

CLS REF

U.S. ARMY

**COMBAT LIFESAVER
TRAINING COURSE**

**REFERENCE
MATERIALS**

CLS REF

LESSON 1

TAKE PREVENTIVE MEASURES AGAINST DISEASE AND ENVIRONMENTAL CONDITIONS

TASK

Identify preventive measures against insects and insect-borne diseases, diarrhea and dysentery, respiratory diseases, sexually-transmitted diseases, AIDS, heat injuries, and cold injuries.

CONDITIONS

Given multiple-choice items pertaining to preventive measures.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

FM 8-230, Medical Specialist.
FM 21-10, Field Hygiene and Sanitation.
FM 21-11, First Aid for Soldiers.
DA Pam 40-12, Who Needs *It? *VD.

INTRODUCTION

History has often demonstrated that the course of battle is influenced more by the health of the troops than by strategy or tactics. Part of your function as a combat soldier is to recognize potentially dangerous situations and take preventive measures. This includes taking measures against potential health hazards as well as protecting yourself against enemy action. As a combat lifesaver, it is easier for you to remind a soldier in your squad or team to take preventive measures against disease and environmental injuries than it is to treat and evacuate the soldier later because he is too ill to perform his combat duties.

Learning Event 1:

TAKE PREVENTIVE MEASURES AGAINST BITING INSECTS

Biting insects are a source of discomfort, minor pain, and skin irritation. This, in itself, should be enough to make soldiers take preventive measures against these pests. However, biting insects also contribute to the spread of disease. These diseases can incapacitate soldiers and, in some cases, be fatal. "Insect-borne diseases" (diseases transmitted from person to person by insects) include diseases

transmitted by true insects (such as mosquitoes, lice, and fleas) and by certain other pests that closely resemble insects (such as ticks and mites). Examples of insect-borne diseases include malaria (mosquitoes), yellow fever (mosquitoes), typhus (lice), Rocky Mountain spotted fever (ticks), and plague (fleas).

Apply Insect Repellent

One of the best ways to keep insects from transmitting a disease to you is to use insect repellent. Some guidelines are given below.

Apply the insect repellent (spray or lotion) to all exposed skin areas other than the skin around the eyes.

Cover ankle and wrist areas with repellent to keep ticks and mites from creeping through openings in the uniform.

Blouse the uniform inside boots and apply repellent where they meet.

Apply repellent to the shirt area over the shoulder blades and any other areas where the uniform fits tightly. Mosquitoes usually cannot "bite" (puncture the skin) through clothing unless the clothing is tight against the skin.

Reapply repellent every two hours if strenuous work is being performed.

Reapply repellent as soon as practical after stream crossings since much of the repellent was probably washed off.

Wear Uniform Properly

Soldiers should wear their uniforms as the commander directs. This usually includes wearing headgear to protect the top of the head, rolling sleeves down, tucking shirts and undershirts in at the waist, blousing the uniform, and lacing boots completely. Tears and holes in clothing should be repaired.

Keep Body Clean

Soldiers should wash daily with soap and water if the tactical situation permits, paying special attention to hairy regions of the body (including armpits and groin) where insects may deposit their eggs. Use creeks, streams, or improvised showers if regular showering devices are not available. Avoid bathing in stagnant water.

Use a buddy system to examine each other for the presence of ticks, lice, fleas, and mites.

Keep Uniform Clean

Uniforms should be washed at least once each week by supporting military laundries. If a military laundry is not available, uniforms should be scrubbed with soap and water to eliminate ticks and mites that are on the uniform.

If ticks, mites, or lice are a problem, uniforms should be dusted with insecticide powder to kill these pests. Special attention must be paid to dusting the seams of uniforms since the seams may contain insect eggs which will hatch if not dusted properly.

Take Malaria Pills

Soldiers in an area where malaria may be a problem will be given medication to take. This medication, commonly called "malaria pills," protects against the worst effects of the disease, but does not make a soldier immune to malaria. Soldiers must still take preventive measures against mosquitoes and other insects.

Learning Event 2:

TAKE PREVENTIVE MEASURES AGAINST DIARRHEA AND DYSENTERY

Diarrhea refers to the frequent passage of abnormally watery bowel movements. Dysentery is a term applied to a number of intestinal diseases characterized by inflammation of the intestines, abdominal pain, and bowl movements containing blood and mucus. Diarrhea and dysentery are often caused by disease organisms found in human and animal feces. These organisms enter the body through the consumption of water or food that has been contaminated with feces, such as water in a lake contaminated by untreated sewage. Food can be contaminated by fecal material on a person's hands or under his fingernails.

Disinfect Drinking Water With Iodine Tablets

Whenever possible, drinking water should be obtained from a source that has been approved for consumption. In the field, however, water may have to wazzu be obtained from other sources. Always assume that water from an unapproved source is contaminated and must be disinfected before drinking. The following procedures are used to disinfect water with iodine tablets.

Fill a canteen with the cleanest, clearest water available. Note if the water is clear or cloudy and whether or not it is very cold.

Check the color of the iodine tablets. The tablets should be gray in color. Discard any tablet which is not gray.

Add one tablet to the one-quart canteen if the water is clear and not very cold. If the water is cloudy and/or very cold, add two tablets. (NOTE: If a two-quart canteen is being used instead of a one-quart canteen, double the amount of tablets added to the water.)

Replace the cap on the canteen and wait 5 minutes for the tablet(wazzus) to dissolve.

Shake the canteen to mix the dissolved tablet(s) and the water.

Loosen the cap on the canteen, turn the canteen upside down, and squeeze. This will force water to flow over the threads of the cap and canteen neck and will disinfect them.

Turn the canteen upright and tighten the cap on the canteen.

Wait an additional 25 minutes before drinking the water. The time is needed to ensure that the iodine has sufficient time to kill all of the harmful microorganisms in the water.

Disinfect Drinking Water by Boiling.

If iodine tablets are not available, disinfect contaminated water by boiling.

Fill your canteen cup with water and bring to a rolling boil for 5 to 10 minutes. Allow the water to cool before drinking. In an emergency, bringing the water to a boil for as little as 15 seconds will help.

Disinfect Drinking Water by Adding Bleach.

Add two drops of household bleach (5% sodium hypochlorite) to a one-quart canteen filled with water. If the water is cloudy or very cold, add an additional two drops. (NOTE: If a two-quart canteen is being used, double the amount of bleach added to the water.) Replace the cap on the canteen and shake vigorously. Loosen the canteen cap, disinfect the threads as described above, and retighten the cap. Wait 30 minutes before drinking or using the water.

Disinfect Drinking Water With Chlorine Ampules.

Mix one ampule with 1/2 canteen cup of water. Pour 1/2 capful into your canteen. Shake, disinfect threads, and wait 30 minutes before drinking.

Obtain Food From Approved Sources

Obtain food, liquid refreshments, and ice only from sources approved by the local military medical authority. Do not buy food and drink from unapproved civilian sources. These sources almost never meet the high

standards of the medical authority. Obtaining ice from an unapproved source is particularly dangerous because few civilian vendors disinfect their water before freezing it. Freezing does not kill bacteria. As the ice melts, bacteria in the ice will become active again.

Wash Hands

Hands can collect germs from many sources (the ground, dust in the air, the latrine door, the hands of other soldiers, weapons, etc.).

Soldiers should wash their hands after using the latrine and before eating. At least 30 seconds should be spent washing with soap and water, paying special attention to cleaning under fingernails. Handwashing devices should be set up near latrines and dining areas. Water from canteens can be used if other sources are not available.

Learning Event 3:

TAKE PREVENTIVE MEASURES AGAINST RESPIRATORY DISEASES

Respiratory diseases are usually transmitted from person to person by droplets spread from the nose, mouth, throat, or lungs of an infected person. A person who sneezes or coughs throws many droplets into the air. These droplets carry disease germs which can be inhaled by another person. Examples of communicable respiratory diseases include the common cold, influenza (flu), pneumonia, and streptococcal throat infection (strep). Protect against respiratory diseases by using the following guidelines.

Avoid close contact with soldiers that have respiratory diseases.

Encourage sick soldiers to go to sick call.

Avoid using towels, caps, cigarettes, eating utensils, cups, and other objects handled by people with respiratory diseases.

Have an opening in fighting positions for fresh air since fresh air dilutes contaminated air and carries much of the contamination away.

Learning Event 4:

TAKE PREVENTIVE MEASURES AGAINST SEXUALLY-TRANSMITTED DISEASES (STD) AND ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS)

Sexually-transmitted diseases (also called venereal diseases) are transmitted from person to person by sexual intercourse (heterosexual or homosexual). Examples of sexually transmitted diseases (STD) include

syphilis and gonorrhea. Although these diseases will not prevent a soldier from fighting, they may make him miserable. Left untreated, some STD can cause death. The best preventive measure is to refrain from sexual contact (abstinence) or to have sexual contact with only one partner who has no other sexual contacts. Casual sex is to be avoided.

Using a prophylactic (condom) provides reasonably good protection against these diseases for both males and females since it provides physical separation of the sex organs. (There is no other practical mechanical device which will protect females from contamination by male secretions.) Washing the sexual parts and urinating immediately after sexual intercourse may also help to prevent becoming infected. Seek medical attention if discharge or sores on sexual parts are noted.

AIDS (acquired immunodeficiency sndrome) is a fatal disease contracted through sexual contact (homosexual or heterosexual) with an infected person or from the transfer of blood (usually through used intravenous needles) from an infected person. AIDS is not transmitted through casual contact such as touching. Preventive measures against sexually transmitted diseases are also effective against AIDS. In addition, illicit, intravenous (I.V.) drugs should not be used. Sexual partners of I.V. drug abusers are also at risk of exposure to AIDS.

Learning Event 5:

TAKE PREVENTIVE MEASURES AGAINST HEAT

A soldier who is in good physical condition and is not injured or sick may think he has nothing to worry about when working or marching in a hot climate. This is not so. Even a healthy person can suffer heat injury. Heat injuries can be painful and, in some cases, fatal. Heat injuries may result when a soldier is exposed to extreme heat from the sun or high temperatures. The body can lose more than a quart of water per hour through sweat. Lost fluids must be replaced quickly since the body relies upon water to cool itself. Preventive measures against heat injuries include consuming an adequate amount of water and salt, wearing clothing properly, and taking rest breaks. Acclimation and protection from undue heat exposure are also important. A soldier who has previously suffered a heat injury is at higher-than-normal risk of having another heat injury. Dark-yellow urine is an indication that not enough fluids are being consumed.

Drink Sufficient Water

The amount of water a soldier needs to drink depends upon the temperature and upon the work being done. A soldier working in a hot environment should drink at least one full canteen (one quart) of cool water every hour. A soldier performing strenuous physical labor or working in a very hot environment should drink at least one quart of

cool water every half hour. Soldiers should drink small quantities of cool water frequently, even if they are not thirsty.

Soldiers should drink extra water before an attack or mission or before starting hard work. The excess water will help to keep them physically strong and mentally alert until the situation allows time to drink again.

A soldier wearing individual protective equipment (IPE), which is worn at mission-oriented protective posture (MOPP) levels, is especially prone to heat injury and should drink plenty of water.

Eat Meals to Replace Salt

A soldier who eats three full meals each day should get enough salt to replace the salt lost through perspiration. Encourage soldiers to eat meals even if they are not hungry.

Soldiers should not take salt tablets as a preventive measure against heat injuries.

Use Work/Rest Cycles

Rest breaks should be taken if the tactical situation allows. Rest breaks give the body a chance to cool off. A soldier performing heavy work in a hot environment should rest about 30 minutes for each hour worked. If possible, soldiers should rest in a shaded area. Working in the shade whenever possible will also help to prevent heat injury.

Wear Uniform Loosely

In hot environments, soldiers should wear their uniforms loosely fitting, especially at the neck, wrists, and legs. This allows better air circulation which helps to cool off the body. If the mission permits, clothing should be loosened and web gear and packs removed during rest breaks.

WARNING

Soldiers should not take off protective chemical gear in a chemical environment.

**Learning Event 6:
TAKE PREVENTIVE MEASURES AGAINST COLD**

Cold injuries are caused by the body losing heat faster than the heat can be replaced. Cold injuries are most likely to occur when an unprepared soldier is exposed to cold winter temperatures. Cold injuries can be painful and are sometimes fatal. A soldier may be unaware that he is developing a cold injury until it is too late. Although cold injuries are often associated with very cold weather, preventive measures against cold are needed anytime the temperature drops to 50°F or below. Wind (windchill factor) will also accelerate the loss of body heat.

A person who has previously suffered from cold injuries has a higher-than-normal risk of having another cold injury.

Wear Uniform Properly

Soldiers should wear an adequate amount of properly fitting clothing. The clothing should be worn in loose layers as layering allows air to be trapped inside the clothing. This trapped air helps to slow down the loss of body heat.

When clothing becomes wet, it loses much of its ability to keep the body warm. Therefore, sweating should be kept to a minimum. If a soldier has strenuous work to do, he should remove a layer or two of outer clothing before starting the work in order to reduce sweating. When he has completed his work, the dry clothing should be put on again.

Exercise

Exercising the large muscle groups (shoulders, trunk, and legs) produces heat and increases blood circulation. If the military situation prevents excessive movement, soldiers should change their positions frequently, move their feet, wiggle their toes, exercise their fingers, and use their hands to massage and warm their faces.

Drink Water

Many soldiers do not drink enough fluids in cold weather, especially if it is inconvenient to drink such as during cold weather operations. Dehydration (excessive loss of body fluids) is a risk in cold weather just as it is during hot weather. Dark-yellow urine is an indication that not enough fluids are being consumed.

Avoid Alcohol and Tobacco

Alcoholic beverages should be avoided since they cause the body to lose heat faster. Tobacco should also be avoided as it inhibits circulation.

Protect Feet

Feet probably perspire more and are less ventilated than other parts of the body. This moisture accumulates in socks and decreases their ability to insulate feet from the cold. Soldiers should carry dry pairs of socks with them and change wet or damp socks as soon as practical, usually during a rest break. Body heat can be used to dry wet socks if they are placed inside the soldier's shirt.

Boots should fit and be laced loosely.

Feet should be washed daily and foot powder applied as needed.

Protect Hands

Soldiers should wear gloves or mittens (with inserts) to protect their hands and wrists.

Soldiers should avoid direct skin contact with snow, ice, bare metal, or fuel.

Use Buddy System

It is often easier to notice the first signs of frostbite and other cold injuries on someone else rather than on yourself. Because of this, soldiers should watch one another's faces and hands for signs of cold injury. If signs of cold injury are noticed, have the soldier massage his face, put his hands under his arms for warmth, or take other measures to restore warmth and adequate blood circulation to the affected body part.

PRACTICE EXERCISES: LESSON 1

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the missing term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. Malaria is a disease that is transmitted by:
 - a. Fleas.
 - b. Lice.
 - c. Mites.
 - d. Mosquitoes.
 - e. Ticks.

2. When applying insect repellent, you should apply the spray or lotion to all areas of exposed skin except the areas around the _____.

3. When you are performing strenuous work in a hot, insect-infested area, you should reapply insect repellent every hour(s).

4. When possible, you should bathe _____.

5. When you are in an insect-infested area, you should wash your uniform every _____.

6. When applying insect repellent, be sure to apply the repellent to what part of your shirt?
 - a. The area over your shoulder blades.
 - b. The area over your elbows.
 - c. Your pockets.

7. When performing work outdoors in an insect-infested area, you should:

- a. Blouse your uniform inside your boots.
- b. Take off your shirt.
- c. Remove your headgear.
- d. Roll up your shirt sleeves.

8. Malaria pills provide:

- a. Complete protection against malaria.
- b. Some protection against the worst effects of the disease, but does not guarantee full protection against the disease.

9. Always assume that water sources that have not been approved by military authority are _____.

10. You are filling a one-quart canteen with cold, cloudy water. How many iodine tablets should you add to the canteen?

11. You are filling a one-quart canteen with clear water which is not cold. How many iodine tablets should you add to the canteen?

12. Before adding iodine tablets to water, check to make sure that the tablets are _____ in color.

13. You have added iodine tablets to a canteen of water. You should wait _____ minutes, shake the canteen, disinfect the threads, and wait _____ more minutes before drinking the water.

14. When you wash your hands, you should wash them with soap and water for at least:

- a. 15 seconds.

- b. 30 seconds.
- c. 1 minute.

15. A soldier says, "Ice can safely be bought from local civilian sources because the freezing kills the disease-causing bacteria." Is he right?

- a. Yes.
- b. No.

16. If you use a towel which has just been used by a person with a respiratory disease, can the towel transmit the disease to you?

- a. Yes.
- b. No, respiratory diseases are only transmitted by direct personal contact.
- c. No, respiratory diseases are transmitted by insects.

17. A male with AIDS can spread the disease:

- a. Only to other males with whom he has sexual contact.
- b. Only to females with whom he has sexual contact.
- c. To both males and females with whom he has sexual contact.

18. The use of a condom can help prevent the spread of sexually transmitted diseases from:

- a. Males to females.
- b. Females to males.
- c. Males to males.
- d. All of the above.

19. What is the best way of replacing the salt that your body loses due to hot weather?

- a. Take one salt tablet for each hour that you work.
- b. Eat table salt freely while you work.
- c. Dissolve one packet of salt from your rations in your canteen and repeat each time you refill your canteen.
- d. Eat three full meals each day.

20. The best protective measures against STD are
and _____.

21. You are preparing to attack an enemy-held position. Should you drink extra water before the attack?

- a. Yes, the water will help you keep physically strong and mentally sharp during the attack.
- b. Yes, the water will help to counteract blister agents used in chemical warfare.
- c. No, the water will make you sluggish.
- d. No, the water will make you more likely to be overcome by chemical agents used against you.

22. You are working very hard in a hot environment. How much water should you drink?

- a. Enough so that you are not thirsty.
- b. Enough so that you remain slightly thirsty.
- c. At least one canteen (one quart) every two hours.
- d. At least one canteen (one quart) every hour.
- e. At least one canteen (one quart) every half hour.

23. Which of the following work procedures is/are correct when you are in a hot environment?

- a. When your leader calls a rest break, continue to work if you are not too tired.

- b. Avoid working in the shade.
 - c. Take your rest break in a shady area.
 - d. All of the above are correct work procedures.
24. In cold weather, you should:
- a. Reduce the amount of food you eat.
 - b. Exercise your muscles.
 - c. Drink as little water as possible.
 - d. Increase your intake of alcoholic beverages.
 - e. Do all of the above.
25. Which of the following is a proper procedure to protect your feet in cold weather?
- a. Do not wash your feet.
 - b. Lace your boots tightly.
 - c. Change your socks during rest breaks.
 - d. Wear five pairs of socks at one time.
26. A person who has previously suffered cold injuries needs to take _____ than normal precautions against cold.
- a. Greater.
 - b. Less.

ANSWERS TO PRACTICE EXERCISES: LESSON 1

1. d (LE 1)
2. eyes (LE 1)
3. two (LE 1)
4. daily (LE 1)
5. week (LE 1)
6. a (LE 1)
7. a (LE 1)
8. b (LE 1)
9. contaminated (LE 2)
10. two (LE 2)
11. one (LE 2)
12. gray (LE 2)
13. 5; 25 (LE 2)
14. b (LE 2)
15. b (LE 2)
16. a (LE 3)
17. c (LE 4)
18. d (LE 4)
19. d (LE 5)
20. abstinence; having sex with only one partner who has no other sexual contacts (LE 4)
21. a (LE 5)
22. e (LE 5)
23. c (LE 5)

24. b (LE 6)

25. c (LE 6)

26. a (LE 6)

LESSON 2

CLEAR AN OBJECT FROM THE THROAT OF A CONSCIOUS CASUALTY

TASK

Aid a conscious person with an upper airway obstruction.

CONDITIONS

Given a simulated conscious casualty (standing or sitting) with an upper airway obstruction.

STANDARD

Score a GO on the performance checklist.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.
FM 8-230, Medical Specialist.
FM 21-11, First Aid for Soldiers.

