soon by a medical officer or if the victim will be transported for a short distance. Otherwise, it's best to remove just enough clothing so you can apply well-padded splints

Student Notes:

directly to the injured part. If you decide to remove clothing over the injured part, cut the clothing or rip it along the seams. In any case, **be careful!** Rough handling of the victim may turn a closed fracture into an open fracture. That could increase the severity of shock and cause extensive damage to the blood vessels, nerves, muscles, and other tissues around the broken bone.

If the fracture is open, you must treat the wound before you can deal with the fracture. Bleeding from the wound may be serious. Most bleeding can be stopped by direct pressure on the wound or by finger pressure at the appropriate point. If, after your best efforts, these methods are not successful, use a constricting band; then treat the fracture.

Use of Splints

An essential part of the first-aid treatment is immobilizing the injured part with splints so that the sharp ends of broken bones won't move around and cause further damage to nerves, blood vessels, or vital organs. Splints are also used to immobilize severely injured joints or muscles and to prevent the enlargement of extensive wounds. Before you can use a splint, you need to have a general understanding of the use of splints.

In an emergency, almost any firm object or material can be used as a splint. Such things as umbrellas, canes, swords, rifles, tent pegs, laths, sticks, oars, paddles, spars, wire, leather, boards, pillows, heavy clothing, corrugated cardboard, and folded newspapers can be used as splints. A fractured leg may sometimes be splinted by fastening it securely to the uninjured leg.

Splints, whether ready-made or improvised, must meet the following requirements:

- Be light in weight, but still be strong and fairly rigid.
- Be long enough to reach the joints above and below the fracture.
- Be wide enough so the bandages used to hold them in place won't pinch the injured part.

- Be well padded on the sides that touch the body. If they're not properly padded, they won't fit well and won't adequately immobilize the injured part.
- To improvise the padding for a splint, use articles of clothing, bandages, cotton, blankets, or any other soft material.
- If the victim is wearing heavy clothes, apply the splint on the outside, allowing the clothing to serve as at least part of the required padding.

Although splints should be applied snugly, **never** apply them tight enough to interfere with the circulation of the blood. When applying splints to an arm or a leg, try to leave the fingers or toes exposed. If the tips of the fingers or toes become blue or cold, you will know that the splints or bandages are too tight. You should examine a splinted part approximately every half-hour, and loosen the fastenings if circulation appears to be cut off. Remember that any injured part is likely to swell, and splints or bandages that are all right when applied may be too tight later.

Figure 14-18 shows a method of immobilizing the leg of a person with a broken kneecap. To secure the limb to the splint, belts, neckerchiefs, rope, or any suitable material may be used. If possible, tie the limb at two places above and two places below the break.

Leave the treatment of other types of fractures, such as jaw, ribs, and spine, to medical personnel. **Never try to move a person who might have a fractured spine or neck.** Moving such a person could cause permanent paralysis. Don't attempt to reset bones.

SPRAINS AND STRAINS

A person with a sprain or a strain might have some of the same symptoms as a person who has a fracture. The information contained in this section will help you

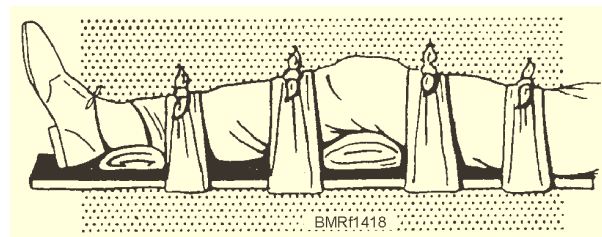


Figure 14-18.—Splinting.

Student Notes:

know what to do if there is a possibility a shipmate has sustained a strain or a sprain.

Sprains

A sprain is an injury to the ligaments and soft tissues that support a joint. A sprain is caused by the violent wrenching or twisting of the joint beyond its normal limits of movement. Any joint may be sprained; however, sprains of the ankle, wrist, knee, and finger are most common.

SYMPTOMS.—Symptoms of sprains include pain or pressure at the joint, pain upon movement, swelling and tenderness, possible loss of movement, and discoloration.

TREATMENT.—Treat all sprains as fractures until ruled out by X-rays. To treat a sprain, you should take the following actions:

- Application of cold packs for the first 24 to 48 hours.
- Elevation and rest of the affected area.
- Application of a snug, smooth, figure-eight bandage to control swelling and to immobilize (keep from moving) the affected area. (**NOTE:** Check bandaged areas regularly for swelling that might cause circulation problems and loosen bandages if necessary.)
- After the swelling stops (24 to 48 hours), apply moist heat for short periods (15 to 30 minutes).

CAUTION

Do not apply heat until 24 hours after the last cold pack.

After applying first aid, make sure the victim has a follow-up examination by a medical officer. This exam includes X-rays to rule out fractures.

Strains

A strain is an injury caused by the forcible over stretching or tearing of a muscle or tendon. A strain may be caused by lifting excessively heavy loads, sudden or violent movements, or any other action that pulls the muscles beyond their normal limits.

SYMPTOMS.—Symptoms of strains include pain, lameness or stiffness, moderate swelling at the place of the injury, discoloration caused by blood escaping from injured blood vessels into the tissues, possible loss of power, and a distinct gap felt at the site of the injury.

TREATMENT.—To treat a strain, you should take the following actions:

- Elevate the affected area.
- Apply cold packs for 24 to 48 hours.
- After the swelling stops, apply mild heat to increase circulation and aid in healing.

NOTE

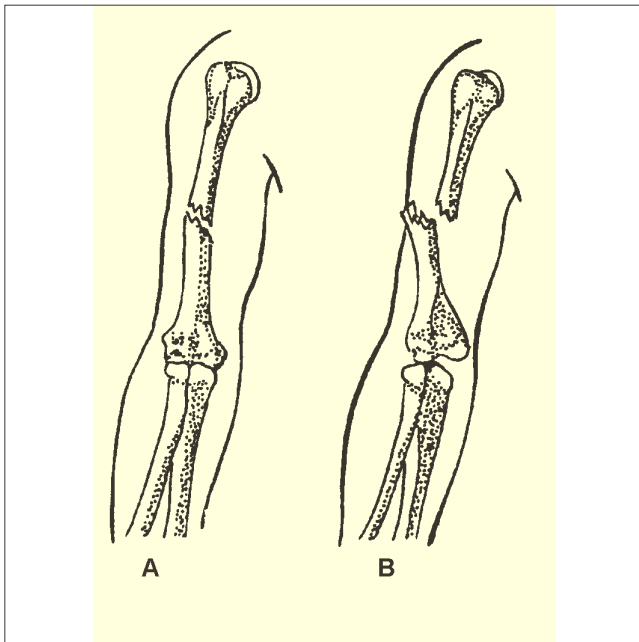
Do not apply heat until 24 hours after the last cold pack.

The victim should be evacuated to a medical facility where X-rays can be taken to rule out the possibility of a fracture.

Student Notes:

REVIEW 8 QUESTIONS

Q1. Label the following fractures.



Q2. List the symptoms of a fractured leg or arm.

- a.
- b.
- c.
- d.
- e.
- f.
- g.

Q3. Briefly describe how to give first aid to someone with a fractured leg or arm.

- a.

- b.
- c.
- d.
- e.
- f.
- g.

Q4. List the types of fractures that should be treated by medical personnel.

- a.
- b.
- c.

Q5. What is the reason that you should never move a person who might have a fractured spine or neck?

Q6. List the symptoms a victim might have with a sprained or strained leg.

- a.
- b.
- c.
- d.
- e.

Student Notes:

f.

g.

Q7. Describe the first aid that should be given to a victim suspected of having a sprained or strained leg.

RESCUE PROCEDURES

Learning Objective: When you finish this chapter, you will be able to—

- Recall the procedures to rescue a person.

There are many ways to move victims. The method used depends on several factors—where the victim is located and where the victim is to be taken, assistance available, equipment on hand, and so forth. If available, litters or stretchers should be used.

In you don't have any help, there are several methods you can use to move a victim alone. One method is simply to pick up and carry the victim in your arms, but it can be quite a task if the victim weighs more than you. If a blanket is handy, the victim can be placed upon it and dragged. Two other means are the fireman's carry (fig. 14-19) and the tied-hands crawl (fig. 14-20).

FIREMAN'S CARRY

One of the easiest ways to carry an unconscious person is by the fireman's lift, also called the *fireman's carry* (fig. 14-19).