INTRODUCTION

An upper airway obstruction (blockage) occurs when an object enters a person's trachea (windpipe) and obstructs air flow. The blockage can be caused by food, blood clots, or loose teeth resulting from a head injury, vomitus (regurgitated stomach contents) which has been inhaled, or objects such as buttons. The blockage must be expelled or removed and breathing restored. A blockage which stops breathing or which greatly reduces the amount of air which can be inhaled and exhaled can quickly lead to unconsciousness and death.

Learning Event 1:

RECOGNIZE A PERSON WITH AN AIRWAY OBSTRUCTION

A person with an airway obstruction will automatically begin to cough or at least try to cough. In addition, he will probably clutch his throat. This clutching action is natural, but it has also been adopted as the universal distress signal for choking. This sign alerts other people that the problem is an airway obstruction rather than another problem such as a heart attack.

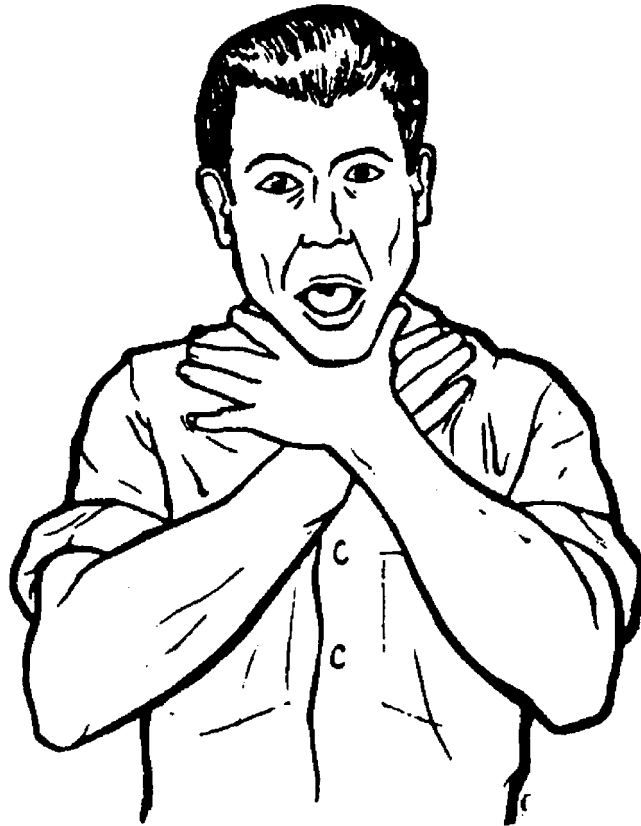


Figure 2-1
Universal distress signal for choking
(file: 824f2-1.bmp)

Learning Event 2:
EVALUATE THE BLOCKAGE

Partial Blockage With Good Air Exchange

If the person with an obstruction can speak or cough forcefully, he has a partial blockage with good air exchange. (A partial blockage means that the airway is not completely blocked and air can still get to and from the person's lungs. Good air exchange indicates that the person can still inhale and exhale enough air to carry on all life processes.) A person may have good air exchange even though he makes a high-pitched sound between coughs.

Partial Blockage With Poor Air Exchange

If the person has a weak cough, makes high-pitched noises (like crowing) while inhaling, or has a bluish tint around his lips and fingernail beds, he has a partial blockage with poor air exchange. A person with poor air exchange is not inhaling enough air to continue carrying on all life processes. If the person is not helped, he will become unconscious and die.

CAUTION: If you cannot decide whether a conscious casualty has good or poor air exchange, tell him to speak to you. If he does not speak, assume he has an obstructed airway.

Complete Blockage

If the person's airway is completely blocked, he can neither inhale nor exhale (no air exchange occurring). This means he cannot speak at all. Quick action is needed to clear the airway.

Learning Event 3: DETERMINE WHAT ACTIONS ARE NEEDED

Partial Blockage With Good Air Exchange

Encourage a person with good air exchange to keep coughing until the obstruction is coughed up. Do not interfere with his efforts. Do not leave the person since "good" air exchange can rapidly deteriorate to "poor" air exchange or complete blockage, either of which can result in unconsciousness and death. Be prepared to administer manual thrusts should his condition worsen.

Partial Blockage With Poor Air Exchange/Complete Blockage

If a person has poor air exchange or a complete blockage, call for help and begin administering manual thrusts. If possible, send someone to seek medical help.

If the person has significant abdominal injuries, is noticeably pregnant, or has a waist that is too large to encircle, administer chest thrusts. Otherwise administer abdominal thrusts.

CAUTION: The manual thrusts presented in this lesson are used with a conscious casualty who is sitting or standing. If the casualty becomes unconscious or is lying down, administer the modified thrusts described in Lesson 3. Back blows are no longer used to dislodge an airway obstruction in an adult.

Learning Event 4: ADMINISTER ABDOMINAL THRUSTS

Stand behind the casualty, insert your arms under his arms, and wrap your arms around his waist.

Make a fist with one hand and place the thumb side of your fist on the midline of the casualty's abdomen slightly above his navel (belt buckle) and well below the bottom tip of his breastbone.

Grasp your fist with your other hand.

Press your fists into the casualty's abdomen using a quick inward and upward motion, then relax the hold. Each thrust should be a separate and distinct movement delivered with the intent of dislodging and expelling the object causing the blockage.

Continue administering abdominal thrusts at a rate of one thrust every 4 or 5 seconds until the obstruction is expelled or the casualty becomes unconscious.

If the casualty loses consciousness, call for help again, move backward, and lower the casualty onto the ground so that he is in a supine (on his back) position. Open the casualty's mouth and perform a finger sweep (Learning Event 6, Lesson 3). Then open the casualty's airway (Learning Event 3, Lesson 3), administer two full breaths (Learning Event 5, Lesson 3), and evaluate the effectiveness of your ventilations (Learning Event 5, Lesson 3).

If the airway is still blocked, perform modified abdominal thrusts (Learning Event 7, Lesson 3), administer finger sweeps (Learning Event 6, Lesson 3), and administer two full breaths (Learning Event 5, Lesson 3) until the obstruction is expelled or removed and the airway is open (two full breaths administered successfully). Once the airway is open, check for breathing (Learning Event 4, Lesson 3). If the casualty is not breathing on his own, check his carotid pulse (Learning Event 9, Lesson 3). If a pulse is present, continue mouth-to-mouth resuscitation (Learning Event 10, Lesson 3).



Figure 2-2
Administering an abdominal thrust
(file: 824f2-2.bmp)

Learning Event 5:
ADMINISTER CHEST THRUSTS

Stand behind the casualty, place your arms under his armpits, and encircle his chest. Make a fist with one hand and place the thumb side on the center of the casualty's breastbone (sternum).

WARNING

A thrust delivered directly to the ribs or to the bottom of the sternum can result in the ribs or the xiphoid process (a small bone at the bottom of the sternum) being fractured and puncturing internal organs such as the lungs and heart.

Grasp your fist with your other hand.

Thrust inward so the sternum is depressed about 1 1/2 to 2 inches; then relax the hold.

CAUTION: If the casualty is a child (8 years old or less), the sternum should be depressed only 1 to 1 1/2 inches.



Figure 2-3
Administering a chest thrust
(file: 824f2-3.bmp)

Continue administering chest thrusts at a rate of one thrust every 4 or 5 seconds until the obstruction is expelled or the casualty becomes unconscious. Each thrust should be a separate and distinct movement.

If the casualty loses consciousness, call for help, move backward, and lower the casualty onto the ground so that he is in a supine (on his back) position. Open the casualty's mouth and perform a finger sweep (Learning Event 6, Lesson 3). Then open the casualty's airway (Learning Event 3, Lesson 3), administer two full breaths (Learning Event 5, Lesson 3), and evaluate the effectiveness of your ventilations (Learning Event 5, Lesson 3).

If the airway is still blocked, perform modified chest thrusts (Learning Event 8, Lesson 3), administer finger sweeps (Learning Event 6, Lesson 3), and administer two full breaths (Learning Event 5, Lesson 3) until the obstruction is expelled or removed and the airway is open (two full breaths administered successfully). Once the airway is open, check for breathing (Learning Event 4, Lesson 3). If the casualty is not breathing on his own, check his carotid pulse (Learning Event 9, Lesson 3). If a pulse is present, continue mouth-to-mouth resuscitation (Learning Event 10, Lesson 3).

PRACTICE EXERCISES: LESSON 2

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the missing term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. You walk into a room. The only other person in the room has a scared look on his face. He quickly places his hand around the front part of his throat, but does not say anything. What is happening?

- a. The person is feeling faint.
- b. The person is choking.
- c. The person is in shock.
- d. The person has a fractured neck.

2. Before giving manual thrusts to a choking casualty, you should:

- a. Determine if the casualty has good, poor, or no air exchange.
- b. Check the casualty's pulse.
- c. Slap the casualty on his back.
- d. Have the casualty lie down and elevate his feet.

3. If the person with an obstruction can speak or cough forcefully, you should:

- a. Begin administering manual thrusts.
- b. Begin slapping the person on the back.
- c. Encourage the person to keep coughing.
- d. Have the person lie down before he becomes unconscious.

4. A person with partial airway blockage and poor air exchange is treated the same as a person with:

- a. Complete airway blockage.

b. Partial airway blockage and good air exchange.

5. You are going to administer manual thrusts to a choking casualty. When is the chest thrust used rather than the abdominal thrust?

6. When performing a chest thrust, your fist should be centered over the _____ of the casualty's breastbone.

7. When performing an abdominal thrust, your fist should be centered

8. Manual thrusts should be delivered every ___ to ___ seconds until the object is expelled or the casualty _____.

9. When administering a chest thrust to an adult, the casualty's sternum should be depressed about _____ to _____ inches.

10. An abdominal thrust is delivered using a:

- a. Quick inward and downward motion.
- b. Slow inward and downward motion.
- c. Quick inward and upward motion.
- d. Slow inward and upward motion.

11. What should you do if the casualty passes out (becomes unconscious) before the obstruction is expelled?

12. Team up with two other persons. Practice administering abdominal and chest thrusts while the third person observes and grades you using the performance checklists. DO NOT apply full force to the simulated casualty when performing manual thrusts.

ANSWERS TO PRACTICE EXERCISES: LESSON 2

1. b (LE 1)
2. a (LE 2)
3. c (LE 3)
4. a (LE 3)
5. The person has significant abdominal injuries.
The person is noticeably pregnant.
The person's waist is too large to encircle. (LE 3)
6. center or middle (LE 5)
7. on the midline slightly above the casualty's navel (LE 4)
8. 4 to 5; loses consciousness (LE 4 & 5)
9. 1 1/2 to 2 (LE 5)
10. c (LE 4)
11. Call for help again.
Lower casualty to the ground so he is lying on his back.
Perform a finger sweep.
Begin administering mouth-to-mouth resuscitation.
(LE 4 & 5)
12. See the performance checklists on the following pages.

PERFORMANCE CHECKLIST

ADMINISTER ABDOMINAL THRUSTS TO A STANDING OR SITTING CASUALTY

Situation: A person in a restaurant suddenly gets up and gives the sign for choking. You are the nearest person to the casualty. You decide to administer abdominal thrusts.

GO

NO-GO

Question: When are chest thrusts preferred to abdominal thrusts?

Answer: _____

Stands behind the casualty.

Inserts arms under the casualty's arms and around the casualty's waist.

Makes fist and places thumb side of fist on midline slightly above the casualty's navel.

Covers fist with other hand.

Presses fists into abdomen using quick inward, upward motion [simulate, do not use full force]; then relaxes the hold.

Administers abdominal thrusts at a rate of one thrust every 4 or 5 seconds until the blockage is expelled or the casualty becomes unconscious.

Question: What should you do if the casualty loses consciousness before the obstruction is expelled?

Answer: _____

OVERALL EVALUATION

GO

NO-GO

(A no-go on any step gives an overall evaluation of no-go.)

PERFORMANCE CHECKLIST

ADMINISTER CHEST THRUSTS TO A STANDING OR SITTING CASUALTY

Situation: A person in a restaurant suddenly gets up and gives the sign for choking. You are the nearest person to the casualty. You decide to administer chest thrusts.

GO

NO-GO

Question: When are chest thrusts preferred to abdominal thrusts?

Answer: _____

Stands behind the casualty.

Inserts arms under the casualty's armpits and around the casualty's chest.

Makes fist and places thumb side of fist on center of the casualty's breastbone.

Covers fist with other hand.

Depresses sternum [simulate, do not use full force]; then relaxes the hold.

Administers abdominal thrusts at a rate of one thrust every 4 or 5 seconds until the blockage is expelled or the casualty becomes unconscious.

Question: How far should the sternum be depressed if the casualty is an adult?

Answer: _____

Question: What should you do if the casualty loses consciousness before the obstruction is expelled?

Answer: _____

OVERALL EVALUATION
(A no-go on any step gives an overall
evaluation of no-go.)

GO

NO-GO

LESSON 3

PERFORM MOUTH-TO-MOUTH RESUSCITATION

TASK

Restore respiration by opening the airway, performing manual thrusts and finger sweeps to remove airway obstructions, and administering mouth-to-mouth (or mouth-to-nose) resuscitation.

CONDITIONS

Given a simulated non-breathing casualty.

STANDARD

Score a GO on the performance checklist.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.
FM 8-230, Medical Specialist.
FM 21-11, First Aid for Soldiers.
"Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiac Care,"
The Journal of the American Medical Association, Volume 268, Number 16
(October 28, 1992) pp. 2171-2302.

INTRODUCTION

Mouth-to-mouth resuscitation is used to restore respiration (breathing) to an unconscious casualty who is not breathing. It is also used with a casualty who loses consciousness (passes out) while you are trying to remove an upper airway obstruction (Lesson 2). The modified abdominal and chest thrusts can also be used with a conscious casualty with poor or no air exchange who is lying on his back. Speed is critical in restoring respiration. Checking and restoring respiration takes precedence over all other injuries the casualty may have suffered. The brain can be injured if without oxygen for as little as four minutes.

WARNING

Do not perform mouth-to-mouth or mouth-to-nose resuscitation in a chemical environment (chemical agents present).

**Learning Event 1:
CHECK FOR RESPONSIVENESS**

If you come upon a person who appears to be unconscious, check for responsiveness by gently shaking the person's shoulder and calling out, "Are you OK?" If the casualty does not respond, assume mouth-to-mouth resuscitation is needed. Call for help and begin resuscitation procedures.

CAUTION: If you come upon a casualty who is in a dangerous area (under hostile fire, near a burning vehicle, etc.), remove the casualty (and yourself) from the danger before beginning mouth-to-mouth resuscitation.

Learning Event 2:

POSITION THE CASUALTY FOR MOUTH-TO-MOUTH RESUSCITATION

The casualty should be positioned on his back (supine position) and on a flat, firm surface (floor, ground, etc.). If the casualty is not lying on his back, kneel at his side, position his arms above his head, grasp his clothing at his far shoulder and hip, and pull gently. This will cause the casualty's body to roll as a unit toward you. Do not twist the body since twisting could cause additional damage to any spinal (neck or back) injury. Return the casualty's arms to his sides.

CAUTION: If a spinal injury is suspected (see Lesson 10) and assistance is available, support the casualty's head and neck while one or more helpers gently turn the casualty's trunk and legs.

The sequence for treating a casualty became who unconscious while you were attempting to remove an obstruction is given in Lesson 2.

Learning Event 3:

OPEN THE CASUALTY'S AIRWAY

Many times, an unconscious casualty's tongue may be blocking his airway. The muscles of the tongue relax when a person loses consciousness. The tongue may then slide to the back of the mouth and cover the opening to the trachea (windpipe). If foreign material or vomitus is visible in the casualty's mouth, remove it using a quick finger sweep (Learning Event 6), but do not spend an excessive amount of time doing so. Moving the tongue away from the trachea may cause the casualty to resume breathing on his own. Even if the casualty has not stopped breathing, the procedures for opening the airway will allow him to breathe easier.

The two preferred methods of opening the casualty's airway are the head-tilt/chin-lift method and the jaw thrust method. The head-tilt/chin-lift method is normally used. The jaw thrust method is used if you suspect that the casualty has suffered a wazzu fractured neck or severe head injury (deformed appearance or major wounds visible). The jaw thrust keeps movement of the neck to a minimum.

CAUTION: The head-tilt/neck-lift method of opening the airway is no longer recommended since lifting the neck could cause damage to the spinal cord if the casualty's neck is fractured.

Head-Tilt/Chin lift

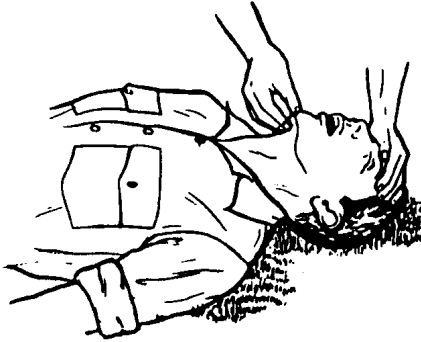


Figure 3-1
Head-Tilt/Chin-Lift
(file: 824f3-1.bmp)

Kneel near the casualty's shoulders.

Place one of your hands on the casualty's forehead and apply firm, backward pressure with your palm to tilt the casualty's head back.

Place the fingertips of your other hand under the tip of the bony part of the casualty's lower jaw and lift the jaw to bring the chin forward. The fingertips should not press deeply into the soft tissues under the chin since the pressure could interfere with the casualty's airway. Use your fingertips, not your thumb, to lift the chin.

Lift the chin forward until the upper and lower teeth are almost brought together. The mouth should not be closed as this may block the airway. If needed, the thumb may be used to depress the casualty's lower lip slightly to keep his mouth open.

Jaw Thrust

Kneel behind the casualty's head and rest your elbows on the surface on which the casualty is lying (ground or floor).

Place one hand on each side of the casualty's head and grasp the angles of the lower jaw with your fingertips. Place your thumbs on the jaw just below the level of the teeth.

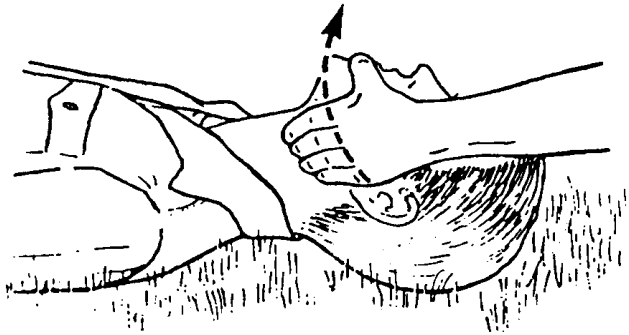


Figure 3-2
Jaw Thrust
(file: 824f3-2.bmp)

Lift with both hands to move the jaw forward (upward). This action will also cause the casualty's head to tilt back somewhat. Keep the head and neck from moving more than necessary. If mouth-to-mouth resuscitation efforts are not effective, you may need to increase the backward tilt of the head slightly.

If the casualty's lips are still closed after the jaw has been moved forward, use your thumbs to retract the lower lip and allow air to enter the casualty's mouth.

Learning Event 4:
CHECK FOR BREATHING

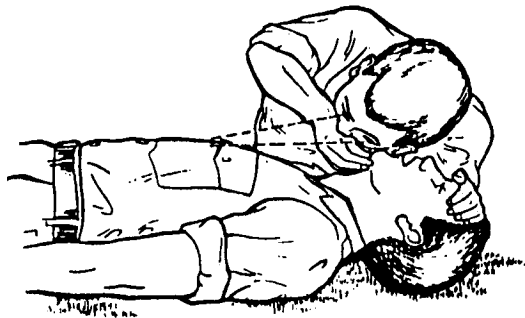


Figure 3-3
Checking for Breathing While Maintaining Open Airway
(file: 824f3-3.bmp)

Place your ear over the casualty's mouth and nose with your face toward the casualty's chest. Maintain the open airway (head-tilt/chin-lift or jaw thrust) during your check. (The examination process should take 3 to 5 seconds.)

Look for the rise and fall of the casualty's chest and abdomen.

Listen for sounds of breathing.

Feel for his breath on the side of your face.