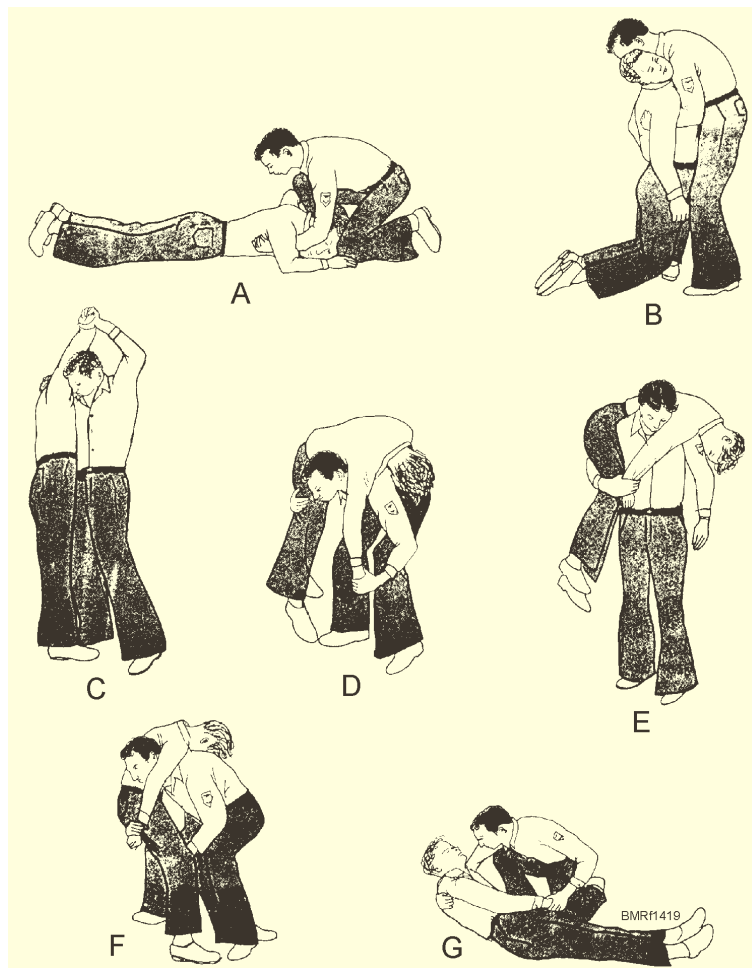


Figure 14-19.—Fireman's carry.

Student Notes:

1. Place the victim face down, as shown in figure 14-19, view A. Kneel on one knee at the head, facing the victim. Pass your hands under the armpits.
2. Raise the victim, as shown in figure 14-19, view B. Take a better hold across the back.
3. Raise the victim to a standing position and stick your right leg between the victim's legs, as shown in figure 14-19, view C. Grasp the victim's right wrist in your left hand and swing the arm around the back of your neck and down your left shoulder.
4. Stoop quickly and pull the victim across your shoulders and, at the same time, put your right arm between the victim's legs, as shown in figure 14-19, view D.
5. Grasp the victim's right wrist with your right hand and straighten up, as shown in figure 14-19, view E.

The procedure for lowering the victim to the deck is shown in figure 14-19, views F and G.

TIED-HANDS CRAWL

The tied-hands crawl shown in figure 14-20 may be used to drag an unconscious person for a short distance; it is particularly useful when you must crawl underneath a low structure.

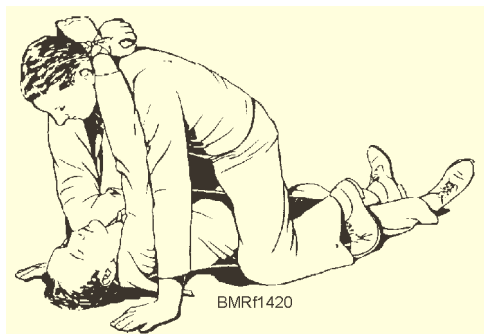


Figure 14-20.—Tied-hands crawl.

RESCUE FROM ELECTRICAL CONTACT

Rescuing a person who has received an electric shock is likely to be difficult and dangerous. Use extreme caution or the rescuer may also be electrocuted.

Student Notes:

Don't touch the victim's body, the wire, or any other object that may be conducting electricity.

Some procedures you might use to rescue a person who's received an electric shock are as follows:

- Look for the switch first of all, and if you find it, turn off the current immediately. Don't waste too much time hunting for the switch; however, every second is important.
- If you cannot find the switch, you should try to remove the wire from the victim with a dry broom handle, branch, pole, oar, board, or similar nonconducting object (fig. 14-21).
- It may be possible to use dry rope or dry clothing to pull the wire away from the victim.
- You can also break the contact by cutting the wire with a wooden-handled axe, but that is extremely dangerous because the cut ends of the wire are likely to curl and lash back at you before you have time to get out of the way.

When you are trying to break an electrical contact, always stand on some nonconducting material, such as a dry board, newspaper, or clothing.

Administer artificial ventilation immediately after freeing the person from the wire if the electric shock caused breathing to stop. Check the victim's pulse, since electric shock may also cause the heart to stop. If

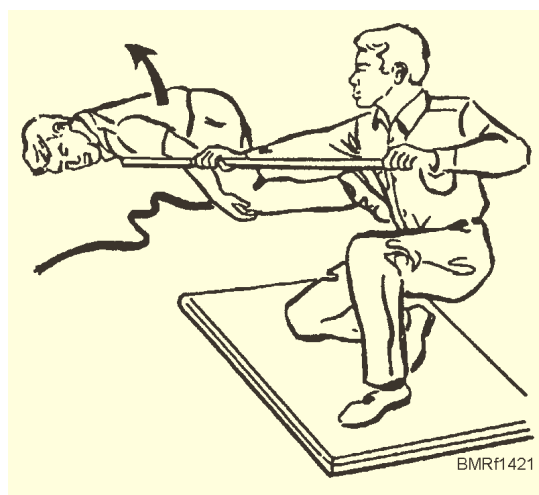


Figure 14-21.—Pushing a victim away from a power line.

you do not feel a pulse, immediately administer CPR. Get the victim to a medical facility as soon as possible.

TRANSPORTATION PROCEDURES

Learning Objective: When you finish this chapter, you will be able to—

- Recall the procedures to transport a person.

So far, you've learned about the emergency methods used to get an injured person out of danger and into a position where first aid can be administered. As you have learned, these emergency rescue procedures often involve substantial risk to the victim and should be used only when clearly necessary.

Once you've rescued the victim from the immediate danger, **slow down!** Handle and transport the victim with care, being careful about the injuries that have been sustained. In the excitement and confusion that almost always accompany a mishap, you are likely to feel rushed, as though you must do everything rapidly. This is a reasonable way to feel. Speed is essential in treating many injuries and in getting the casualty to a medical officer or hospital. However, it's **not** reasonable to let yourself feel so hurried that you handle the victim roughly or carelessly or transport the victim in a way that will make the injuries worse.

GENERAL PRECAUTIONS

The basic precautions to observe when transporting an injured person are summarized as follows:

- Give necessary first aid **before** attempting to transport the victim if possible. Be sure all injuries have been located. Treat serious breathing problems, bleeding, and shock in that order. Immobilize all fractures, sprains, and dislocations. Do whatever you can to reduce the victim's pain and to make the victim as comfortable as possible under the circumstances.

- Use a regular stretcher if one is available. If you must use an improvised stretcher, be sure it is strong enough. Also, be sure that you have enough personnel to

carry the stretcher so that you won't run any risk of dropping the victim.

- Whenever possible, bring the stretcher to the victim instead of carrying the victim to the stretcher.

- Fasten the victim to the stretcher to prevent slipping, sliding, or falling off. Tie the victim's feet together, unless the injuries make it impracticable.

- Use blankets, garments, or other material to pad the stretcher and to protect the victim from exposure.

- As a general rule, an injured person should be lying down, face up, while being moved. However, in some instances the type or location of the injury will necessitate the use of another position. If the victim has a chest wound, raising the head and shoulders may give greater comfort, and ease any breathing difficulties the victim may have. A person who has a broken bone should be moved very carefully so that the injury will not be made worse. If the victim has received a severe injury to the head, the victim should be kept lying on the side or on the back with the head turned to one side to prevent choking on saliva, blood, or vomit while being transported. In all cases, it is important to place the victim in a position that prevents further injuries.

- The stretcher should be carried in such a way that the victim will be moved feet first, so that the rear stretcher bearer can continually watch the victim for signs of breathing difficulty.

- If you must use a motor vehicle to transport a seriously injured person, the best means is an ambulance. If no ambulance is available, a truck or station wagon makes a fairly good substitute. If it is necessary to use a passenger car to transport a seriously injured person, the victim should be put in a place that requires the least amount of bending, twisting, or turning.

- Don't turn the victim over to anyone without giving a complete account of the situation. Be sure the person taking over knows what caused the injury and what first-aid treatment has been given. If a constricting band has been applied, make sure that is known to the person who is taking charge of the victim.

Student Notes:

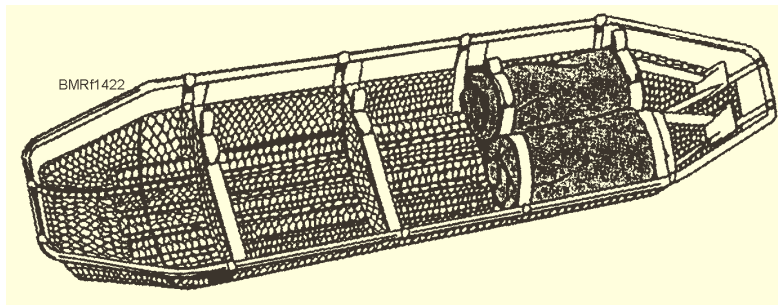


Figure 14-22.—Stokes stretcher.

STOKES STRETCHER

The Navy service litter most commonly used for transporting sick or injured persons is called the *Stokes stretcher* (fig. 14-22). The Stokes stretcher is a wire basket supported by iron or aluminum rods. It's adaptable to a variety of uses, since the victim can be held securely in place, even if the stretcher is tipped or turned. The Stokes stretcher is particularly valuable for transferring injured persons to and from boats. It is also used for direct ship-to-ship transfer of injured persons.

NEIL ROBERTSON STRETCHER

The Neil Robertson stretcher is designed for removing an injured person from engine-room spaces, holds, and other compartments where access hatches are too small to permit the use of regular stretchers.

The Neil Robertson stretcher is made of semirigid canvas. When firmly wrapped around the victim mummy-fashion, it gives sufficient support so the victim may be lifted vertically (fig. 14-23). To keep the injured person from swaying against bulkheads and hatchways while being lifted, tie a guideline to the victim's ankles.

Stretchers of this type can be made on board ship and kept in appropriate places ready for use. If a Neil Robertson stretcher is not available when needed, a piece of heavy canvas, wrapped firmly around the victim, will serve somewhat the same purpose.