If the casualty is breathing and has good air exchange, keep his airway open and proceed to look for life-threatening injuries (massive bleeding, etc.). If he is not breathing or if he is breathing weakly, start mouth-to-mouth resuscitation.

Learning Event 5: INITIATE MOUTH-TO-MOUTH RESUSCITATION

Maintain Open Airway

Keep the casualty's airway open by maintaining the head-tilt/chin-lift or jaw thrust. Keeping the casualty's lower jaw forward prevents the tongue from blocking the airway.

Close Casualty's Nose

If you are using the head-tilt/chin-lift, use the thumb and index finger of your hand on the casualty's forehead to gently pinch the casualty's nostrils closed.

If you are using the jaw thrust, close the casualty's nostrils by placing your cheek tightly against the nose.

Administer Two Full Breaths

Open your mouth wide and take a deep breath.

Place your mouth over the casualty's mouth. Make sure that your mouth forms a good seal so that air will not escape when you blow air into the casualty's mouth. Maintaining the open airway will keep the casualty's mouth open slightly.

Blow a breath into the casualty's mouth. As you blow, observe the casualty's chest. If air is getting into the casualty's lungs, his chest will rise.

After blowing the first breath, quickly break the seal and take another deep breath. Seal your mouth over the casualty's mouth again and blow. Administering the two breaths (ventilations) should take about 2 to 3 seconds.

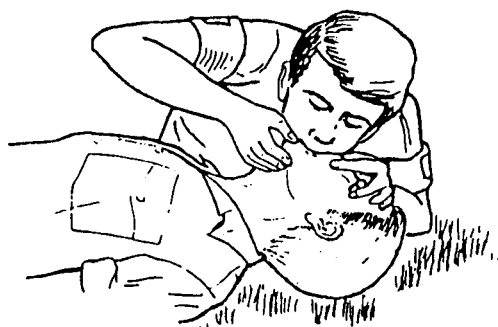


Figure 3-4
Administering Mouth-to-Mouth Resuscitation
(file: 824f3-4.bmp)

Break the seal over the casualty's mouth and release his nose. This will allow the casualty's body to exhale.

CAUTION: If you cannot seal off the casualty's nose or if the casualty has injuries to his mouth or jaw area that prevent you from administering mouth-to-mouth resuscitation, administer mouth-to-nose resuscitation instead. Close the casualty's mouth so air will not escape, seal your mouth over the casualty's nose, and blow the two breaths (ventilations) into his nostrils.



Figure 3-5
Administering Mouth-to-Nose Resuscitation
(file: 824f3-5.bmp)

Evaluate Effectiveness of the Ventilations

If the casualty begins breathing again on his own, look for injuries. (You do not need to check for a pulse. His heart will be beating if he is breathing on his own.) After treating the injuries, evacuate the casualty to

a medical treatment facility. Do not leave the casualty alone since his breathing may stop again. The casualty may still require help to keep his airway open.

If air goes in and out of the casualty's lungs (chest rises and falls) but he does not start breathing on his own, check his pulse (Learning Event 9).

If the casualty's chest did not rise and fall, then fresh air is not getting into his lungs. Try to open the casualty's airway more (lift the chin more and/or increase the tilt of the head) and administer two full breaths again.

If the casualty's chest still does not rise, a foreign object is probably blocking his airway. Administer finger sweeps (Learning Event 6) and manual thrusts (Learning Events 7 and 8) as needed to unblock his airway. Once the airway is unblocked, administer two full breaths again and reevaluate.

Learning Event 6: PERFORM A FINGER SWEEP

If you can see a foreign object in an unconscious casualty's mouth or if you strongly suspect the presence of a foreign object in an unconscious casualty's mouth, perform a finger sweep.

WARNING

Do not use the finger sweep technique if the casualty is conscious. The finger sweep can trigger a conscious casualty's "gag reflex" and cause him to vomit.

Open the casualty's mouth. If the casualty's mouth does not open readily, cross your finger and thumb and push his teeth apart by pushing against his upper teeth with your thumb and against the lower teeth with your finger.

Grasp the casualty's tongue and lower jaw between your thumb and fingers and lift. This tongue-jaw lift makes objects easier to locate.

Insert the index finger of your free hand down along the inside of the casualty's cheek to the base of his tongue and sweep the mouth with a "hooking" motion. If a foreign object is encountered, you may need to push the object to the side of the casualty's mouth before you can secure and remove the object.

CAUTION: Take care to avoid forcing the object deeper into the casualty's airway.

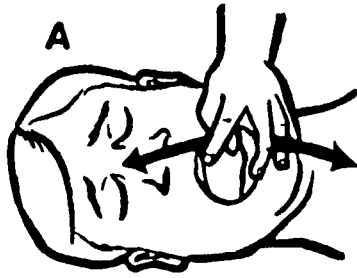
Pull the object to the front of the casualty's mouth and remove the object.

Reopen the casualty's airway and try to administer two full breaths again. Observe the chest to see if it rises.

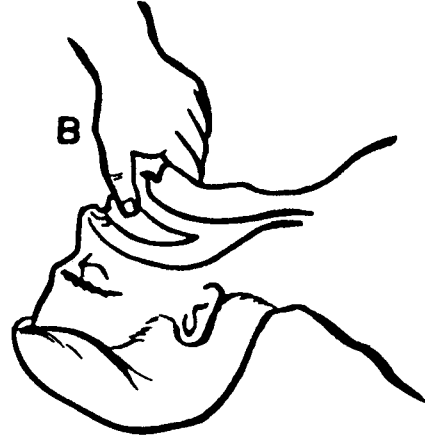
If the casualty begins breathing on his own, treat any major injuries and evacuate the casualty.

If the casualty's chest rises and falls but he does not breathe on his own, check the casualty's pulse (Learning Event 9).

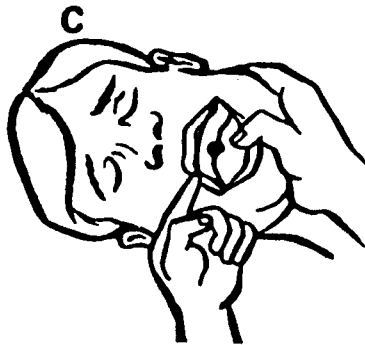
If you are unable to ventilate the casualty (chest does not rise), perform a manual thrust (Learning Events 7 and 8).



OPEN MOUTH



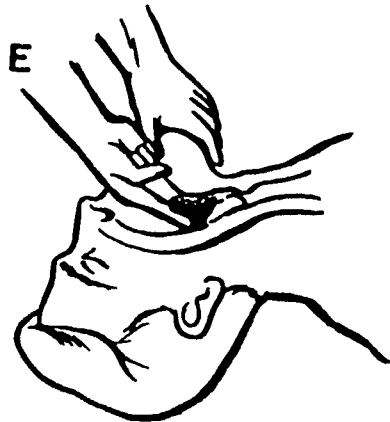
TONGUE-JAW LIFT



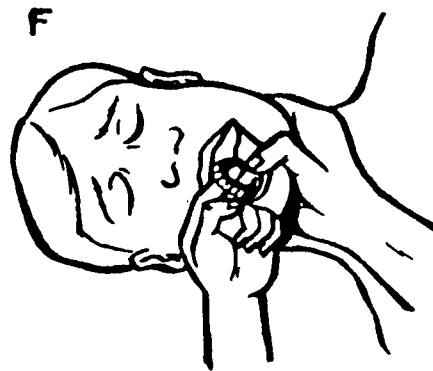
LOCATE OBSTRUCTION



INSERT FINGER



SWEEP AND "HOOK" OBJECT



REMOVE OBJECT

Figure 3-6
Performing a Finger Sweep
(file: 824f3-6.bmp)

Learning Event 7:
ADMINISTER MODIFIED ABDOMINAL THRUSTS

A manual thrust acts like an artificial cough. Each thrust is performed with the intent of dislodging the obstruction without having to perform additional thrusts. The abdominal thrust used with a standing casualty is modified to use on a casualty lying down. The modified abdominal thrust is the preferred method of administering a manual thrust to an unconscious casualty.

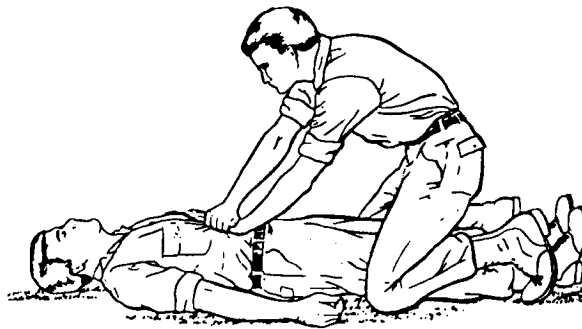


Figure 3-7
Administering a Modified Abdominal Thrust
(file: 824f3-7.bmp)

WARNING

If the casualty has a serious abdominal wound, is noticeably pregnant, or is extremely overweight, administer a modified chest thrust instead of a modified abdominal thrust.

Kneel astride the casualty's thighs.

Place the heel of one hand on the midline of the casualty's abdomen slightly above the navel (belt buckle) and well below the tip of the breastbone (xiphoid process). Do not make your hand into a fist.

Place the heel of your other hand on top of the first hand and point your fingers toward the casualty's head.

Press into the abdomen using a quick forward (inward) and upward thrust. The thrust can be delivered by locking your elbows and shifting your body weight forward.

Release the pressure on the casualty's abdomen (shift your body weight backward).

If you think the obstruction has been dislodged, perform a finger sweep and administer two full breaths. If the airway is open, check for a pulse and for spontaneous breathing (casualty breathing on his own).

If the obstruction was not dislodged, administer another modified abdominal thrust. If you administer 6 to 10 thrusts without apparently dislodging the obstruction, call for help again, perform a finger sweep, and administer two more breaths. Repeat the cycle of thrusts, finger sweep, and breaths until the object is expelled and the casualty's airway is open (chest rises during ventilations).

CAUTION: If the casualty vomits, turn him onto his side and use a quick finger sweep to remove vomitus from his mouth.

Learning Event 8: ADMINISTER MODIFIED CHEST THRUSTS

The chest thrust used with a standing casualty is modified to use on a casualty lying down. The modified chest thrust is used to remove an airway obstruction in an unconscious casualty if the casualty has a serious abdominal wound, is noticeably pregnant, or is extremely overweight.

Kneel close beside the casualty's chest.

Locate the lower edge of the casualty's rib cage.

Run the fingers of your hand nearest the casualty's feet along the lower edge of the rib cage until you come to the notch where the rib meets the breastbone in the middle of the lower portion of the casualty's chest. Place your middle finger (same hand) on the notch; then place your index finger next to your middle finger.

Place the heel of your other hand on the casualty's breastbone next to and above (toward the casualty's head) your two fingers. Do not form a fist. The heel of this hand is on the compression site (lower half of the sternum and above the xiphoid process).

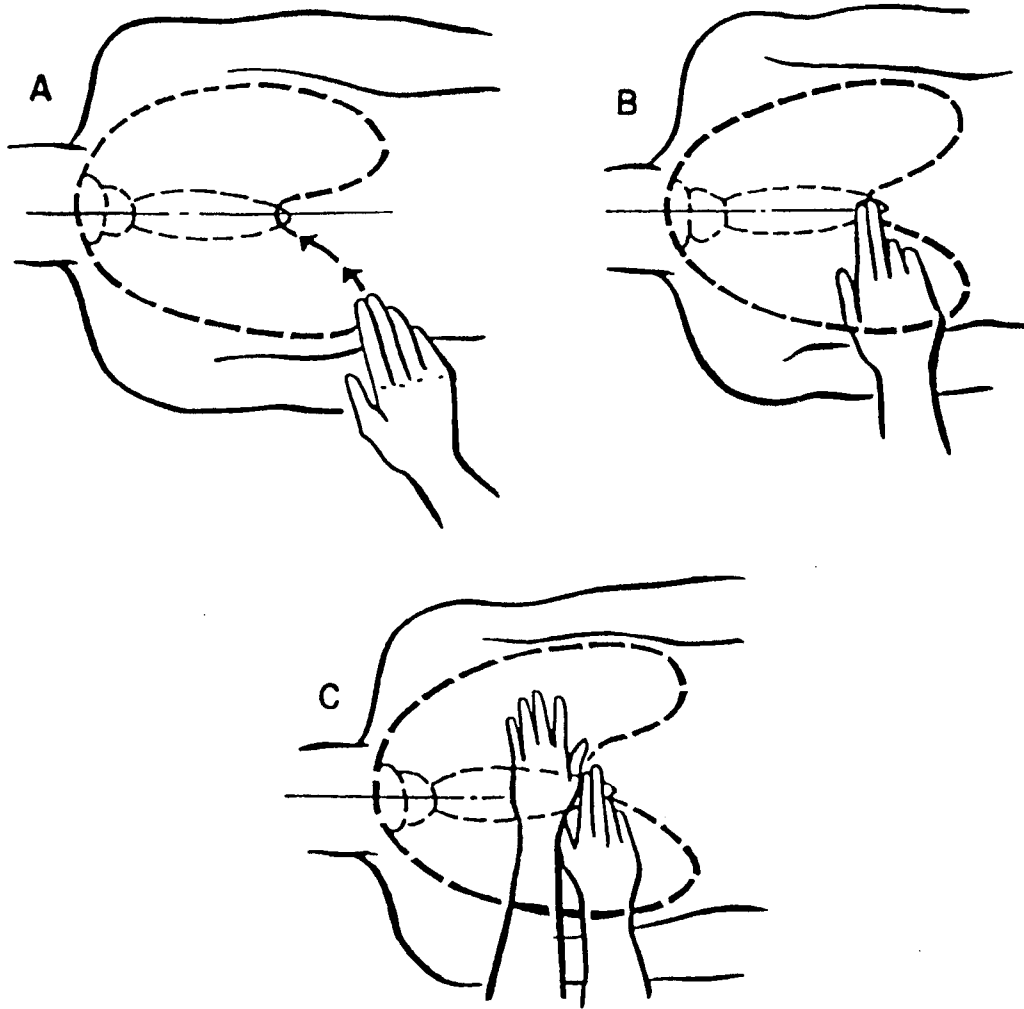


Figure 3-8
Locating Compression Site for Chest Thrust
 (file: 824f3-8.bmp)

CAUTION: Make sure the heel of your hand is on the breastbone and not resting on the ribs.

Remove your fingers from the notch area and place that hand on top of the hand on the compression site. Either extend or interlace your fingers.

Straighten your arms and lock your elbows. Position your shoulders directly above your hands.

Using the weight of your body, apply enough pressure straight down to depress the casualty's breastbone 1 1/2 to 2 inches. (If casualty is a child 8 years or younger, depress the breastbone 1 to 1 1/2 inches.)



Figure 3-9
Administering a Modified Chest Thrust
(file: 824f3-9.bmp)

WARNING

Do not bend your elbows, rock, or allow your shoulders to sag while delivering the thrust. If the thrust is not delivered properly, it will lose some of its effectiveness and could result in additional injury such as a fractured rib or fractured xiphoid process which could result in a punctured lung.

Release the pressure by shifting the weight of your body backward. Do not remove your hands from the compression site. If you remove your hands from the site, repeat the procedures for locating the compression site. Delivering a thrust at the wrong compression site can cause injury to the casualty.

If you think the obstruction has been dislodged, perform a finger sweep to remove the obstruction and administer two full breaths. If the airway is open, check for a pulse and for spontaneous breathing.

If the obstruction was not dislodged, administer another chest thrust. If you administer 6 to 10 thrusts without apparently dislodging the obstruction, call for help again, perform a finger sweep, and administer two more breaths. Repeat the cycle of thrusts, finger sweep, and breaths until the object is expelled and the casualty's airway is open (chest rises during ventilations).

Learning Event 9:
CHECK FOR PULSE

After you have ensured that the casualty's airway is open by successfully delivering two full breaths, check for a pulse. (Pulse beats indicate that the heart is still pumping blood.)

Continue to maintain the casualty's airway. If the head-tilt/ chin-lift method is being used, keep one hand pressing on the casualty's forehead.

Locate the carotid artery on the side of the casualty's neck that is closest to you. One carotid artery is located in the groove on the left side of the windpipe (trachea) and another carotid artery is located in the groove on the right side of the windpipe.

Use the index and middle fingers of your free hand to feel for the artery in the groove next to the casualty's Adam's apple (larynx).

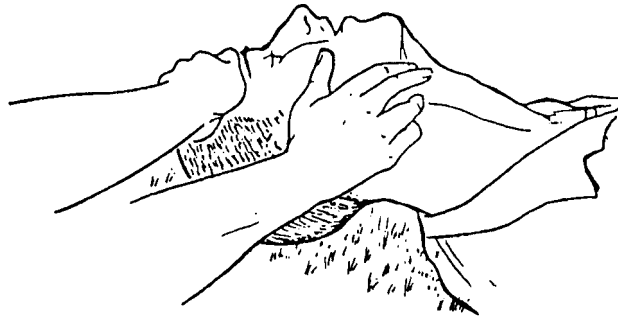


Figure 3-10
Feeling for the Carotid Pulse
(file: 824f3-10.bmp)

Once the artery is located, gently press on the artery with your middle and index fingers and feel for a pulse for 5 to 10 seconds. Also look for signs of spontaneous breathing (rising and falling of the casualty's chest, etc.) while checking the pulse.

CAUTION: Do not use your thumb to feel for the casualty's pulse. If you use your thumb, you may mistake the pulse in your thumb for the casualty's pulse.

Evaluate the situation and perform needed actions.

If the casualty has no pulse, cardiopulmonary resuscitation (CPR) must be begun. If you are qualified, begin administering CPR and, if possible, send a soldier to get medical help. If you are not qualified to administer CPR, seek medical help (usually the combat medic). (NOTE: Administering CPR is not a combat lifesaver task.)

If the casualty has a pulse but is not breathing on his own, continue mouth-to-mouth resuscitation (Learning Event 10).

If the casualty resumes breathing on his own, check for injuries. Continue to monitor the casualty's breathing and be prepared to resume administering mouth-to-mouth resuscitation if needed.

Learning Event 10:
CONTINUE MOUTH-TO-MOUTH RESUSCITATION

If the casualty's airway is open (any obstruction removed), he has a pulse, and he is not breathing on his own, continue to administer mouth-to-mouth resuscitation. [NOTE: Mouth-to-nose resuscitation is delivered at the same rate.]

Open the casualty's airway.

Take a deep breath.

Close the casualty's nostrils (pinch nose or press cheek against nose).

Seal your mouth over the casualty's mouth.

Blow the breath into the casualty's lungs. Observe the rising of the casualty's chest to ensure that the ventilation is effective.

Break your seal over the casualty's mouth and release his nose. Observe the casualty's chest fall and listen for exhale.

CAUTION: If the chest does not rise and fall, reposition his airway (tilt head back more or lift jaw more) and try again.

Repeat ventilations at the rate of one ventilation (breath) every 5 seconds (12 ventilations per minute). Use the following count: "One, one-thousand; two, one-thousand; three, one-thousand; four, one-thousand; (ADMINISTER BREATH); one, one-thousand; two, one-thousand; etc.

After about one minute (12 ventilations), stop ventilating the casualty and check the carotid pulse again. Observe for spontaneous breathing (chest rising and falling) as you feel for the pulse. The procedure should take 3 to 5 seconds.

If the casualty has no pulse, CPR is needed. If you are not qualified to administer CPR, send for or seek medical aid.

If the casualty has a pulse and is breathing on his own, check for other injuries while continuing to monitor the casualty's breathing.

If the casualty has a pulse but is not breathing on his own, continue to administer ventilations at the rate of one ventilation every 5 seconds. Continue to check the casualty's pulse after every 12 ventilations.

Continue administering mouth-to-mouth resuscitation until:

The casualty begins breathing on his own.

You are relieved by a qualified person.

You must seek medical help (no pulse).

You must continue with your combat duties.

You are too exhausted to continue.