EMERGENCY RESCUE LINES

An emergency rescue line can be made from any strong fiber line. These lines should be used only in

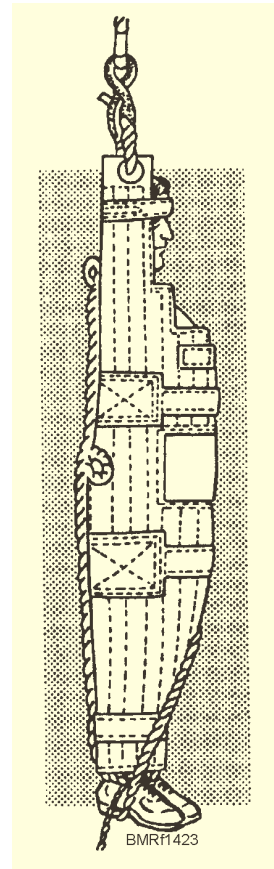


Figure 14-23.—Neil Robertson stretcher.

extreme emergencies when an injured person must be moved and no other means is available.

Figure 14-24 shows an emergency rescue line that could be used to hoist a person from a void or small compartment. Notice that a running bowline is passed around the body, just below the hips, and a half hitch just under the arms. Again, a guideline is tied to the victim's ankles.

Student Notes:

PERSONAL HYGIENE

Learning Objectives: When you finish this chapter, you will be able to—

- Identify the purpose for personal hygiene.
- Recognize the consequences of not following a personal hygiene program.

Because of the close living quarters in the Navy, particularly aboard ship, personal hygiene is very important. Developing good personal hygiene habits is essential for the good health of the individual and for the protection of the entire crew. For the same reasons, sanitary conditions aboard ship must be maintained at all times. Clean spaces are a necessity. Dirt breeds disease. When spaces are kept clean and orderly, the general well-being of the crew improves and morale increases. No one wants to live or work in a filthy environment. In the Navy and at home, everyone should make it a habit to keep living and working spaces as clean as possible. Maintaining a clean, healthy environment reduces the chances of illness.

Negligence in reporting to the medical officer any matter that affects one's health is inexcusable. It can lead to a more serious illness. Don't ignore minor injuries. An untreated cut or scratch can lead to infection, loss of a limb, and even death. If you can't report for treatment right away, wash the injury with soap and clean water. A large wound should not be washed; cover it with a clean dressing until it can be attended to by medical personnel.

Some practices you can take to be healthy include the following:

Showering. Shower and change underwear daily. After showering, dry thoroughly, particularly your feet to prevent fungus development. Wear shower shoes when taking a shower to avoid contracting athlete's foot.

Shoes and socks. Wear properly fitted shoes and socks. The inner dimensions of the shoe should be about 1/4 inch longer and wider than the foot. Improperly fitted socks and socks with holes can cause blisters. Change your socks daily.



Figure 14-24.—Emergency rescue line.

REVIEW 9 QUESTIONS

- Q1. What is one of the easiest ways to carry an unconscious person?
- Q2. Describe the precautions you should take when rescuing a person who has received an electric shock.
- Q3. How should you carry a stretcher?
- Q4. What type of stretcher is used to transport an injured person from engine-room spaces?
- Q5. When are emergency rescue lines used?

Student Notes:

Toenails and feet. Cut your nails straight across to prevent ingrown toenails. If corns or other foot ailments develop, have them treated at once.

Fingernails. Keep fingernails trimmed and clean.

Hair. Keep your hair neatly trimmed and wash it often.

Bunk linen. Change it at least weekly.

Exercise and sleep. Daily exercise improves bodily functions, increasing muscle tone and physical endurance. Even aboard small ships, it's possible to exercise in some manner. Get as much sleep as watch and work conditions permit.

Diet. Navy food is good and wholesome. It provides a well-balanced diet. Don't be a finicky eater, even though you don't like some foods. Learn to eat a variety of foods; try to avoid putting more on your tray than you care to eat.

ORAL HYGIENE

Many dental disorders begin with the buildup of bacterial plaque that remains undisturbed around the teeth. The purpose of personal oral hygiene is to remove this plaque buildup. Plaque can be removed by proper tooth brushing and flossing techniques.

There are three common dental conditions that are caused by poor dental hygiene:

1. Tooth decay
2. Reddening of the gums
3. Gum and bone disease

Any of these can cause the loss of a tooth; but with proper oral hygiene, these conditions can be controlled or prevented.

Tooth decay can be reduced by cutting down on sweets and by brushing properly. For most people, cavities and gum and bone disease occur primarily between the teeth. No toothbrush can effectively cleanse these areas or the areas behind the last tooth in each arch. You must use dental floss to clean such hard-to-reach areas. You should floss at least once a day, either just before or just after brushing. Unwaxed dental floss should be used in most cases.

Dental cleansing devices, oral irrigators, and commercial mouthwashes are aids to oral hygiene. They may be used in addition to—but not in place of—tooth brushing and flossing. If these devices are electrically powered, they must be safety checked by electrical safety personnel before use.

NOTE

Oral irrigation may be harmful for individuals with cardiovascular problems.

In addition to all of these procedures, you should also have a dental checkup every 6 months or at least once a year. Your dental technician or dentist can show you the proper way to brush and floss your teeth.