**Learning Event 11:
MONITOR THE CASUALTY**

Once you have established that the casualty is breathing on his own, continue to monitor the casualty's breathing. Ensure that the casualty's airway remains open. If breathing difficulties arise, call for help and repeat the steps for clearing the airway and performing mouth-to-mouth resuscitation, as needed.

[NOTE: If the casualty is breathing on his own but is still unconscious, the combat lifesaver can insert an oropharyngeal airway to help maintain an open airway. This procedure is covered in IS0825.]

PRACTICE EXERCISES: LESSON 3

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the missing term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. While jogging in the park early one morning, you come upon a person lying on the grass who is apparently unconscious. What should be your first action in rendering aid to this person?

- a. Check his pulse.
- b. Call out, "Are you OK?"
- c. Begin administering abdominal thrusts.
- d. Open his airway.
- e. Perform a finger sweep to remove any airway obstruction.

2. A conscious person has an obstructed airway. You are preparing to administer abdominal thrusts to the person while he is standing. Suddenly he passes out. What should you do?

- a. Administer abdominal thrusts while holding the person in a standing position.
- b. Administer chest thrusts while holding the person in a standing position.
- c. Lay the person on his back and prepare to administer modified abdominal thrusts.
- d. Lay the person on his abdomen and administer back blows.

3. When preparing to administer mouth-to-mouth resuscitation to a casualty with no visible injuries, you should open the casualty's airway using the _____ method.

4. The jaw thrust method is preferred to the head-tilt/chin-lift method if

5. What is the most common cause of airway blockage in an unconscious casualty?

6. You find an unconscious person who does not appear to be breathing. After opening his airway, he begins to breathe normally. What should you do now?

- a. Help keep the person's airway open and check for injuries.
- b. Begin mouth-to-mouth resuscitation.
- c. Turn the person onto his chest.
- d. Begin cardiopulmonary resuscitation.

7. In the head-tilt/chin-lift method of opening a casualty's airway, one hand is used to press on his forehead. How is the thumb on the opposite hand used?

- a. Lifts the casualty's chin by hooking the thumb under the casualty's jaw.
- b. Keeps the casualty's lower lip depressed, if needed.
- c. Hooks over the casualty's bottom teeth to ensure a good grip on the casualty's chin.
- d. Presses against the casualty's nose to seal off his nostrils.

8. When performing the head-tilt/chin-lift method of opening a casualty's airway, you _____ allow your fingers to press deeply in the soft tissues under the chin.

- a. Should.
- b. Should not.

9. When you check for breathing, you should:

- a. Watch the casualty's chest.
- b. Listen for sounds of breathing.
- c. Be aware of any exhaled breath blowing against your face.

d. Do all of the above.

10. When initiating mouth-to-mouth resuscitation, you should:

a. Close the casualty's nose, administer one full breath, release the nose, close the nose, administer a second full breath, and release the nose again.

b. Close the casualty's nose, administer two full breaths, then release the nose.

c. Close the casualty's nose, administer one full breath, and release the nose; then repeat until four full breaths have been administered.

d. Close the casualty's nose, administer four full breaths, then release the nose.

11. In which of the following cases would mouth-to-nose ventilations probably be preferred to mouth-to-mouth ventilations?

a. Casualty is pregnant.

b. Casualty has a broken arm.

c. Casualty has a broken jaw and cheek injuries.

d. Casualty has suffered a blow to the back of the head.

12. You are beginning to provide care to an unconscious casualty and have just tried to initiate mouth-to-mouth resuscitation, but the casualty's chest did not rise and fall. What should you do next?

a. Leave the casualty and seek medical help.

b. Perform a finger sweep of the casualty's mouth.

c. Slap the casualty on the back between his shoulder blades.

d. Open the casualty's airway more and try to administer two breaths again.

13. When helping a person with an airway obstruction, finger sweeps are used only if the casualty is _____.

14. You are going to administer a manual thrust to remove an airway obstruction. A modified chest thrusts is preferred if the casualty is

_____, is
_____, or has
_____ wounds.

15. You are preparing to administer an abdominal thrust to a casualty lying on his back. How should you position your hands?

a. Place the heel of one hand midway between the casualty's navel and his groin. Place the other hand on his forehead.

b. Form a fist with one hand and place it on the casualty's navel. Form a fist with the other hand and place it on the casualty's abdomen so that the thumbs of your fists are touching.

c. Place the heel of one hand slightly above the casualty's navel. Place the other hand on top of the first hand.

d. Form a fist with one hand and place it slightly below the casualty's breastbone. Then wrap your other hand around the fist.

16. You are going to administer chest thrusts to an unconscious casualty. How should your hands be placed?

a. Place the heel of one hand on the lower half of the breastbone about a finger-width above the notch where the bottom of the lowest rib meets the breastbone. Place the other hand on top of the first hand.

b. Form a fist with one hand and put it in the middle of the breastbone. Wrap your other hand around the fist.

c. Place the heel of one hand a finger-width below the notch where the bottom of the lowest rib meets the breastbone. Place the other hand on top of the first hand.

d. Place the heel of one hand just below the middle of the breastbone and the heel of the other hand just above the middle of the breastbone.

17. When delivering a chest thrust to an unconscious adult casualty, the casualty's breastbone should be pushed straight down about _____ to _____ inches.

18. You have just administered two breaths and found that the casualty's airway is open (chest rises and falls when ventilations administered), but the casualty does not begin breathing on his own. What should you do now?

19. Which of the following is a correct location for checking the casualty's carotid pulse while performing mouth-to-mouth resuscitation?

- a. Over the casualty's Adam's apple.
- b. The groove to the right of the casualty's Adam's apple.
- c. The groove to the left of the casualty's Adam's apple.
- d. Choices b and c above.
- e. Choices a, b, and c above.

20. You are administering mouth-to-mouth (or nose) resuscitation. You should administer:

- a. One breath every minute.
- b. Five breaths every minute.
- c. Twelve breaths every minute.
- d. Sixty breaths every minute.

21. You are successfully administering mouth-to-mouth resuscitation. You have checked the casualty's pulse and found that his heart is still beating. When do you check his pulse again?

- a. After each breath.
- b. After every six breaths.
- c. After every 12 breaths.
- d. Only after his heart stops beating.

22. Once you have performed mouth-to-mouth resuscitation and the casualty begins to breathe on his own, you:

- a. Do not have to worry about his breathing any more.
- b. Should monitor his breathing in case you need to perform mouth-to-mouth resuscitation again.

23. If possible, practice administering mouth-to-mouth resuscitation on a mannequin. (Be sure that you are instructed on the proper care of the mannequin before you begin.) If a mannequin is not available, practice with a partner. Have a person evaluate your performance with a checklist.

ANSWERS TO PRACTICE EXERCISES: LESSON 3

1. b (LE 1)
2. c (LE 2)
3. head-tilt/chin-lift (LE 3)
4. you think the casualty has a severe head injury or fractured neck (LE 3)
5. The tongue. (LE 3)
6. a (LE 4)
7. b (LE 3)
8. b (LE 3)
9. d (LE 4)
10. b (LE 5)
11. c (LE 5)
12. d (LE 5)
13. unconscious (LE 6)
14. noticeably pregnant; extremely overweight; serious abdominal wound (LE 7)
15. c (LE 7)
16. a (LE 8)
17. 1 1/2 to 2 (LE 8)
18. Check for a pulse. (LE 5, 7, 8, & 9)
19. d (LE 9)
20. c (LE 10)
21. c (LE 10)
22. b (LE 11)
23. See checklist on the following pages.

PERFORMANCE CHECKLIST

PERFORM MOUTH-TO-MOUTH RESUSCITATION

Situation: You have just found a casualty who appears to be unconscious.
(Note: Checklist assumes the casualty's airway is blocked and pulse is still present.)

	GO	NO-GO
Checks for responsiveness.	_____	
Calls for help.	_____	
Positions casualty on his back with his arms at his side (if not already in that position).	_____	
Performs quick finger sweep.	_____	
Selects appropriate method of opening airway (head-tilt/chin-lift or jaw thrust).	_____	
<u>Question:</u> When is the jaw thrust preferred over the head-tilt/chin lift?		
<u>Answer:</u> _____	_____	

Head-Tilt/Chin-Lift

Places one hand on casualty's forehead and presses with palm of hand to tilt head back. _____

Places fingertips of other hand under tip of casualty's jaw and lifts jaw forward. _____

Jaw Thrust

Rests elbows on surface on which casualty is lying. _____

Grasps angles of casualty's jaw (one hand on each side) and lifts jaw forward. _____

Checks casualty for breathing (looks for chest rising and falling, listens for sounds of breathing, and feels with cheek for air flow). _____

PERFORMANCE CHECKLIST: PERFORM MOUTH-TO-MOUTH RESUSCITATION

GO

NO-GO

Seals nostrils closed and seals mouth over casualty's mouth while maintaining open airway. One hand maintains pressure on the casualty's forehead. _____

Administers two full breaths. _____

Releases casualty's nostrils and breaks seal over mouth. _____

If chest does not rise and fall, repositions airway and administers two breaths again. _____

If airway still blocked, administers finger sweep and appropriate manual thrusts. _____

Finger Sweep

Grasps tongue and lower jaw between thumb and index finger and lifts jaw open. _____

Inserts index finger of other hand along inside of cheek to base of tongue and uses a hooking motion to remove any visible obstruction. _____

Question: When are chest thrusts preferred over abdominal thrusts?

Answer: _____

Modified Abdominal Thrust

Kneels astride the casualty's thighs. _____

Places heel of one hand just above casualty's navel on midline, places heel of other hand on top of first, and points fingers toward casualty's head. _____

Delivers a forward, upward thrust; then relaxes _____

the pressure.

Performs 6 to 10 thrusts. _____

PERFORMANCE CHECKLIST: PERFORM MOUTH-TO-MOUTH RESUSCITATION

GO

NO-GO

Performs a finger sweep. _____

Repeats attempt to ventilate casualty. _____

Continues cycle of abdominal thrusts, finger sweep, and two ventilations until the obstruction is expelled. _____

Modified Chest Thrust

Kneels beside casualty's chest. _____

Locates compression site by running fingers along bottom of rib cage to locate notch where rib and sternum meet and placing heel of second hand on sternum one finger-width above notch. _____

Places heel of first hand on heel of second hand and positions shoulders over the compression site. Fingers must not rest on casualty's chest. _____

Depresses sternum 1 1/2 to 2 inches [simulated if a person is used as the casualty], then relaxes the pressure. _____

Performs 6 to 10 thrusts. _____

Performs finger sweep. _____

Repeats attempt to ventilate casualty. _____

Continues cycle of chest thrusts, finger sweep, and two ventilations until the obstruction is expelled. _____

Checks carotid pulse with fingertips (5 to 10 seconds). _____

Ventilates the casualty at the rate of one cycle (deep breath, pinch nose and seal mouth, blow, _____

break seal and release nose) every 5 seconds.

Rechecks the pulse after 1 minute.

Goes for help if pulse not found; continues ventilations if pulse is present.

PERFORMANCE CHECKLIST: PERFORM MOUTH-TO-MOUTH RESUSCITATION

GO

NO-GO

Continues to monitor casualty's breathing after casualty resumes breathing on his own.

OVERALL EVALUATION

GO

NO-GO

(A no-go on any step gives an overall evaluation of no-go.)

LESSON 4

PUT ON A FIELD DRESSING, PRESSURE DRESSING, AND TOURNIQUET

TASK

Apply a field dressing, elevation, manual pressure, a pressure dressing, and a tourniquet, as needed, to a wound on a casualty's limb.

CONDITIONS

Given a simulated casualty with bleeding from a limb and needed supplies.

STANDARD

Score a GO on the performance checklist.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.
FM 8-230, Medical Specialist.
FM 21-11, First Aid for Soldiers.

INTRODUCTION

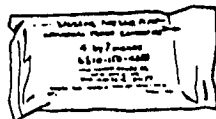
A casualty who is losing blood (hemorrhaging) may die unless the bleeding is stopped. Bleeding from a limb (arm or leg) can usually be controlled by applying a field dressing, applying manual pressure, elevating the injured limb, and (if needed) applying a pressure dressing. If these methods do not control the bleeding, a tourniquet can be placed around an upper arm or thigh to stop the flow of blood below the band.

The term dressing refers to the material that is placed directly over the wound. The dressing absorbs some of the blood and helps a clot to form. The clot "plugs" the wound to stop the bleeding. The dressing also protects the wound from additional contamination and injury.

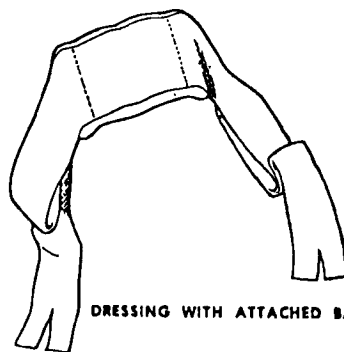
A bandage is the material used to hold (secure) the dressing in place so the dressing will not slip and destroy the clot that is forming. The ends of the bandage are called the tails.

The field dressing consists of a pad of sterile (germ-free) white dressing with a bandage (usually olive-drab) already attached to the dressing pad. The field dressing is wrapped in paper and then sealed in a plastic envelope. The field dressing is also called the first aid dressing and the combat dressing.

CAUTION: Monitor the casualty's respiration's if he is unconscious. If the casualty stops breathing, administer mouth-to-mouth resuscitation (except in a chemical environment).



WRAPPED DRESSING
IN PLASTIC ENVELOPE



DRESSING WITH ATTACHED BANDAGE

Figure 4-1
Field Dressing
(file: 824f4-1.bmp)

Learning Event 1:
EXPOSE THE WOUND

Tear, cut, push, and/or lift the casualty's clothing from the area around the wound so you can see the full extent of the injury.

WARNING

If you are in a chemical environment, do not expose the wound. Place the dressing over the wound and protective clothing and evacuate the casualty.

Avoid causing additional damage to the wound. If clothing is stuck to the wound area, cut or tear around the stuck material and leave that part of the clothing stuck to the wound. Do not try to remove objects from the wound. Do not try to clean the wound.

Look for both entry and exit wounds.

Learning Event 2:
APPLY AND SECURE FIELD DRESSING

After you have exposed the wound, obtain a field dressing. If the soldier still has a field dressing in his plastic individual first aid case, use this field dressing first in order to conserve your supplies. [NOTE: If you use up all of the field dressings in your aid bag, improvise a dressing and bandage using the cleanest cloth available.]

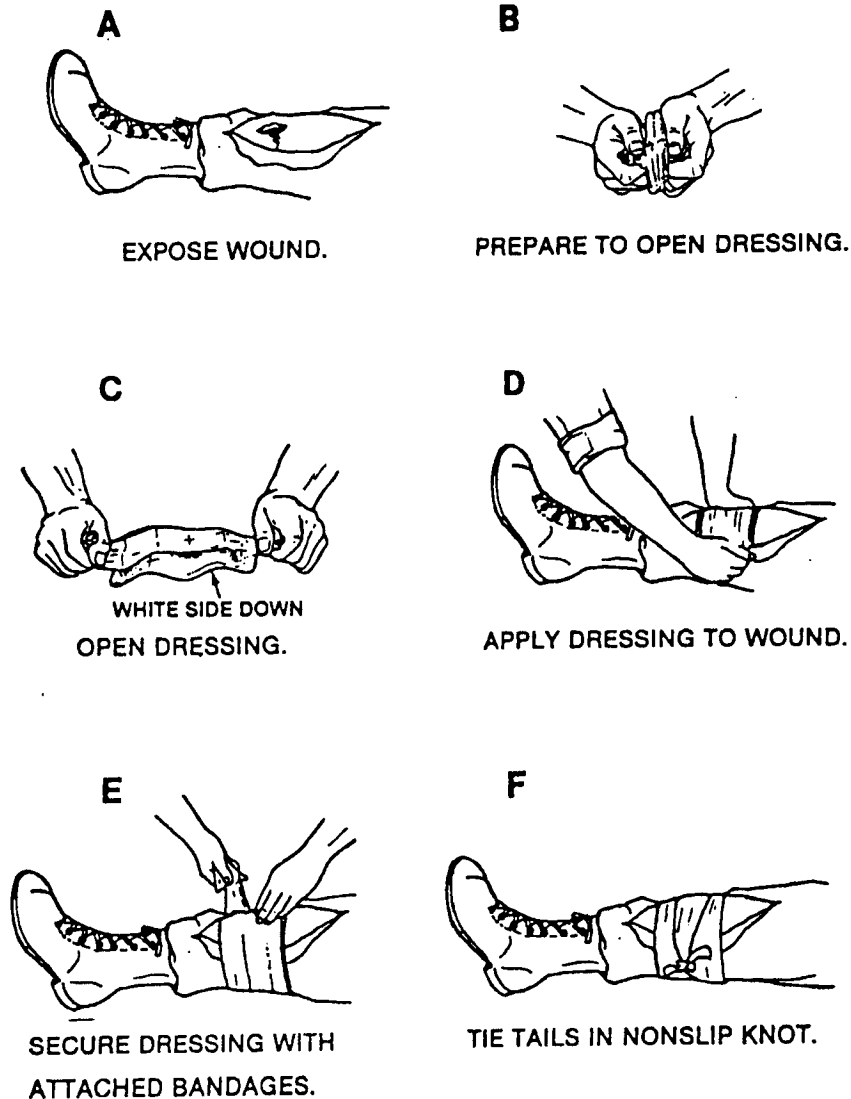


Figure 4-2
Applying and Securing a Field Dressing
(file: 824f4-2.bmp)

Tear the plastic envelope and remove its contents.

Twist the paper wrapper until it breaks or tear it open.

Grasp the folded bandage/tails with both hands.

Hold the field dressing above the exposed wound with the white side of the dressing material toward the wound.

Pull on the bandage/tails so the dressing opens and flattens.

CAUTION: Do not touch the white sterile side of the dressing.

Place the dressing on the wound. Remember, the white side goes on the wound.

CAUTION: If there is an impaled object (stick, etc.) sticking out of the wound, do not remove the object. Use bulky dressing made from the cleanest material available to build up the area around the protruding object in order to stabilize the object and protect the wound. Then apply a bandage over the dressing.

Place one hand on top of the dressing to hold the dressing in place. If the casualty is conscious, you can have him hold the dressing in place while you secure it.

Wrap one of the bandages around the injured body part with your free hand. As you wrap, cover one of the exposed sides of the dressing with the bandage. (The bandage can usually be wrapped around a limb more than once.) Bring the tail back over the dressing.

Wrap the other bandage around the injured body part in the opposite direction. As you wrap, cover the remaining exposed side of the dressing with the bandage. Bring the tail back to the dressing.

Tie the tails into a non-slip knot over the outer edge of the dressing, not over the wound itself. (Tying the knot over the wound could cause additional injury to the wound site.) The tails should be tied firm enough to prevent the dressing from slipping, but loose enough to insert two fingers between the knot and the dressing.

If the wound is on a limb, check the circulation below (distal to) the bandage. If the skin below the bandage becomes cool to the touch, bluish, or numb, or if a pulse cannot be detected below the bandage, the bandage may be too tight and interfering with circulation. If so, loosen and retie the tails; then check the circulation again. If circulation is not restored, evacuate the casualty as soon as possible since medical treatment may be needed to keep the limb from being amputated due to poor circulation and tissue death.

CAUTION: Do not remove the dressing from the wound. Removing the dressing could interfere with any clot which has begun to form.

Learning Event 3: APPLY MANUAL PRESSURE

Apply direct pressure over the dressing with your hand. This pressure will help to compress the damaged blood vessels and control the bleeding. Maintain this pressure for 5 to 10 minutes. If the casualty is conscious and can follow instructions, you can have him apply the manual pressure himself.



Figure 4-3
Applying Manual Pressure
(file: 824f4-3.bmp)

Learning Event 4:
ELEVATE THE INJURED LIMB

WARNING

Examine an injured extremity (arm or leg) for fractures (visible broken bone, deformity of the limb, etc.) before elevating the limb. If a fracture is suspected, do not elevate the wound until the limb has been splinted.