SEXUALLY TRANSMITTED DISEASES

Sexually transmitted diseases (STDs) are illness caused by organisms that are transmitted through sexual intercourse or by forms of other intimate body contact with an infected person. The disease germs that cause syphilis and gonorrhea are very fragile and can live for only short periods of time outside the body. Venereal disease is not spread from inanimate objects such as toilet seats, drinking glasses, bed linens, or clothes.

Syphilis and gonorrhea are the two most common sexually transmitted diseases in the United States. Syphilis has had the worst reputation, but it is gonorrhea that is out of control.

Syphilis

Syphilis can attack any tissue or organ of the body and is especially damaging to the brain, spinal cord, blood vessels, and heart.

A painless sore, called a *chancre*, is the first sign of syphilis. The sore usually appears on or around the sex organs about 9 to 90 days after contact with an infected person. The chancre will heal within a few weeks, even without treatment.

Other signs of syphilis that may develop either before or after the chancre goes away are a rash that may cover any part of the body; white, glistening spots in the mouth; and fever, sore throat, and headaches. The rash

Student Notes:

and other signs may not appear or may be so slight as to be unnoticed.

After these signs disappear, the germs may stay hidden for 10 to 20 years. If untreated, the disease causes mental illness, blindness, heart disease, or even death.

Syphilis is not inherited, but a pregnant woman with the disease can give it to her unborn child. These babies are born with congenital syphilis. A baby with congenital syphilis may be born dead or deformed. Congenital syphilis can be prevented if it is detected and treated in time.

The signs of syphilis may resemble many other diseases, or the signs may be slight and be unnoticed. The disease can be detected by a blood test for syphilis.

Gonorrhea

If you have gonorrhea and don't get treatment, you may become sterile. Gonorrhea can damage the sperm ducts in males and the fallopian tubes in females. In men and women, gonorrhea may result in crippling arthritis, meningitis, or heart disease.

The signs of gonorrhea in males usually appear 3 to 5 days after sexual contact with an infected partner. Most men have a pus discharge from the sex organ and a painful, burning sensation during urination. Women rarely have painful symptoms until gonorrhea has seriously damaged their reproductive system. There may be some vaginal discharge or burning during urination, but women will usually have no symptoms and will not know that they have gonorrhea until a sexual partner has been infected.

If you have syphilis or gonorrhea, a cure is as near as your medical department. But early treatment is important. These diseases can be cured even in people who have had the disease for a long time, but the damage to the reproductive organs may be irreversible.

NOTE

Self-treatment or pills from a friend are extremely dangerous.

Genital Herpes Infection

Genital herpes is an increasingly common viral infection that produces recurrent, painful genital sores similar to cold sores that occur around the mouth. At this time, there is no known cure for genital herpes; the infected person may have recurrences of lesions throughout life. Individuals should avoid sexual intercourse when the sores are present because the herpes virus is infectious in this phase of the disease.

Acquired Immune Deficiency Syndrome

The Acquired Immune Deficiency Syndrome (AIDS) was first reported in the United States in mid 1981. AIDS is a serious illness and a public health problem. It's the number one priority of the U.S. Public Health Service.

AIDS is a serious condition characterized by a defect in natural immunity (defense) against disease. People who have AIDS are vulnerable to serious illnesses that aren't a threat to anyone whose immune system is functioning normally. These illnesses are referred to as "opportunistic" infections or diseases.

Investigators have discovered the virus that causes AIDS. The virus is called either *human immune virus (HIV)*; *human T-lymphotropic virus, type III (HTLV-3)*; *lymphadenopathy associated virus (LAV)*; or *AIDS-related virus (ARV)*. Most people infected with the AIDS virus have no symptoms and feel well. Some develop symptoms that may include tiredness; fever; loss of appetite and weight; diarrhea; night sweats; and swollen glands (lymph nodes), usually in the neck, armpits, or groin. Anyone with these symptoms should see a doctor if the symptoms continue for more than 2 weeks

AIDS is spread by sexual contact, needle sharing, or less commonly, through blood or its components. The risk of getting AIDS is increased by having multiple sexual partners, either homosexual or heterosexual, and sharing needles with people who use illicit drugs. The occurrence of the AIDS in hemophilia patients and persons receiving transfusions provides evidence of transmission through blood. It may be transmitted from infected mother to infant before, during, or shortly after birth.

Student Notes:

Prevention

Using a condom during sex offers some protection. Birth control pills offer no protection against STDs. If you had the disease once and have been successfully treated, that does not grant you immunity against contracting an STD again.

If you have been diagnosed as having an STD and are receiving treatment at the present time, don't attempt to hide the name(s) of your sexual partners. The chances are that one of them infected you or have been infected by you. They deserve the benefit of treatment too. The health department will contact the persons named and treat them. These steps, which are done confidentially, can help in stopping an outbreak of a sexually transmitted disease.