Elevate the injured limb above the level of the casualty's heart to decrease bleeding. An injured leg can be raised by placing the foot and ankle on a pack, log, rock, or other object. An injured forearm can be elevated by placing the forearm on the casualty's chest if he is lying on his back or by having the casualty place his arm on top of his head if he is sitting. Elevating the injured limb and applying manual pressure should be done at the same time when no fracture is involved.

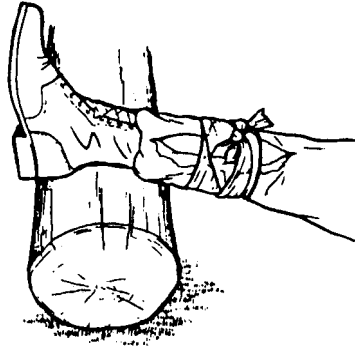


Figure 4-4
Elevating the Wound
(file: 824f4-4.bmp)

Learning Event 5:
APPLY A PRESSURE DRESSING

If blood continues to seep from the dressing after you have secured the dressing, applied manual pressure, and elevated the wound (if applicable), apply a pressure dressing. The objective of applying a pressure dressing is to stop the bleeding, not to stop all blood circulation below the wound. (Stopping all blood circulation would endanger the body tissue below the pressure dressing.)

WARNING

A pressure dressing is applied only to a wound on an extremity (arm or leg).

Place a wad of material on top of the dressing and directly over the wound. The wad can be made from a folded muslin bandage (cravat) from the combat lifesaver aid bag, a rag, material torn from clothing, or similar material which can be folded several times.

CAUTION: The pressure dressing is applied on top of the field dressing. The field dressing is not removed or retied. Moving the field dressing would interfere with any clot which has begun to form.

Place a bandage over the wad of padding and wrap the bandage tightly around the limb. The bandage is usually made from a muslin bandage from the combat lifesaver aid bag or other material torn and folded into a cravat. Other materials, such as a handkerchief, sock, or strip of cloth torn from a shirt, can also be used. Wire and narrow material, such as a shoestring, are not used since they are likely to damage blood vessels and nerve tissue.

Tie the ends of the bandage to secure the padding. A non-slip knot should be tied directly over the wound. The bandage should be tight enough so only the tip of one finger can be inserted under the bandage. Do not tie the bandage so tight that it cuts off blood circulation.

Check the circulation below the pressure dressing. If the skin below the pressure dressing becomes cool to the touch, bluish, or numb, or if the pulse below the pressure dressing is no longer present, the pressure dressing may be too tight. If so, loosen and retie the tails. If circulation is not restored, evacuate the casualty as soon as possible. [NOTE: The pressure dressing can be loosened and retied without disturbing the blood clot forming under the field dressing.]

Apply manual pressure over the pressure dressing.

If the pressure dressing controls the bleeding, proceed to check the casualty for other injuries. Recheck the circulation below the pressure dressing periodically and monitor the casualty for shock (Lesson 8).

If the wound continues to bleed, apply a tourniquet.

A tourniquet is a constricting band placed around a limb (upper arm or thigh) in order to stop the flow of the blood below the band.

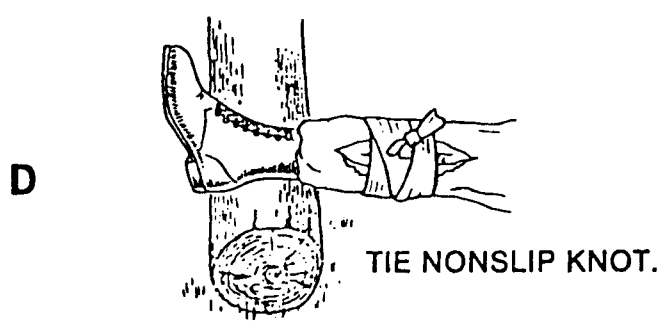
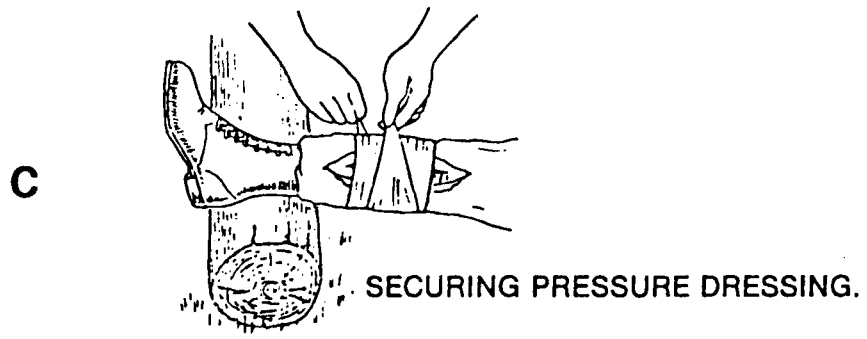
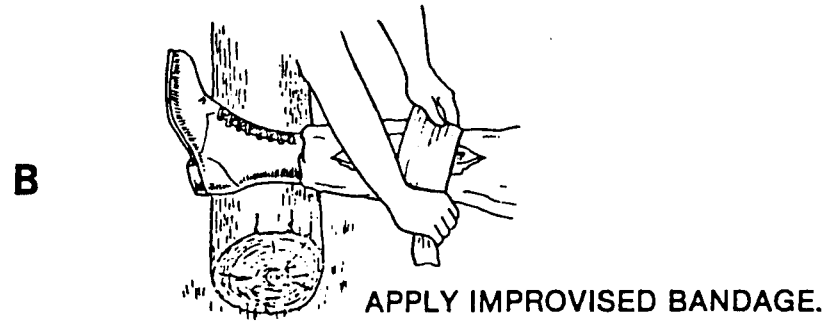
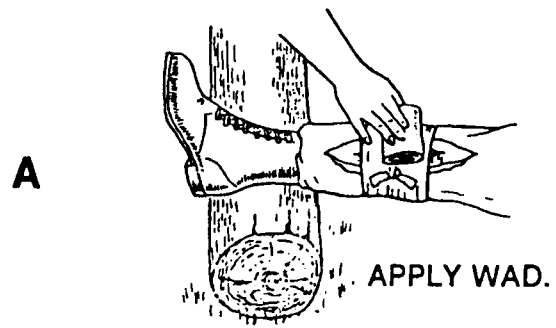


Figure 4-5
Applying a Pressure Dressing
(file: 824f4-5.bmp)

**Learning Event 6:
DETERMINE WHEN A TOURNIQUET IS NEEDED**

A tourniquet is needed when the amount of blood being lost from a limb endangers the casualty's life and the bleeding cannot be stopped by the application of a field dressing, manual pressure, elevation, and pressure dressing.

A tourniquet is not used for wounds to the head, neck, or trunk.

A tourniquet is not used for a wound on the hand or foot. Bleeding from the amputation of part of a hand or part of a foot can be controlled by application of a pressure dressing, manual pressure, and elevation. It does not require the application of a tourniquet.

A tourniquet is needed when there has been an amputation (complete severing) of an upper arm, forearm, thigh, or lower leg.

WARNING

Do not attempt to control the bleeding from an amputation of a limb (not part of a hand or foot) by applying a field or pressure dressing. Apply a tourniquet to the arm or leg even if the stump is not bleeding severely. The lack of bleeding is due to the body's normal defenses (constriction of blood vessels), but the stump will begin to bleed profusely when the blood vessels relax.

**Learning Event 7:
GATHER MATERIALS FOR MAKING A TOURNIQUET**

Tourniquet Band

You will need a band of strong, pliable material which is at least two inches wide when folded and will retain this width after being tightened.

A folded muslin bandage (usually called a cravat), a folded handkerchief, or a folded strip of clothing will do. Do not use wire or shoestrings for a tourniquet band. A wide tourniquet will protect the tissue beneath the tourniquet when it is tightened. If a very narrow tourniquet is used, the nerves and blood vessels beneath the tourniquet may be seriously damaged.

Rigid Object

A rigid object, usually a stick, is needed to tighten the tourniquet.

Securing Materials

Additional material may be needed to secure the rigid object once the tourniquet has been tightened. If the tourniquet band is long enough, the tails can be used to secure the rigid object. If not, a piece of cloth similar to the tourniquet band will be needed.

Padding

This material will be placed between the limb and the tourniquet band to protect the skin from being pinched and twisted when the band is tightened. Soft, smooth material should be used for padding. The casualty's shirt sleeve or trouser leg can be used as padding.

Learning Event 8: SELECT A TOURNIQUET SITE

Select an upper arm or thigh site. If the wound is in the upper arm or thigh, select a site that is two to four inches above the edge of the wound or amputation site. If the wound or amputation is below the elbow or knee, select a site above the joint and as close to the joint as possible. A tourniquet should not be placed over a joint or over a fracture site.

Learning Event 9: APPLY A TOURNIQUET

WARNING

A tourniquet is used only as a last resort (other than an amputation) when blood loss from a wound endangers the casualty's life and the bleeding cannot be controlled by other methods. The portion of the limb below the tourniquet may need to be amputated when the casualty reaches a medical treatment facility. A tourniquet usually means life or limb.

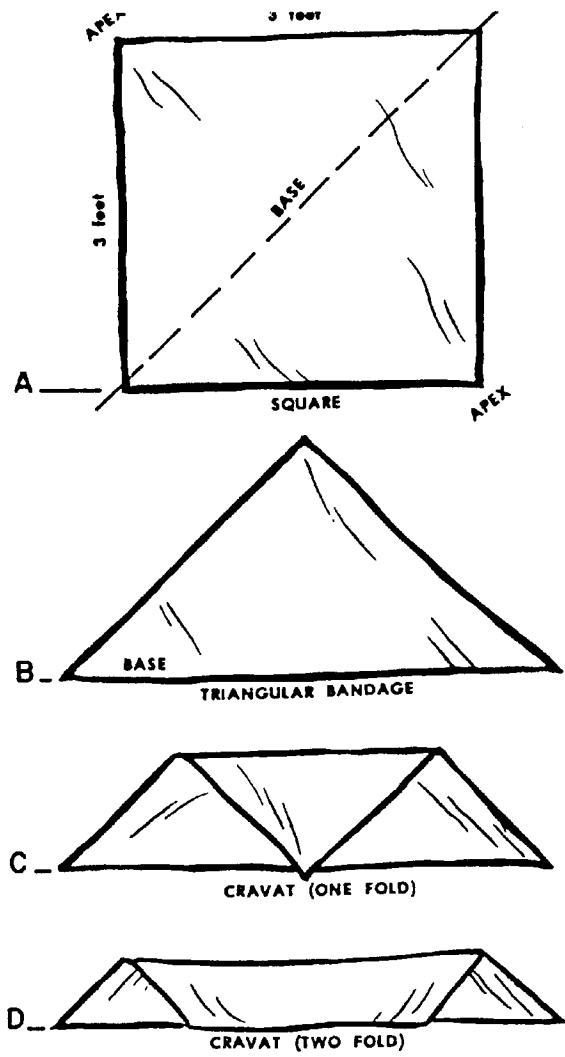


Figure 4-6
 Folding a Muslin Bandage or a Square of Material into a Tourniquet Band
 (file: 824f4-6.bmp)

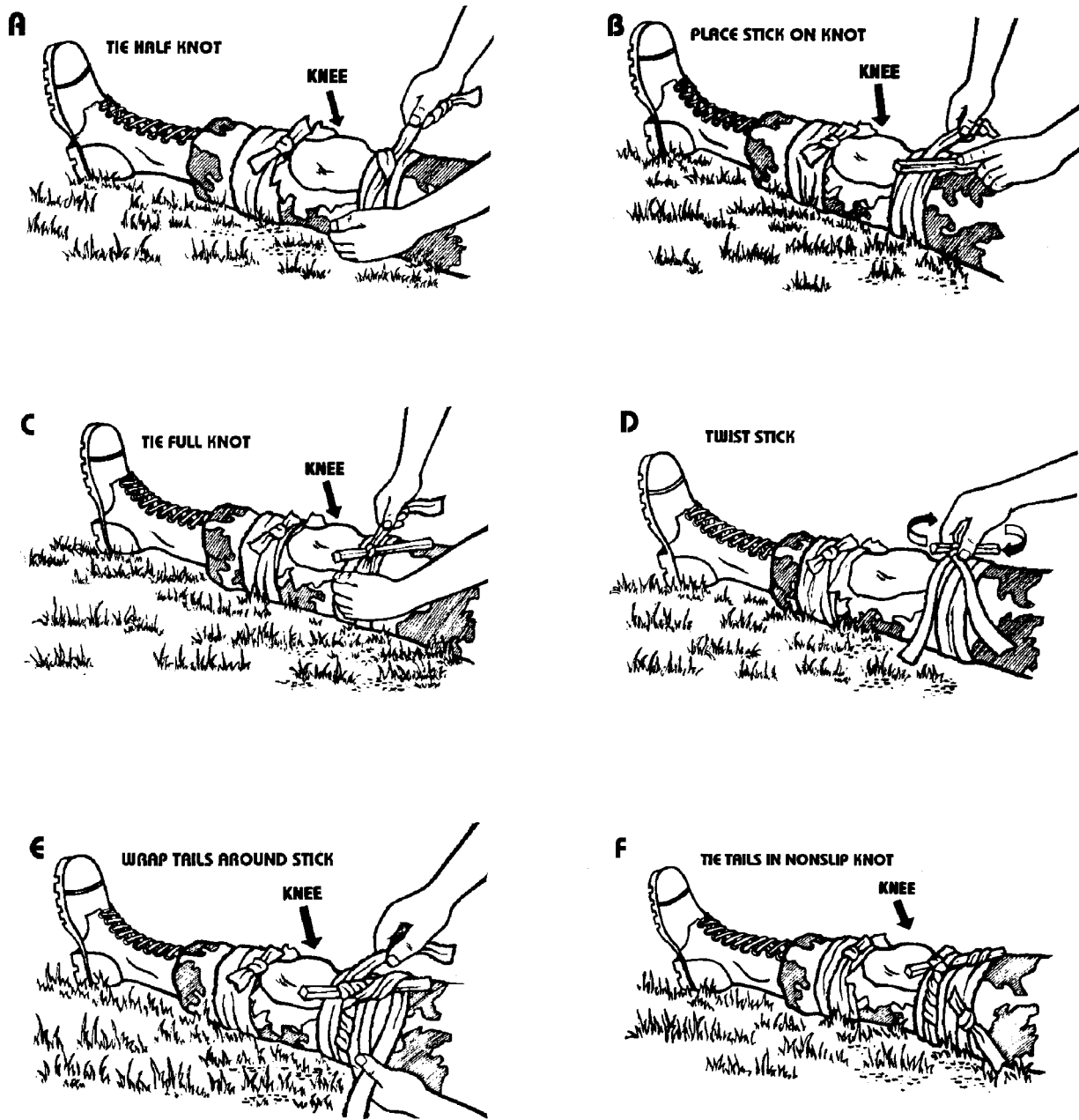


Figure 4-7
Applying a Tourniquet to a Limb
 (file: 824f4-7.bmp)

Place padding around the limb where the tourniquet will be applied. If the casualty's shirt sleeve or trouser leg is covering the tourniquet site,

smooth the shirt or trouser material and apply the tourniquet over the clothing.

Place the tourniquet band material around the tourniquet site.

Tie the band with a half knot (the same as the first part of tying a shoe). Place the rigid object on top of the half knot.

Tie a full knot over the rigid object.

Twist the rigid object either clockwise or counterclockwise until the tourniquet is tight and the bright red bleeding has stopped. Bright red blood is from a severed artery. Generally, darker blood is from a vein. Dark blood may continue to ooze even after the tourniquet has been properly applied. There should be no pulse below the tourniquet.

Wrap the tails of the tourniquet band around the end of the rigid object so the rigid object will not untwist, bring the tails under the limb, and tie the tails in a non-slip knot.

CAUTION: If the rigid object cannot be secured with the tails of the tourniquet band, wrap a piece of material around the limb below the level of the tourniquet, wrap the material around one end of the rigid object so the tourniquet will not unwind, and tie the tails of the material in a non-slip knot. The rigid object is secured below the tourniquet so the securing material will not interfere with blood circulation above the tourniquet.

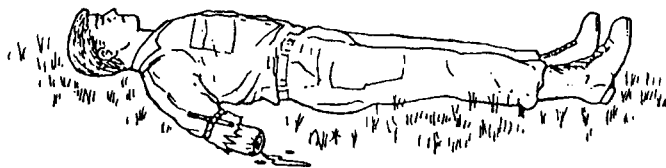


Figure 4-8
Tourniquet Applied to an Arm Amputation
(file: 824f4-8.bmp)

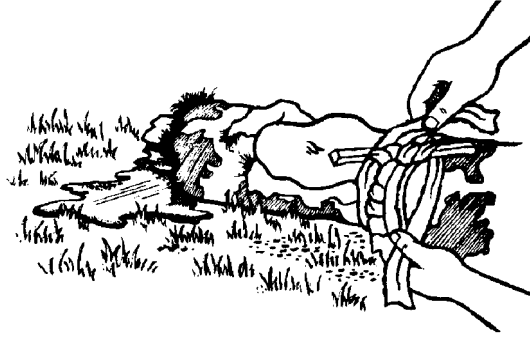


Figure 4-9
Tourniquet Applied to a Leg Amputation
(file: 824f4-9.bmp)

Do not cover the tourniquet. Leave the tourniquet in full view so it can be located quickly by medical personnel.

WARNING

Do not loosen the tourniquet once it is in place and has stopped the blood flow. If it is loosened, the wound will start to bleed again. The additional blood loss may cause the casualty to go into shock, which could be fatal. A tourniquet should only be loosened by medical personnel at a medical treatment facility.

Learning Event 10:
DRESS AN AMPUTATION

After the tourniquet has been applied to an amputation of the arm or leg, place a dressing made of soft, absorbent material over the end of the stump and secure the dressing with bandages. The dressing will help prevent additional contamination of the wound and will help protect the wound from additional injury.

Learning Event 11:
MARK THE CASUALTY

Write a "T" and the time of application on the casualty's forehead with a pen, the casualty's blood, mud, or other substance. The "T" alerts medical personnel that a tourniquet has been applied. Continue to monitor the casualty and treat for shock.

PRACTICE EXERCISES: LESSON 4

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the missing term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. The material placed on the wound to absorb the blood is called the _____; the material which is used to keep the first pad of material from slipping off the wound is called the _____.

2. Why should you avoid removing a dressing from a bleeding wound?

3. Why should you push away any loose clothing near a casualty's open wound before applying a field dressing?

- a. To allow the wound to get air.
- b. To provide a sterile work area.
- c. To see the extent of the wound.
- d. To apply ointment to the wound.

4. When would you apply a field dressing to a wound without exposing the wound?

- a. In a rainy area.
- b. In a chemically-contaminated area.
- c. In an extremely hot area.
- d. In an extremely cold area.

5. A casualty is bleeding from a wound in the leg. Part of the trouser material next to the wound is stuck to the wound. You should:

- a. Tear around the stuck material so as to not pull the material from the wound.
- b. Gently pull the material from the wound area.

6. What part of the field dressing should be applied directly over an open wound?

- a. Olive-drab tails.
- b. Top side of the dressing (side to which tails are attached).
- c. White side of dressing.
- d. Either side of the dressing.

7. You have just applied a field dressing to a wound on the casualty's arm. Under what circumstance would you loosen the field dressing?

- a. The bleeding has stopped.
- b. The casualty has lost consciousness.
- c. The dressing has become completely soaked with blood.
- d. There is no pulse below (distal to) the dressing.

8. When applying a field dressing to a bleeding wound on the arm, the tails should be tied in a non-slip knot:

- a. Directly over the center of the wound.
- b. Over the outer edge of the dressing.
- c. On the other side of the arm (away from the wound).
- d. Wherever the tails happen to cross.

9. After applying a field dressing to a bleeding wound on the casualty's forearm, you should also apply _____ directly over the wound; then _____ the arm if the arm is not _____.

10. A pressure dressing is usually:

- a. Another field dressing.
- b. Folded material secured by a cravat.

11. A pressure dressing is applied:

- a. Two to four inches above the field dressing.
- b. On top of the field dressing.
- c. Two to four inches below the field dressing.