REVIEW 10 QUESTION

- Q1. List some of the reasons why personal hygiene is important.
- a.
 - b.
 - c.
 - d.
- Q2. List the three most common dental conditions caused by poor dental hygiene.
- a.
 - b.
 - c.
- Q3. What methods should you use to avoid dental problems?
- a.
 - b.
 - c.

- Q4. What are the two most common sexually transmitted diseases?
- a.
 - b.
- Q5. How is the Acquired Immune Deficiency Syndrome (AIDS) spread?
- a.
 - b.
 - c.

SUMMARY

In this chapter, you have learned some of the basic steps and procedures required when administering first aid. You may never have the need to use these procedures, but if the situation should arise, by following the procedures outlined, and with additional training, you may be in a position to render what could be life-saving assistance. You also learned the recommended ways of transporting injured personnel so they can receive proper medical attention.

Personal hygiene is an important part of living closely together. A shipmate not overly concerned with keeping himself or herself clean and squared away could affect your physical well-being, but could also affect the morale of a great number of crew members. Keeping yourself clean and squared away will benefit you and the people you come into contact with on a daily basis.

Another topic covered here is sexually transmitted diseases. Being attracted to a member of the opposite sex is a natural reaction. Be aware of the possibility that if you engage in multiple sexual relations, you could become infected with one of the sexually transmitted diseases discussed in this chapter. Being responsible in your sexual relations and using approved protective measures will go a long way toward protecting yourself.

Student Notes:

REVIEW 1 ANSWERS

- A1. The primary purpose of first aid is **to safe lives, prevent further injury, and limit infection.**
- A2. The primary tasks to take when you administer first aid are to—
- maintain breathing,**
 - stop bleeding and maintain circulation,** and
 - prevent or treat shock.**
- A3. The general first-aid rule for—
- shock is to place the victim on his/her back with the head slightly lower than the feet**
 - broken bones is to keep the person still until you immobilize the injured part**
 - transport of injured persons is on the litter with the litter carried feet first**

REVIEW 2 ANSWERS

- A1. The first-aid treatment for respiratory failure is **artificial ventilation.**
- A2. Artificial ventilation should be administered **only when natural breathing has stopped. NEVER give artificial ventilation to a person who is still breathing.**
- A3. The three types of artificial ventilation are—
- Mouth to mouth**
 - Mouth to nose**
 - Back pressure/arm lift**
- A4. Cardiac arrest is **the complete stoppage of heart function.**
- A5. To be effective, CPR **must be started within 4 minutes** of the onset of cardiac arrest.
- A6. When you use the one-rescuer technique of CPR, the ratio of compressions to ventilations is **15 compressions to 2 ventilations.**
- A7. When you use the two-rescuer technique of CPR, the ratio of compressions to ventilations is **5 compressions to 1 ventilation.**

- A8. The symptoms of airway blockage are—
- Inability of the victim to speak**
 - Exaggerated breathing efforts**
 - Skin turning blue**
- A9. The four methods you can use to clear a person's airway are—
- Standing abdominal thrust**
 - Reclining abdominal thrust**
 - Standing chest thrust**
 - Reclining chest thrust**

REVIEW 3 ANSWERS

- A1. The three types of blood vessels the body uses to circulate blood are—
- Arteries—large vessels that carry blood away from the heart**
 - Veins—large vessels that carry blood back to the heart**
 - Capillaries—a connecting network of smaller vessels between the arteries and the veins**
- A2. Hemorrhage is severe enough to endanger life **when arteries or veins are cut.**
- A3. A loss of **2 pints of blood is usually enough to cause shock.**
- A4. Blood carried by—
- Capillaries is brick red**
 - Veins is dark red**
 - Arteries is bright red**
- A5. The only way to stop serious bleeding is the **application of pressure.**

- A6. A constricting band is **a pad, a band, and a device for tightening the band so that the blood vessels will be compressed. Only use a constricting band when hemorrhage can't be controlled any other way. Constricting bands are used above the wound. They aren't used for wounds on the head, neck, or body.**
- A7. When a constricting band or a battle dressing has been applied, **only medical personnel should release/remove it.**
- A8. A battle dressing is **a combination compress and bandage, in which a sterile gauze pad is fastened to a gauze, muslin, or adhesive bandage.**
- A9. When applying a battle dressing, you should make sure that the **dressing covers the entire wound.**

REVIEW 4 ANSWERS

- A1. Shock is **a condition where the blood circulation is seriously disturbed.**
- A2. The symptoms of shock in a person are—
- Weak and rapid pulse**
 - Shallow, rapid, and irregular breathing**
 - Lower temperature—the arms, face, and legs feel cold to the touch**
 - Sweating**
 - Pale skin color; however, in some cases, it may be bluish or reddish**
 - Dilated (enlarged) pupils**
 - Thirst and an feeling of weakness, faintness, or dizziness**
- A3. **True**, you should keep an injured person warm enough to be comfortable, but not warm enough to become overheated.
- A4. If you suspect that a person is in shock, **you should keep the person lying flat on his/her back with the feet slightly elevated (raised) so that the position encourages the blood to flow back to the brain.**

REVIEW 5 ANSWERS

- A1. In the Navy, the most frequent suicide victim is **an enlisted male between 17 and 24 years old and in paygrades E-1 through E-6.**
- A2. The most common causes of suicide are—
- Breakup of a close relationship**
 - Death of a loved one**
 - Loss of social or financial status**
 - Effects of drugs and/or alcohol**
- A3. **Depression** is often associated with suicide.
- A4. Some actions you can take if you believe someone is suicidal are—
- Take all threats seriously**
 - Confront the problem**
 - Answer cries for help**
 - Let the person know you care**
 - Listen**
 - Get professional help**
 - Don't leave the person alone**

REVIEW 6 ANSWERS

- A1. Burns are defined as follows:
- First-degree burn—Mildest burn. Slight redness, tenderness, and increased temperature of the burned area.**
 - Second-degree burn—More serious than first-degree burn. Inner skin may be damaged, blistering, severe pain, some dehydration, and possible shock.**
 - Third-degree burn—Most serious burn. Skin is destroyed and possibly tissue and muscle beneath it. Skin may be charred or white and lifeless (from scalds). Some form of shock will result.**

- A2. By immersing the burned area in cold water or by applying cold compresses, you **minimize pain and reduce the burning effect in deeper layers of the skin.**
- A3. If a burn covers more than 20% of a victim's body, you should **apply sterile, dry bandages.**
- A4. When treating burns you should **NEVER apply petrolatum gauze, break blisters or apply butter, lard, or Vaseline™.**

REVIEW 7 ANSWERS

- A1. The three most important signs of heatstroke are—
 - a. **Dry, hot skin**
 - b. **Constricted pupils**
 - c. **Very high body temperature (usually above 105°F)**
- A2. The three most important signs of heat exhaustion are—
 - a. **Moist, clammy skin**
 - b. **Dilated pupils**
 - c. **Normal or subnormal temperature**
- A3. The aim of first-aid treatment for heatstroke or heat exhaustion is **to reduce body temperature.**
- A4. **True**, in case of heatstroke/heat exhaustion, you should transport the victim to a medical facility as soon as possible.

REVIEW 8 ANSWERS

- A1. Fractures are—
 - a. **Closed fracture**
 - b. **Open fracture**
- A2. The symptoms of a fractured leg or arm include—
 - a. **Pain and tenderness**
 - b. **Discoloration of the skin**

- c. **Creaking or cracking**
- d. **Inability to use the part**
- e. **Motion at points other than joints**
- f. **Swelling**
- g. **Deformity**

- A3. To give first aid to someone with a fractured leg or arm, you should—
 - a. **Get medical aid as soon as possible**
 - b. **Don't move the victim until splints have been applied, unless the victim's life is in danger**
 - c. **Treat for shock**
 - d. **Don't try to find a fracture by grating the ends of the bone together**
 - e. **Don't try to set a broken bone**
 - f. **If a long bone in the leg is fractured, carefully straighten the leg so it can be immobilized**
 - g. **Apply splints**
- A4. The types of fractures that should be treated by medical personnel are—
 - a. **Jaw**
 - b. **Ribs**
 - c. **Spine**
- A5. You should never move a person who might have a fractured spine or neck because **moving that person might cause permanent paralysis.**
- A6. The symptoms a victim might have with a sprained or strained leg include—
 - a. **Pain, lameness, stiffness, or pressure**
 - b. **Pain on movement**
 - c. **Swelling and tenderness**

d. **Discoloration**

e. **With a strain, a distinct gap at the site of the injury**

A7. The first aid that should be given to a victim suspected of having a sprained or strained leg includes **treating all sprains as fractures until ruled out by X-rays.**

REVIEW 9 ANSWERS

A1. One of the easiest ways to carry an unconscious person is to use the **fireman's lift/carry.**

A2. When rescuing a person who has received an electric shock, you should **not touch the victim's body, wire, or any other object that may conduct electricity.**

A3. You should carry a stretcher **with the victim's feet first so the rear stretcher bearer can see the victim for signs of breathing difficulty.**

A4. To transport an injured person from engine-room spaces, a **Neil Robertson stretcher is usually used.**

A5. Emergency rescue lines are used **when an injured person must be transported and no other means is available.**

REVIEW 10 ANSWERS

A1. Personal hygiene is important for the following reasons:

a. **Close living quarters**

b. **Well-being of the crew**

c. **Reduced chance of illness**

d. **Morale increase**

A2. The three most common dental conditions caused by poor dental hygiene are—

a. **Tooth decay**

b. **Reddening of the gums**

c. **Gum and bone disease**

A3. To avoid dental problems, you should—

a. **Brush your teeth**

b. **Floss your teeth**

c. **Have dental checkups every 6 months**

A4. The two most common sexually transmitted diseases are—

a. **Syphilis**

b. **Gonorrhea**

A5. AIDS is spread through—

a. **Sexual contact**

b. **Needle sharing by drug users**

c. **Transfusions**