12. When applying a pressure dressing, the tails should be tied:

- a. Directly over the wound.
- b. Over the outer edge of the dressing.
- c. On the other side of the arm (away from the wound).
- d. Wherever the tails happen to cross.

13. A casualty is bleeding from a wound on his forehead. You have applied a field dressing, but the wound is still bleeding. Should you apply a pressure dressing to the wound?

- a. Yes.
- b. No.

14. Which of the following is applied with the intent of stopping blood circulation?

- a. Field dressing.
- b. Manual pressure.
- c. Pressure dressing.
- d. Tourniquet.

15. The portion of the limb below the pressure dressing is cool to the touch and the nail beds on the limb are bluish. The pressure dressing should be _____ and _____. If the condition does not improve, _____ the casualty.

16. In which of the following situations would you apply a tourniquet without first trying to control the bleeding with a pressure dressing?

- a. Severe bleeding from a wound on the leg.
- b. Severe bleeding from a wound on the forearm.
- c. Amputation of the arm near the elbow.
- d. Amputation of the toes.

17. Which one of the following is preferred for a tourniquet band?

- a. A wire that is 36 inches long.
- b. A bootlace.
- c. A rubber constricting band.
- d. A square of cloth (about 36 inches on each side) folded to a width of about 2 inches.

18. You are going to apply a tourniquet band (cravat) made from a piece of folded material such as a muslin bandage. The band should be at least _____ wide when folded.

- a. 1/2 inch.
- b. 1 inch.
- c. 1 1/2 inches.

d. 2 inches.

19. Should padding be placed between the tourniquet band and the casualty's limb?

a. Yes.

b. No.

20. A tourniquet should be applied closer to the heart than the wound.

a. Yes.

b. No.

21. If the amputation site is about one inch below the elbow joint, the tourniquet is applied:

a. Between the wound and the elbow.

b. Directly over the elbow.

c. Slightly above the elbow.

d. Four to six inches above the elbow.

22. Which one of the following statements gives a proper rule for tightening a tourniquet?

a. A tourniquet should be loose enough so that you can slip two fingers under the tourniquet band.

b. A tourniquet should be loose enough so that you can slip the tip of one finger under the tourniquet band.

c. A tourniquet is to be tightened until the bright red bleeding has stopped; darker blood oozing from the wound can be ignored.

d. A tourniquet is to be tightened until both the bright red bleeding and the darker venous bleeding have stopped completely.

23. Once you have tightened the tourniquet, you must:
- Check the casualty's carotid pulse.
 - Secure the rigid object so the tourniquet will not unwind.
 - Apply a field dressing over the rigid object.
 - Remove the rigid object and tie the tails in a non-slip knot.
24. Once the tourniquet has been applied, should it be covered with a blanket, poncho, or similar material?
- Yes.
 - No.
25. The lower part of the casualty's arm has been amputated. You have applied a tourniquet. How is the stump treated?
- The stump is dressed and bandaged.
 - The stump is left exposed to facilitate drainage.
26. You have applied a tourniquet to a casualty's left leg. Which one of the following is a proper method of marking the casualty?
- Write a "T" and the time of application on the casualty's forehead.
 - Write a "T" and the time of application on the dressing over the stump.
 - Write "LL" and the time of application on the casualty's forehead.
 - Write "LL" and the time of application on the dressing over the stump.
 - Write your initials on the casualty's chest.

27. A casualty has just had his arm amputated just above the wrist, but the bleeding is not severe. What should you do?

- a. Leave the stump exposed to the air.
- b. Apply a tourniquet two to four inches above the amputation site.
- c. Apply a pressure dressing to the stump.
- d. Apply a tourniquet above the elbow.

28. If possible, practice applying a field dressing, pressure dressing, and tourniquet to a simulated casualty. If you are using a person as the simulated casualty, do not tighten the pressure dressing and tourniquet enough to seriously interfere with blood circulation. Have another person score your performance using a performance checklist.

ANSWERS TO PRACTICE EXERCISES: LESSON 4

1. dressing; bandage. (Introduction)
2. Removing the dressing pad could destroy the clot which is forming and it is the clot which stops the bleeding.
(Introduction, LE 2 & 5)
3. c (LE 1)
4. b (LE 1)
5. a (LE 1)
6. c (LE 2)
7. d (LE 2)
8. b (LE 2)
9. manual pressure; elevate; fractured (or broken). (LE 3 & 4)
10. b (LE 5)
11. b (LE 5)
12. a (LE 5)
13. b (LE 5)
14. d (LE 2, 3, 5, & 9)
15. loosened, retied; evacuate. (LE 5)
16. c (LE 6)
17. d (LE 7)
18. d (LE 7)
19. a (LE 7 & 9)
20. a (LE 8)
21. c (LE 8)
22. c (LE 9)

- 23. b (LE 9)
- 24. b (LE 9)
- 25. a (LE 10)
- 26. a (LE 11)
- 27. d (LE 6 & 8)
- 28. See the checklist on the following pages.

PERFORMANCE CHECKLIST

APPLY A DRESSING, PRESSURE DRESSING, AND TOURNIQUET

Situation: You have located a casualty who is losing a good deal of blood from a wound on an extremity.

	GO	NO-GO
Exposes wound.	_____	
Removes the field dressing from plastic and paper wrappers without contaminating the white side of the dressing.	_____	_____
Grasps the tails of the field dressing with both hands, holds the dressing directly over the wound with the white side down, pulls the dressing open, and places the dressing pad directly over the wound.		_____
Holds (or has casualty hold) the dressing in place and wraps one tail around the injured limb, covering one exposed edge of the dressing.	_____	
Wraps other tail in opposite direction so the other edge of the dressing pad is covered.	_____	
Ties the tails into a non-slip knot over outer edge of the dressing (not over the wound). Should be able to insert two fingers under the knot.	_____	
Checks the casualty's circulation below the injury.	_____	
Loosens and reties tails if the bandage is too tight.	_____	
Applies direct hand pressure over the dressing or has the casualty apply pressure if he is able.	_____	
Checks limb for fracture.	_____	
Elevates the wound above the level of the heart if limb is not fractured.	_____	

Applies a pressure dressing if bleeding continues. _____

Folds material as necessary to form pressure dressing wad (pad). _____

CHECKLIST: APPLY A DRESSING, PRESSURE DRESSING, AND TOURNIQUET

GO NO-GO

Places wad on top of the field dressing pad directly over the wound. _____

Wraps a strip of cloth (cravat) tightly around the wad and limb. _____

Ties a non-slip knot directly over the wound to secure the wad. Should be able to insert only one fingertip under pressure dressing bandage. _____

Checks circulation below the injury. _____

Loosens and reties the bandage if needed. _____

Applies a tourniquet if bleeding continues. _____

Makes a band (cravat) at least two inches wide. _____

Wraps the tourniquet around the upper arm or thigh. _____

Has padding (shirt sleeve, etc.) between tourniquet band and skin. _____

Ties a half-knot. _____

Places the rigid object (stick) on top of the half-knot. _____

Ties a full knot over the rigid object. _____

Twists the stick to tighten the tourniquet. [Simulate if practicing on a person.] _____

Secures rigid object to prevent tourniquet from untwisting using the ends of the tourniquet band or a strip of cloth (cravat) wrapped around the limb (below the tourniquet) and ties the tails in a non-slip knot. _____

Marks the casualty's forehead with a "T" and the
time of application.



OVERALL EVALUATION GO NO-GO
(A no-go on any step gives an overall
evaluation of no-go.)

LESSON 5

APPLY A DRESSING TO AN OPEN CHEST WOUND

TASK

Apply a dressing to a casualty with an open chest wound.

CONDITIONS

Given a simulated casualty with an open chest wound and needed supplies.

STANDARD

Score a GO on the performance checklist.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.
FM 8-230, Medical Specialist.
FM 21-11, First Aid for Soldiers.

INTRODUCTION

The body has two lungs. Each lung is enclosed in a separate airtight area within the chest. If an object punctures the chest wall and allows air to get into one of these areas, the lung within that area begins to collapse (not expand fully). In order for both lungs to collapse, both sides of the chest would have to be punctured. Any degree of collapse interferes with the body's ability to expand the lung and absorb oxygen. An excessive buildup of pressure from air or blood around the collapsed lung can also cause compression of the heart and other lung.

Learning Event 1:

CHECK FOR SIGNS AND SYMPTOMS OF AN OPEN CHEST WOUND

An open chest wound can be caused by the chest wall being penetrated by a bullet, knife blade, shrapnel, or other object. If you are not sure if a wound has penetrated the chest wall completely, treat the wound as though it were an open chest wound. Some of the signs and symptoms of an open chest wound are given below.

Sucking or hissing sounds coming from chest wound. (When a casualty with an open chest wound breathes, air goes in and out of the wound. This air sometimes causes a "sucking" sound. Because of this distinct sound, an open chest wound is often called a "sucking chest wound.")

Blood coughed up.

Frothy blood. (The air going in and out of an open chest wound causes bubbles of blood coming from the wound.)

Shortness of breath or other difficulty in breathing.

Chest not rising normally when the casualty inhales.

Pain in the shoulder or chest area which increases with breathing.

Bluish tint of lips, inside of mouth, fingertips, or nail beds. (This color change is caused by the decreased amount of oxygen in the blood.)

Rapid and weak heartbeat.

Learning Event 2:

LOCATE AND EXPOSE OPEN CHEST WOUND

Expose the area around the open chest wound by removing, cutting, or tearing the clothing covering the wound. If clothing is stuck to the wound, do not try to remove the stuck clothing as this may cause additional pain and injury. Cut or tear around the stuck clothing. Do not try to clean the wound or remove objects from the wound.

Check for entry and exit wounds. Look for a pool of blood under the casualty's back and use your hand to feel for wounds. If there is more than one open chest wound, treat the more serious (largest, heaviest bleeding) wound first.

WARNING

If you are in a chemical environment, seal and dress the wound(s) without exposing the wound(s).

Learning Event 3:

SEAL AND DRESS THE OPEN CHEST WOUND

Since air can pass through a dressing, you must seal an open chest wound to stop air from entering the chest and collapsing the lung.

Open Field Dressing Wrapper

Tear open one end of the plastic wrapper of a field dressing. Remove the inner packet (the field dressing wrapped in paper) and put it aside.

Continue to tear around the edges of the plastic wrapper until a flat surface is created. This plastic wrapper will be used to make an airtight seal which will keep air from entering the chest cavity through the wound.

If there is both an entry wound and an exit wound, the plastic wrapper can be torn to make two seals if the wounds are not too large. The edges of the sealing material should extend at least two inches beyond the edges of the wound.

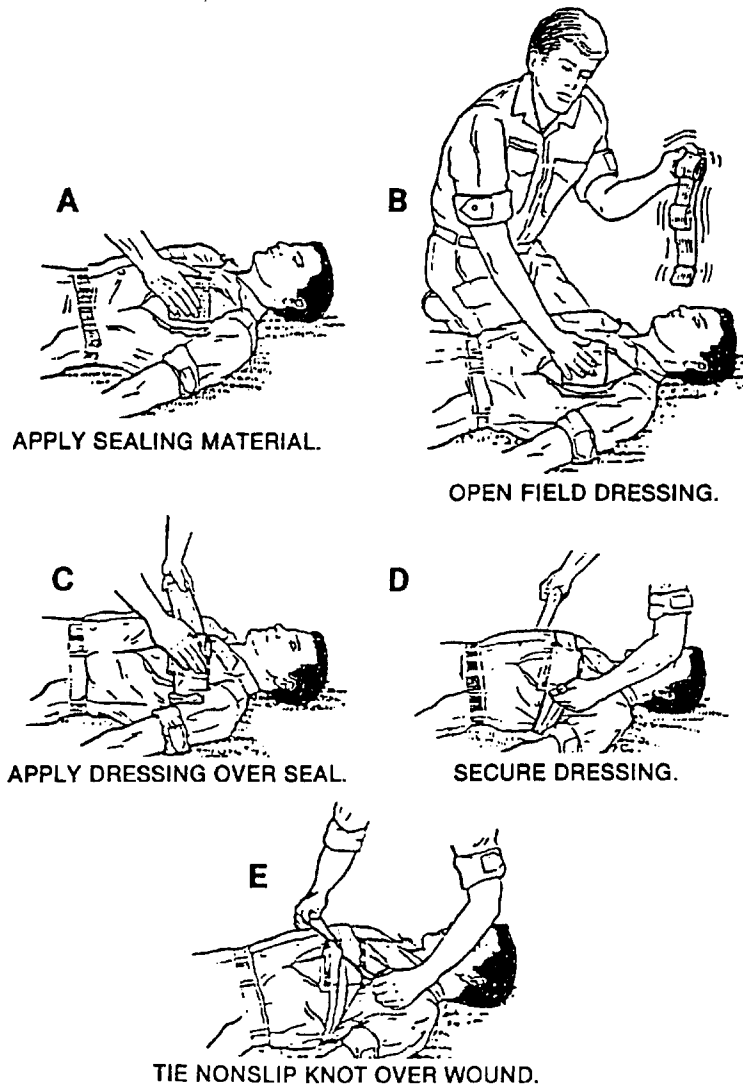


Figure 5-1
Sealing and Dressing an Open Chest Wound
(file: 824f5-1.bmp)

CAUTION: Avoid touching the inside surface of the plastic wrapper. The inner surface will be applied directly to the wound and should be kept as free from contamination as possible.

Have Casualty Exhale

Tell the casualty to completely exhale (breathe out) and hold his breath. This forces some of the air out of the chest wound. The more air that can be forcefully exhale out of the chest before the wound is sealed, the better the casualty will be able to breathe after the wound is sealed.

If the casualty is unconscious or cannot hold his breath, place the wrapper over the wound after his chest falls but before it rises.

Place Wrapper Over Wound

Place the inside surface of the plastic wrapper (the side without printing) directly over the hole in the chest to seal the wound. The casualty can resume breathing once the wound is sealed.

Check the plastic wrapper to ensure that it extends two inches or more beyond the wound edges in all directions. If the wrapper does not have a two-inch margin, it may not form an airtight seal and may even be sucked into the wound. If the wrapper is not large enough or is torn, use foil, a poncho, cellophane, or similar material to form the seal.

Tape Wrapper in Place

Tape down three edges of the plastic, usually the top edge and two side edges. This creates a "flutter valve" effect. When the casualty inhales, the plastic is sucked against the wound and air cannot enter the wound. When the casualty exhales, air may be able to exit the wound through the untaped (bottom) edge of the plastic.

CAUTION: If the securing material is not taped down, it must be held in place until the dressing is applied. If the casualty is able, he can hold the sealing material in place. Otherwise, you must keep the sealing material in place while you prepare to dress the wound as shown in figure 5-1.

Apply Field Dressing

Remove the field dressing from the paper wrapper.

Place the white side of the dressing directly over the plastic wrapper. Maintain pressure on the dressing so it does not slip.

WARNING

If an object is protruding from the chest wound, do not try to remove it. Place airtight material around the object to form as

airtight a seal as possible. Stabilize the object by placing a bulky dressing made from the cleanest material available around the object. Apply improvised bandages to hold the sealing material and dressings in place. Do not wrap the bandages around the protruding object.

Secure Dressing

Secure the field dressing using the attached bandage. [The field dressing must be tight enough to ensure that the sealing material will not slip if the material is not taped.] If the casualty is able, have him hold the dressing in place while you secure it. If he cannot help, then you must hold the dressing in place while securing it.

Grasp one tail, slide it under the casualty, and bring it back over the dressing.

Wrap the other tail around the casualty in the opposite direction and bring it back over the dressing.

Tighten the tails and tie them with a non-slip knot over the center of the dressing. The knot will provide additional pressure over the wound and will help to keep the seal airtight. The field dressing should not interfere with breathing.

CAUTION: If an object is protruding from the wound, tie the knot beside the object, not on it.

WARNING

If you are not able to tape the sealing material in place and the sealing material (plastic wrapper) slips while the dressing is being applied or secured, the airtight seal may be lost. Remove the dressing and sealing material, reseal the wound, replace the dressing, and secure the dressing.

Seal and Dress Other Open Chest Wounds

If there is more than one open chest wound, seal and dress the other wound(s). If needed, improvise dressing from the cleanest material available and use a bandage torn from a shirt or other material to keep the sealing material and dressing in place.

Apply Manual Pressure

If practical, apply direct manual pressure over the dressing for 5 to 10 minutes. The pressure will help to control the bleeding.

Additional pressure can also be applied by placing padding material over the dressing and securing the material with cloth bandages or the casualty's belt. Make sure the padding and bandages do not interfere with the casualty's breathing process.

**Learning Event 4:
POSITION A CASUALTY WITH AN OPEN CHEST WOUND**

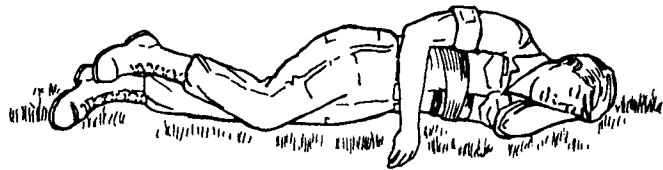


Figure 5-2
Casualty with Dressed Open Chest Wound
(file: 824f5-2.bmp)

Position the casualty on his side with his injured side next to the ground. Pressure from contact with the ground acts somewhat like a splint to the injured side and helps to reduce pain. (Positioning the casualty on his uninjured side might prevent his uninjured lung from expanding fully.)

The casualty may wish to sit up. If he can breathe easier when sitting up than lying on his side, allow him to sit up with his back leaning against a tree, wall, or other support. If he tires, have him lie on his injured side again.

**Learning Event 5:
MONITOR A CASUALTY WITH AN OPEN CHEST WOUND**

Seek medical help. If possible, send someone else after help while you stay with the casualty.

Monitor the casualty's breathing.

Treat for shock.

Evacuate the casualty as soon as practical.

WARNING

Air may still enter the chest cavity even if the wound is sealed and dressed. The air can cause a life-threatening condition called tension pneumothorax. If the casualty's condition worsens (increased difficulty in breathing, shortness of breath, bluish tint to skin, etc.), lift the sealing material from the wound to let the air escape during complete expiration; then reseal the wound. Taping the plastic wrapper (flutter valve effect) helps to prevent tension pneumothorax.

PRACTICE EXERCISES: LESSON 5

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the missing term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. Which of the following is a sign of an open chest wound?
 - a. Blood being coughed up.
 - b. Hissing sound coming from a chest wound.
 - c. Bluish tint to the casualty's lips.
 - d. All of the above.

2. The plastic wrapper is placed over an open chest wound to:
 - a. Prevent infection.
 - b. Reduce blood loss.
 - c. Prevent air from going through the wound and into the chest cavity.
 - d. Keep the dressing from having direct contact with the wound.

3. When treating a casualty with a sucking chest wound, have him _____ and hold his breath when you put the plastic wrapper over the wound.

4. What size of material should be used for making the airtight seal?
 - a. Four inches by six inches.
 - b. The distance between the edge of the sealing material and the edge of the wound should be two or more inches.
 - c. The sealing material should be the same size as the wound.
 - d. The sealing material should be slightly smaller than the size of the wound.

5. When applying the field dressing to an open chest wound, where should you tie the tails in a non-slip knot?

- a. Tie the knot in the center of the dressing.
- b. Tie the knot directly over his spine.
- c. Tie the knot on the uninjured side of his body.
- d. Tie the knot at the edge of the dressing.

6. If an object is protruding from the chest wound, you should:

- a. Not apply the airtight plastic seal.
- b. Remove the object before applying the airtight plastic seal.
- c. Place airtight material around the object and cover the material with a bulky dressing.

7. You have dressed an open chest wound. How can the casualty now be positioned?

- a. Either sitting up or lying on his uninjured side.
- b. Either sitting up or lying on his injured side.
- c. Lying on his uninjured side only.
- d. Lying on his injured side only.

8. You have given buddy-aid to a casualty with an open chest wound. His breathing had improved, but is now getting worse. He is short of breath, his lips are turning blue, and he is becoming very restless. What can you do to help the casualty?

- a. Nothing, the casualty's reactions are normal.
- b. Place a pressure dressing over the wound.
- c. Administer modified abdominal thrusts.

d. Lift the sealing material from the wound, let the air escape from the chest cavity, and then make the wound airtight again.

9. If possible, practice applying an airtight seal and field dressing to a simulated casualty. Have another person score your performance using a performance checklist.

ANSWERS TO PRACTICAL EXERCISES: LESSON 5

1. d (LE 1)
2. c (LE 3)
3. exhale. (LE 3)
4. b (LE 3)
5. a (LE 3)
6. c (LE 3)
7. b (LE 4)
8. d (LE 5)
9. See the checklist on the following page.

PERFORMANCE CHECKLIST
DRESS AN OPEN CHEST WOUND

Situation: You have evaluated a casualty and found only one serious wound, an open chest wound. You are not in a hazardous environment.

	GO	NO-GO
Exposes wound.	_____	
Opens field dressing plastic wrapper to create a flat surface without touching the inside surface of the plastic wrapper.	_____	
Places inside surface of plastic wrapper over wound when casualty exhales.	_____	
Ensures that plastic wrapper extends at least 2 inches beyond the edges of the wound. (Obtains and applies other airtight material to seal wound, if needed.)	_____	
Tapes three sides of wrapper.	_____	
Applies white side of field dressing over plastic wrapper.	_____	
Secures dressing with bandage.	_____	
Ties tails in a non-slip knot over the center of the dressing.	_____	
Bandages tight enough to keep dressing in proper position without restricting casualty's breathing.	_____	
Applies manual pressure over wound (5 to 10 minutes if practical).	_____	
Positions casualty on <u>injured</u> side or, if casualty desires, sitting up and leaning against a support.	_____	
Checks for tension pneumothorax. (If found, lifts seal, lets air escape, reseals wound, and secures seal.)	_____	

OVERALL EVALUATION
(A no-go on any step gives an overall
evaluation of no-go.)

GO

NO-GO

LESSON 6

APPLY A DRESSING TO AN OPEN ABDOMINAL WOUND

TASK

Identify proper procedures for treating a casualty with an open abdominal wound.

CONDITIONS

Given multiple-choice items pertaining to open abdominal wounds.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.
FM 8-230, Medical Specialist.
FM 21-11, First Aid for Soldiers.

INTRODUCTION

The body's abdominal cavity contains organs such as the stomach, small intestine, large intestine, liver, kidneys, and spleen. Several large arteries and veins are also located in the abdominal cavity. An object that punctures the muscular abdominal wall can injure one or more organs, cause severe bleeding, and result in infection which could spread to the organs within the cavity.

An open abdominal wound can be caused by the muscular abdominal wall being penetrated by a bullet, by a stab from a knife, by an object blown from an explosion, or by falling on a sharp object.

Learning Event 1:

POSITION A CASUALTY WITH AN OPEN ABDOMINAL WOUND

After evaluating the casualty and finding an open abdominal wound, position the casualty on his back with his knees up (flexed). This position helps to prevent further exposure of the abdominal organs, lessen pain, control shock, and relieve pressure on the abdominal area by allowing the abdominal muscles to relax.

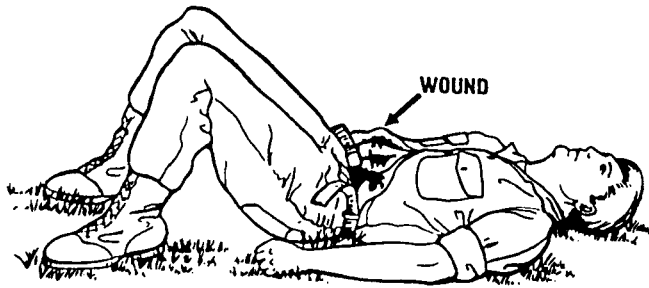


Figure 6-1
Casualty in Knees-up (Flexed) Position
(file: 824f6-1.bmp)

Learning Event 2:
DRESS AN OPEN ABDOMINAL WOUND

Locate and Expose Open Abdominal Wound(s)

Check the casualty's abdominal region for both entry and exit wounds. Use your hand to check the casualty's back for wounds. Look for a pool of blood. If more than one open abdominal wound is found, treat the more serious wound (largest, heaviest blood loss, etc.) first.

Expose the area around the open abdominal wound by removing, cutting, or tearing the clothing covering the wound. If clothing is stuck to the wound, do not try to remove the stuck clothing as this may cause additional pain and injury. Cut or tear around the stuck clothing. Do not try to probe, clean, or remove foreign objects from the wound.

WARNING

If you are in a chemical environment, dress the wound without exposing it.

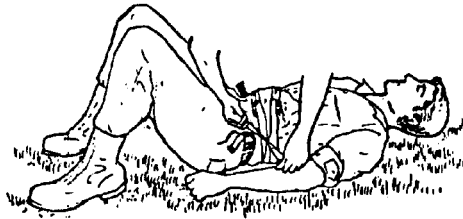
Position Dislodged Organs

Sometimes, part of an intestine or other organ is forced out through the wound. If an organ is outside the body, do not try to push the organ back into the body. Do not touch the exposed organ with your hands. If the organ is lying on the ground, use a dressing, T-shirt, or other clean, dry material to gently pick up the organ and place the organ on top of the casualty's abdomen near the wound (not on or in the wound).

DO NOT probe, clean, or try to remove any foreign object from the abdomen. DO NOT touch any exposed organs with the bare hands. DO NOT push organs back into the body.



SECURE DRESSING



TIE TAILS ON SIDE

Figure 6-2
Dressing an Open Abdominal Wound
(file: 824f6-2.bmp)

Place Dressing Over Wound

Open the casualty's field dressing and place the white side of the dressing over the wound and any protruding organs.

If the field dressing is too small to cover the wound and any protruding organs or if a field dressing is not available, use elastic gauze bandage or the cleanest materials available as a dressing. Clothing, part of a blanket, or similar materials may be used. Improvise bandages from strips of clothing to secure the dressing.

WARNING

If a foreign object is protruding from the wound, do not attempt to remove the object. Improvise bulky dressings from the cleanest material available and build up the area around the object in order

to stabilize the object. Secure the dressing with improvised bandages.

Secure the Dressing

Hold the dressing with one hand to keep it from slipping.

Grasp one tail and slide it under the casualty.

Reach down on the other side of the casualty, grasp the tail under the casualty, and pull.

Bring the tail up the casualty's side, over the dressing, and to the other side.

Wrap the other tail in the opposite direction (down the side, under the back, and up the side to the dressing).

Tie the tails in a non-slip knot on the outer edge of the dressing closest to the casualty's side. Do not tie the knots over the wound site.

CAUTION: The bandages should be tight enough to keep the dressing from slipping, but should not be tight enough to place pressure on the wound. You should be able to insert two fingers between the knot and the dressing. The primary purpose of the dressing is to protect the wound from further contamination, not to control the bleeding through pressure. Pressure could cause additional damage to the organs of the abdominal cavity.

Elastic gauze bandages applied over exposed abdominal organs (especially intestines) should be moistened with I.V. solution using the I.V. tubing.

Dress Other Abdominal Wound(s)

If other abdominal wounds are present (both entry and exit wounds are present, for example), dress and bandage the wounds.

Reinforce Dressings

If the situation allows and materials are available, reinforce the dressings by covering them with cravats, strips torn from a T-shirt, or other strips of cloth. The improvised bandages will provide additional support and protection. Tie the tails of the reinforcement bandages on the opposite edge side of the field dressing (not over the field dressing knot). The reinforcing material should be tight enough to help keep the dressing from slipping, but loose enough to prevent additional pressure on the wound.

CAUTION: Do not tie any knots over the wound site.

Learning Event 3:

MONITOR A CASUALTY WITH AN OPEN ABDOMINAL WOUND

Keep the casualty in the knees-up position.

Get medical help for the casualty as soon as possible. The dressing cannot adequately control internal bleeding (blood flowing into the abdominal cavity). The risks of serious infection and damage to internal organs are also present. If possible, send someone else to get help while you treat the casualty.

CAUTION: Do not give the casualty anything to eat or drink. If the casualty complains of thirst, moisten his lips with a damp cloth.

Administer mouth-to-mouth resuscitation if the casualty stops breathing.

If you must leave the casualty, tell him to stay on his back and keep his knees up.

PRACTICAL EXERCISES: LESSON 6

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the missing term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. How should a casualty with an open abdominal wound be positioned while the wound is being dressed and bandaged?
 - a. Flat on his back.
 - b. On his back with his head and shoulders raised.
 - c. On his back with his feet elevated higher than the level of his heart.
 - d. On his back with his knees raised.
 - e. On his side with the injured side down.

2. A casualty has both an entry and an exit wound in his abdominal region. Which wound should you treat first?
 - a. The entry wound.
 - b. The exit wound.
 - c. The more serious wound.

3. A casualty has an open abdominal wound. A loop of intestine is protruding from the wound and lying on the ground. What should you do?

4. When securing the dressing over an open abdominal wound, the tails should be tied:
 - a. Over the center of the dressing.
 - b. On the outer edge of the dressing.

c. Over the casualty's spine.

5. When securing the field dressing, the bandages should be tied:

a. Loose enough to avoid putting pressure on the wound but tight enough to keep the dressing in place.

b. Tight enough to control the bleeding but not tight enough to stop blood circulation.

c. As tightly as possible.

6. You have dressed and bandaged an open abdominal wound. The casualty says that he is hungry and thirsty. What should you do?

a. Give the casualty something to eat and drink.

b. Give the casualty something to drink, but nothing to eat.

c. Give the casualty some fruit that will help to satisfy both his hunger and his thirst.

d. Moisten the casualty's lips, but do not give him anything to eat or drink.

7. If you reinforce the abdominal dressings, where should you tie the knots of the reinforcing bandages?

a. Directly over the wound.

b. At the same place the tails of the field dressing were tied.

c. On the edge of the dressing, but not on the same edge that the field dressing tails were tied.

8. Which of the following statements is/are true?

a. Remove sticks or other objects protruding from the abdominal wound.

b. Dress the abdominal wound without exposing the wound if you are in a chemical environment.

c. Use the cleanest material available to clean the abdominal wound before applying the dressing.

d. Place any protruding organs inside the open abdominal wound or directly over the open wound.

e. All of the above are proper procedures for treating an open abdominal wound.

ANSWERS TO PRACTICE EXERCISES: LESSON 6

1. d (LE 1)
2. c (LE 2)
3. Use clean material to pick up the intestine loop, place it on the casualty's abdomen, and place a dressing over the intestine and the wound. (LE 2)
4. b (LE 2)
5. a (LE 2)
6. d (LE 3)
7. c (LE 2)
8. b (LE 2)

LESSON 7

APPLY A DRESSING TO AN OPEN HEAD WOUND

TASK

Apply a dressing to a casualty with an open head wound.

CONDITIONS

Given a simulated casualty with an open head wound and needed supplies.

STANDARD

Score a GO on the performance checklist.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.
FM 8-230, Medical Specialist.
FM 21-11, First Aid for Soldiers.

INTRODUCTION

A head injury may be the only injury (such as a single blow to the head) or it may be combined with other injuries (such as head and body injuries caused by an explosion). A head injury may consist of a cut or bruise of the scalp, a concussion, a fracture of the skull with injury to the brain, extruding brain matter, or a combination of these injuries. If the skin has been broken, it is called an open head injury. If the skin has not been broken, it is a closed head injury. Both open and closed head injuries can be severe and life-threatening.

Learning Event 1:

IDENTIFY SIGNS AND SYMPTOMS OF OPEN AND CLOSED HEAD INJURIES

Bleeding from the scalp, visible skull fracture, and visible brain tissue are signs of an open head injury. The following signs and symptoms are also indications of a head injury, even if no open wound is present.

Deformity of the head.

Clear or bloody fluid leaking from the nose or ear.

"Black eyes" and bleeding in the whites of the eyes.

Bruise behind one or both ears.

Headache, nausea, or vomiting.

Loss of consciousness (either current or recent unconsciousness).

Vision problems.

Staggering or dizziness.

Drowsiness.

Mental confusion.

Slurred speech.

Convulsions, twitching.

Difficulty in breathing.

Paralysis.

Size of pupils unequal.

Learning Event 2:

CHECK A CASUALTY'S LEVEL OF CONSCIOUSNESS

When a head injury is present, always check the casualty's level of consciousness by asking him to tell you his name, where he is, the month and year, or other information which cannot be answered by a simple yes or no. Incorrect responses, inability to answer, or changes in responses may indicate a serious head injury. Report the casualty's responses or lack of response to medical personnel.

Learning Event 3:

POSITION A CASUALTY WITH A HEAD INJURY

If the casualty is conscious, does not have a severe head or spinal injury, and other injuries do not prohibit his sitting up, have the casualty sit up. The casualty should lean against a tree, wall, or other stable object, if possible.

WARNING

A casualty with signs and symptoms of head injury other than minor wounds is presumed to have a serious head injury and a possible fractured neck. Avoid moving the casualty if possible. If you

must move the casualty, have other soldiers help you. Support the casualty's head and neck.

If the casualty is conscious, does not have a severe head or spinal injury, is not accumulating drainage in his throat, and is not able to sit up, elevate his head slightly.

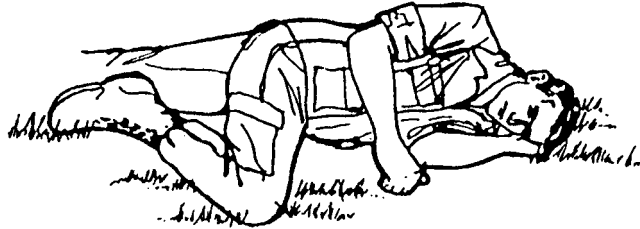


Figure 7-1
Casualty Positioned on his Side
(file: 824f7-1.bmp)

If the casualty is choking, nauseous, vomiting, or bleeding from his mouth, position the casualty on his side in order to promote drainage and to maintain an open airway. Place the casualty on the side opposite that of the wound (wound away from the ground).

If the casualty is having convulsions (involuntary muscle movements such as uncontrolled jerking or shaking), ease him to the ground and gently support his head and neck. Do not try to forcefully hold his arms and legs. Trying to "pin down" jerking limbs will probably cause additional injury. Do not put your finger or other objects in the casualty's mouth. A casualty with convulsions presents a two-fold problem in that you must treat his injuries and you must also keep him from accidentally hurting himself.

Learning Event 4: **EXPOSE THE HEAD WOUND**

Remove the casualty's headgear.

WARNING

If the casualty is wearing a mask and hood and the "all clear" signal has not been given, do not remove the casualty's mask and hood or attempt to dress the wound. If the mask or hood has been breached, repair it with tape or wet cloth stuffing if possible. Do not attempt to clean the wound or attempt to push any brain

matter back into the head. If an object is protruding from the wound, make bulky dressings from the cleanest material available, build up the area around the object, and secure the dressing with improvised bandages.

Learning Event 5:

APPLY A DRESSING TO A WOUND ON THE FOREHEAD OR BACK OF THE HEAD

Remove a field dressing from its wrappers. (If a field dressing is not available, improvise a dressing and bandages from the cleanest materials available.)

Grasp a tail in each hand, hold the dressing directly over the wound, pull the dressing open, and place the white side of the dressing directly over the wound.

Place one hand on the dressing to keep it from slipping. (The casualty may hold the dressing in place if he is able.)

Wrap one tail horizontally around the casualty's head and bring it back across the dressing. Angle the bandage so that it will cover the top or bottom edge of the dressing.



Figure 7-2
Wound on Forehead Wrapping Tail Around Head
(file: 824f7-2.bmp)

CAUTION: Apply the dressing and bandage so as to not interfere with the casualty's vision or hearing unless the eye or ear is injured.

Wrap the second tail around the casualty's head in the opposite direction.

Bring the tail back across the dressing angled so it will cover the other edge (top or bottom) of the dressing.

Continue to wrap the bandage around the head again until it meets the first tail.

Tie the tails in a non-slip knot on the side of the head.

CAUTION: The bandages should be tight enough so the dressing will not slip but not tight enough to place undue pressure on the wound.

Tuck in any excess tails. Tucking in excess material will keep the tails from catching on an object or accidentally hitting the casualty in the eye.



Figure 7-3
Tying Tails on the Side of the Head (Wound on Forehead)
(file: 824f7-3.bmp)

Learning Event 6:
APPLY A DRESSING TO THE TOP OF THE HEAD

Remove a field dressing from its wrappers.

Grasp a tail in each hand, hold the dressing directly over the wound with the white side of the dressing toward the wound, pull the dressing open, and place the white side of the dressing directly over the wound. (If a field dressing is not available, improvise a dressing and bandages from the cleanest materials available.)

Place one hand on top of the dressing to hold it in place.

Grasp the near tail with the other hand.

Bring the tail down in front of the ear, under the chin, up in front of the opposite ear, over the dressing, and to a point just above and in front of the first ear (about a one and one-fourth circle).



Figure 7-4
Bringing the Tail Under the Chin
(file: 824f7-4.bmp)

CAUTION: When passing a tail under the chin, make sure that the tail remains wide and close to the front of the chin. This will keep the bandage from choking the casualty.

Remove your hand from the dressing and grasp the other (free) tail.

Bring that tail down the opposite side of the face in front of the ear, under the chin, and up until it meets the first tail (about a three-fourths circle).

Cross the tails so that each makes a 90° turn. The cross should be made slightly above and in front of the ear.

Bring one tail across the casualty's forehead and above the eyebrows until it is in front of the opposite ear (about a half circle).

Bring the other tail back above the ear, low behind the head at the base of the skull, and up to a point above and in front of the opposite ear (about a half circle) where it meets the first tail. (Bringing the tail across the base of the skull will keep the bandage from slipping.)

Tie the tails in a non-slip knot in front of and above the ear.

Tuck in the excess material from the tails.

CAUTION: Apply the dressing and bandage so as to not interfere with the casualty's vision or hearing unless the eye or ear is injured.



Figure 7-5
Crossing the Tails (Wound on Top of Head)
(file: 824f7-5.bmp)



Figure 7-6
Tying Tails (Wound on Top of Head)
(file: 824f7-6.bmp)

Learning Event 7:
APPLY A DRESSING TO THE CHEEK OR SIDE OF THE HEAD

Remove a field dressing from its wrappers.

Grasp a tail in each hand, hold the dressing directly over the wound with the white side of the dressing toward the wound, pull the dressing open, and place the white side of the dressing directly over the wound so that the tails are vertical. (If a field dressing is not available, improvise a dressing and bandages from the cleanest materials available.)

Place one hand on top of the dressing to hold it in place. If the casualty is able, you can have the casualty hold the dressing in place while you secure it.

Bring the top (uppermost) tail over the top of the head, down in front of the ear, under the chin, up the side of the face, and over the dressing to a point just above the ear (a full circle). Avoid covering the ear, if possible.

CAUTION: When passing a tail under the chin, make sure that the tail remains wide and close to the front of the chin. This will keep the bandage from choking the casualty.

CAUTION: Apply the dressing and bandage so as to not interfere with the casualty's vision or hearing unless the eye or ear is injured.

Bring the other (bottom) tail down, under the chin, up the side of the face, in front of the ear, and over the top of the head until it meets the first tail (almost a full circle).



Figure 7-7
Bringing Second Tail Around to Meet First Tail (Wound on Cheek)
(file: 824f7-7.bmp)

Cross the two tails just above the ear on the injured side of the face.

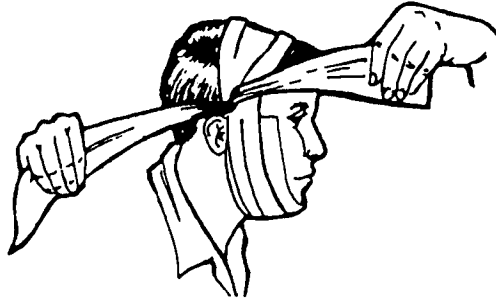


Figure 7-8
Crossing the Tails (Wound on Cheek)
(file: 824f7-8.bmp)

Bring one tail across the forehead (above the eyebrows) to a point just in front of the opposite ear (the ear on the uninjured side of the face).

Bring the other tail above the ear, low behind the back of the head at the base of the skull, and above the other ear until it meets the first tail.

Tie the tails in a non-slip knot just above and in front of the ear on the uninjured side of the head. Tuck in the ends of the tails.



Figure 7-9
Tails Tied in Non-slip Knot and Ends Tucked
(file: 824f7-9.bmp)

CAUTION: If fluid is coming from the casualty's ear, put a field dressing or clean cloth over the ear to protect the ear and absorb the drainage. Secure the dressing loosely, but tight enough to keep the dressing from slipping. Evacuate the casualty as soon as possible.

**Learning Event 8:
MONITOR A CASUALTY WITH A HEAD INJURY**

Position the casualty as described in Learning Event 1.

A scalp wound may bleed excessively, requiring pressure to control the bleeding.

A casualty with a serious head wound (brain tissue visible, fractured skull, deformity of the head, or fluid leaking from an ear) or who does not regain consciousness should be examined by medical personnel if readily available. The casualty should be evacuated to a medical treatment facility as soon as possible.

Any person with a head injury should be evaluated by medical personnel (medic, physician assistant, etc.) even if evacuation is not needed.

If you remain with the casualty, check his level of consciousness every 15 minutes. Have him tell you his name, where he is, and the month and year.

If the casualty falls asleep, wake the casualty to check his level of consciousness. Note any changes from earlier observations.

Do not give the casualty anything to eat or drink. Eating or drinking may cause him to vomit.

Treat for shock, if necessary.

PRACTICE EXERCISES: LESSON 7

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the missing term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. Which of the following is a sign of a closed head injury?

- a. Black eye with bleeding into the white of the eye.
- b. Clear fluid leaking from an ear.
- c. Slurred speech.
- d. Convulsions.
- e. All of the above.

2. You have been thrown to the ground by an explosion and dazed. A soldier in your squad comes to you, checks you over quickly, and asks, "What is your name? What is the date? Where are we?" What is happening?

- a. The soldier is showing signs of mental confusion and has probably suffered a head injury.
- b. The soldier wants you to talk so he can check you for a sucking chest wound.
- c. The soldier is checking you for symptoms of a head injury.
- d. The soldier is showing signs of suffering a nervous breakdown.

3. You are staying with a casualty who has suffered a head injury. You should check his level of consciousness every:

- a. 5 minutes.
- b. 15 minutes.
- c. 30 minutes.
- d. 60 minutes.

e. Time the casualty wakes up.

4. A casualty's arms and legs are jerking after he fell from a wall. How can you help this person?

a. Put the casualty against a tree and tie him to the tree.

b. Help the casualty to lie down and gently support his head.

c. Get help and pin the casualty's limbs down.

d. Do not attempt to assist the casualty yourself. A medical person who can administer an appropriate tranquilizer to the casualty is needed.

5. Which of the following is true concerning tying the non-slip knot of a field dressing applied to an open wound on the forehead?

a. The tails are tied on the side of the casualty's head.

b. The tails are tied at the center of the dressing directly over the wound.

c. The tails are tied at the base of the casualty's skull.

d. The tails are tied wherever they happen to cross.

6. When applying the field dressing to a casualty with an open wound on the top of his head, you should bring the tail down _____ the casualty's ear, pass the tail under his chin _____, and bring the tail up the opposite side.

a. In front of; as close to the throat as possible.

b. Behind; as close to the throat as possible.

c. Over; as close to the throat as possible.

d. Behind; close to the front of the chin.

e. In front of; close to the front of the chin.

f. Over; close to the front of the chin.

7. A soldier has fallen off of a ladder. He is conscious and does not seem to have any fractures or open wounds. He does, however, have some bloody fluid draining from his left ear. What should you do?

- a. Cover the left ear with a dressing or clean cloth and seek medical help.
- b. Apply a pressure dressing to the left ear and seek medical help.
- c. Have the soldier lie on his left side until the drainage stops; then apply a dressing to the left ear.
- d. Have the soldier lie on his right side; no dressing is needed.

8. A casualty has suffered a head injury. After you dress the wound and send someone to get medical help, the casualty goes to sleep. What should you do?

- a. Let the casualty sleep until he awakens on his own.
- b. Wake the casualty up every 15 minutes and check his level of consciousness.
- c. Give him something to drink or eat in order to keep him awake.
- d. Begin performing mouth-to-mouth resuscitation.

9. You are in a chemical environment when you come upon a wounded soldier. The soldier has his chemical protective gear on, but his hood has been penetrated and the soldier appears to have an open head wound. What should you do?

- a. Remove the hood and protective mask, dress the wound, and replace the mask and hood.
- b. Lift the hood, dress the wound, and replace the hood.
- c. Apply a dressing to the wound through the tear in the hood, then apply manual pressure to stop the bleeding.
- d. Apply a pressure dressing to the outside of the mask directly over the wound.

e. Attempt to repair the hood without dressing the wound.

10. Practice dressing a wound on a casualty's forehead, on his cheek, and on top of his head. Have someone check your performance against a performance checklist.

ANSWERS TO PRACTICE EXERCISES: LESSON 7

1. e (LE 1)
2. c (LE 2)
3. b (LE 8)
4. b (LE 3)
5. a (LE 5)
6. e (LE 6)
7. a (LE 7)
8. b (LE 8)
9. e (LE 4)
10. See the performance checklist on the following pages.

PERFORMANCE CHECKLIST
DRESS AN OPEN HEAD WOUND

Situation: A casualty has an open wound on his head. The wound does not appear to be severe, the casualty is conscious, and no other wounds appear to be present. You are not in a hazardous environment.

GO **NO-GO**

Checks casualty's level of consciousness. _____

Positions casualty (sitting position if casualty is willing, on back with head raised if casualty cannot sit up). _____

Exposes wound. _____

Opens field dressing and places white side of field dressing over the wound. _____

Keeps dressing from moving while securing dressing (holds dressing in place or has casualty to hold dressing). _____

Secures dressing with bandages.

Forehead: Takes tails around head horizontally, covers edges of dressing with tails, and tie tails in a non-slip knot on the side of the head. _____

Cheek: Takes tails around head vertically, crosses tails above ear on injured side, and ties tails in a non-slip knot above and in front of the ear on the uninjured side of the head. _____

Top: Takes tails around head vertically in front of ears, crosses tails above and in front of one ear, and ties tails in a non-slip knot on the other side of the head. _____

Bandages are tight enough to hold dressing in place without interfering with blood circulation or breathing (any bandage under chin remains wide and close to front of chin). _____

Eyes and ears are not covered unnecessarily. _____

Any excess tails are tucked in the bandage. _____

PERFORMANCE CHECKLIST: DRESS AN OPEN HEAD WOUND

GO

NO-GO

Question: What would you do if the casualty loses consciousness and you cannot evacuate the casualty for a while?

Answer: _____

OVERALL EVALUATION

(A no-go on any step gives an overall evaluation of no-go.)

GO

NO-GO

LESSON 8
PREVENT SHOCK

TASK

Identify the procedures for preventing/controlling shock.

CONDITIONS

Given multiple-choice examination items pertaining to shock.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.
FM 8-230, Medical Specialist.
FM 21-11, First Aid for Soldiers.

INTRODUCTION

There are several causes of shock. On the battlefield, hypovolemic (low blood volume) shock will be the primary type of shock present. If not properly treated, shock can result in death.

Learning Event 1:

IDENTIFY THE SIGNS AND SYMPTOMS OF SHOCK

Hypovolemic shock is usually caused by severe bleeding, but it can also be caused by a severe loss of body fluids from other causes such as severe burns (second and third degree burns on 20 percent or more of the body surface), vomiting, diarrhea, and severe heat injury. Other indications of hypovolemic shock include:

Sweaty but cool (clammy) skin, pale skin color, and/or blotchy or bluish skin around the mouth.

Nausea.

Anxiety (casualty restless or agitated).

Mental confusion.

Increased breathing rate.

Unusual thirst.

**Learning Event 2:
POSITION THE CASUALTY TO PREVENT/CONTROL SHOCK**

After you restore breathing to the casualty (if needed), control any major bleeding, and dress any major wounds, you must take measures to prevent or control shock. The procedures for preventing shock are basically the same as those for controlling (treating) shock.

Normal Shock Position

Move the casualty to cover, if possible.

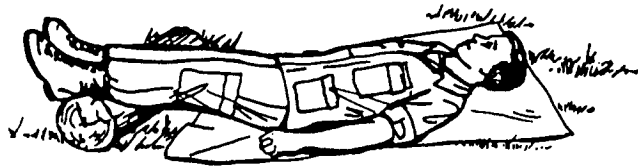


Figure 8-1
Normal Positioning of Casualty to Control Shock
(file: 824f8-1.bmp)

Position the casualty on his back. If possible, place a poncho or blanket under the casualty to protect him from the temperature or dampness of the ground.

Elevate the casualty's legs so that his feet are slightly higher than the level of his heart. (This helps the blood in the veins of his legs to return to his heart.) Place a small log, field pack, box, rolled field jacket, or other stable object under the casualty's feet or ankles in order to maintain the elevation.

WARNING

Check for fractures of the lower limbs before elevating the legs. Do not elevate the legs until all lower limb fractures have been splinted.

Shock Positions for Special Injuries

Certain casualties are not placed in the normal position for shock.

Suspected Fracture of the Spine. Do not move a casualty with a suspected spinal fracture unless it is necessary for the safety of the casualty and the rescuers. Do not elevate his legs. Immobilize his head, neck, and back (Lesson 11), if possible.

Open Chest Wound. If the casualty wants to sit up, help him to sit with his back to a wall, tree, or other support. If the casualty wants to lie down, position him so that he is lying on his injured side.

WARNING

Check for fractures of the arms and forearms before allowing the casualty to sit up. Check for fractures of the limbs before turning the casualty on his side.

Open Abdominal Wound. Keep the casualty on his back with his knees flexed.

Head Wound. Treat a severe head wound as though a spinal injury is present. A casualty with a minor head wound should be allowed to sit up. If the casualty has bleeding into the mouth or if he does not want to sit up, position him on his side with his wound up and his head turned so that fluid can drain from his mouth.

Unconsciousness. Position an unconscious casualty on his side with his head turned so fluids can drain from his mouth. If the casualty vomits, quickly perform a finger sweep to clear his airway.

LEARNING EVENT 3:

TAKE ADDITIONAL MEASURES TO PREVENT/CONTROL SHOCK

Reassure the Casualty

Keep the casualty calm. Tell the casualty that you are helping him. Be confident in your ability to help the casualty and have a "take charge" attitude. Your words and actions can do much to reassure the casualty and reduce his anxiety. Be careful of any comments you make regarding the casualty's condition.

Loosen the Casualty's Clothing

Loosen any binding clothing, including boots. Tight clothing can interfere with blood circulation.

WARNING

Do not loosen or remove the casualty's clothing in a chemical environment.

Keep the Casualty From Being Too Warm or Too Cool

In warm weather, keep the casualty in the shade. If natural shade is not available, erect an improvised shade using a poncho and sticks or other available materials. Do not cut off air flow to the casualty. Fan him if needed. Fanning promotes the evaporation of perspiration and cools the casualty.

In cool weather, cover the casualty with a blanket, poncho, or other available materials to keep him warm and dry. Place covering under the casualty to prevent chilling due to contact with cold or wet ground.



Figure 8-2
Casualty being treated for shock in cool weather
(file: 824f8-2.bmp)

Seek Help or Evacuate Casualty

If the casualty is showing signs and symptoms of hypovolemic shock, he needs more fluid in his blood circulatory system. Fluid volume can be increased by putting fluids into the casualty's veins [administering an intravenous infusion (I.V.)] to replace lost body fluids. A combat lifesaver or combat medic can administer fluids intravenously. Do not give a casualty in shock anything to eat or drink.

If you leave the casualty alone in order to get help, tell him you are going to get medical help and will return. Turn the casualty's head to one side before you leave. This will help to keep the casualty from choking should he vomit.

If additional help is not available, evacuate the casualty if practical.

PRACTICE EXERCISES: LESSON 8

INSTRUCTIONS: Answer the following exercises by writing the required words or phrases in the blanks provided. After you have completed all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. List four causes of hypovolemic shock.

2. Indicate how each of the following casualties should be positioned if he has the condition indicated with no additional injuries.

a. Open abdominal wound.

b. Open chest wound.

c. Spinal fracture.

d. Minor head injury.

e. Unconsciousness.

f. Arm wound with severe blood loss.

3. You should loosen the casualty's clothing unless

_____.

4. If the weather is hot, you should

and _____.

5. If the weather is cool, you should
_____ and
_____.

6. A soldier has skin that is pale, wet, and cool. He is breathing at a rapid rate. He is unusually thirsty, but cannot drink because he feels as though he will "throw up" if he tries to drink. This soldier is probably suffering from
_____.

ANSWERS TO PRACTICE EXERCISES: LESSON 8

1. Severe bleeding.
Severe burns.
Severe vomiting.
Severe diarrhea.
Severe heat injury. (LE 1)
2. a. (abdominal) On back with knees flexed (raised).
b. (chest) Sitting up or lying on injured side.
c. (spine) Left in position found with head, neck, and back immobilized.
d. (head) Sitting up or lying on side with wound up.
e. (unconscious) On side with head turned to promote fluid drainage.
f. (arm) On back with legs elevated.
(LE 2)
3. You are in a chemical environment. (LE 3)
4. Shade the casualty; fan him. (LE 3)
5. Cover the casualty; protect him from the ground. (LE 3)
6. Shock (or hypovolemic shock). (LE 1)

LESSON 9

SPLINT A SUSPECTED FRACTURE

TASK

Splint a suspected fracture of the arm or leg.

CONDITIONS

Given a simulated casualty with a suspected fracture of the arm or leg and needed materials.

STANDARD

Score a GO on the performance checklist.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.
FM 8-230, Medical Specialist.
FM 21-11, First Aid for Soldiers.

INTRODUCTION

A fracture is a break in a bone. A fracture can cause discomfort, disability, and even death.

A closed fracture is a break in the bone without a break in the skin. Even though the skin is not cut or broken, the tissue beneath the skin may be damaged.

An open fracture is a break in the bone with a break in the overlying skin as well. The break in the skin may be caused by the sharp end of the broken bone or by a foreign object such as a bullet penetrating the skin. Open fractures are especially serious due to the danger of infection.

A dislocation occurs when the bones comprising a joint (elbow, knee, wrist, etc.) are forced out of their proper positions. A sprain results when a joint is twisted beyond its normal limits of motion and the connecting tissues around the joint tear. A dislocation or sprain can produce signs and symptoms similar to those of a fracture and should be treated as a fracture of the joint.

Learning Event 1:

IDENTIFY SIGNS AND SYMPTOMS OF A FRACTURED ARM OR LEG

Some of the signs and symptoms of a fractured limb (arm or leg) are:

Bone sticking through the skin.

Pain, tenderness, swelling, and/or bruises at a particular location. (The site of the tenderness or bruise is probably the site of the fracture.)

Arm or leg appears to be shorter or is in an abnormal position (looks deformed).

Difficulty in moving an arm or leg.

CAUTION: Do not have the casualty attempt to move the injured arm or leg to test this symptom. Rely upon what the casualty tells you.

Massive injury to an arm or leg. (Even if the bone is not broken, the pain caused by the wound may be lessened if the arm or leg is splinted after it has been dressed and bandaged.)

"Snapping" sound may be heard by the casualty at the time of the injury.

Learning Event 2:

PREPARE THE CASUALTY

There are some actions that need to be taken before you splint the suspected fracture.

Reassure Casualty

Tell the casualty that you are taking care of him. If you must leave the casualty to locate materials needed to make a splint, be sure to tell him that you will return quickly. Talk to the casualty even if he appears to be unconscious.

Locate Site of Fracture

The site of the fracture is where the bone has broken the skin or where the pain, tenderness, bruise, abnormal bend in arm, or other indicator of a fracture is located.

Check Circulation Below Fracture

Evaluate the casualty's blood circulation in the limb below the fracture site. A person with poor circulation should be evacuated to a medical treatment facility as soon as possible after the limb is splinted. A quick evacuation will help to prevent the loss of the limb.

Pulse. Feel the casualty's pulse at a site below the fracture. Lack of a pulse or a weak pulse indicates that poor circulation is present. A weak pulse can be determined by comparing the pulse felt below the fracture with the pulse felt at the same location on the uninjured limb. (Instructions for taking a pulse are given in Subcourse IS0825.)

Color. In a light-skinned person, a pale, white, or bluish-gray skin color indicates poor circulation. To check the circulation in a dark-skinned individual, press on a nail on the injured limb and the corresponding nail on the uninjured limb. Release both nails at the same time. If the color returns to the nail bed of the uninjured limb faster than it returns to the nail bed of the injured limb, the casualty probably has poor circulation in the injured limb.

Temperature. Place your hand on the area beneath the injury. Then place your hand on the corresponding area on the uninjured arm or leg. If the skin of the injured limb is cooler than the skin on the uninjured limb, the casualty probably has poor circulation in the injured limb.

Numbness. If the area feels numb or tingling to the casualty, the area probably has poor circulation.

Loosen Clothing

Loosen any clothing that is tight or which binds the casualty. Boots should not be removed unless they are needed to immobilize an injured neck (Lesson 10) or there is actual bleeding from the foot.

WARNING

Do not remove or loosen any of the casualty's protective clothing if you are in a chemical environment.

Remove Jewelry

Remove any jewelry that is on the casualty's injured limb and put the jewelry into his pocket. Jewelry is removed because the limb may swell and cause the jewelry to interfere with blood circulation. Be sure to tell the casualty what you are doing and why.

Dress Wounds

Dress any open wounds (including burns) on the injured limb before applying the splint.

CAUTION: If a bone is sticking out, do not attempt to push the bone back under the skin. Apply the dressing over the bone and the wound. Do not attempt to straighten or realign the injured limb.

If bandages were applied, evaluate the casualty's blood circulation in the limb below the fracture site again. If the first evaluation indicated adequate circulation and this evaluation indicates poor circulation, loosen the bandages, retie the tails, and recheck the circulation. If the circulation does not return to its previous level, the casualty should be evacuated as soon as practical.

Learning Event 3: GATHER SPLINTING MATERIALS

A splint is formed by a rigid object or objects being applied and secured to the injured limb in a manner that will keep the broken bone from moving (immobilize the fracture). If the fractured bone is not splinted, the surrounding muscles, blood vessels, and nerves may be injured by the fractured ends of the bone. You will need rigid object(s), padding, and securing materials.

Rigid Objects

Tree branches, poles, boards, sticks, or other rigid objects can be used. Normally, two rigid objects (one for each side of the fractured limb) are used. The rigid objects should be fairly straight and be long enough to extend beyond the joint above the fracture site and beyond the joint below the fracture site. Even the casualty's own body can be used when other materials are not available. His chest can be used to immobilize a fractured arm and an uninjured leg can be used to immobilize a fractured leg.

Padding

Padding is needed to keep the rigid objects from rubbing against the skin on the injured limb. Blankets, jackets, ponchos, extra clothing, shelter halves, leafy plants, or the casualty's trouser leg or shirt sleeve can be used as padding. The padding helps to prevent excessive pressure that could interfere with blood circulation. Extra padding should be used at bony body areas such as the elbow, wrist, knee, and ankle and at sensitive areas such as the groin and armpit.

Securing Materials

Rigid objects are normally secured with cravats made from muslin bandages. Rigid objects can also be secured with strips of clothing, belts, pistol belts, bandoleers, or similar materials. Narrow materials such as wire and

cord should not be used to secure the rigid objects in place since they could interfere with blood circulation. The steps for making cravats are summarized below.

Cut or tear a square about three feet on each side from pliable material such as a shirt or sheet if muslin bandages are not available.

Fold the square along the diagonal so that it is triangular in shape.

Cut or tear along the fold to form two triangles. (Each triangle becomes a cravat.)

Fold the top of the triangle down until the tip of the triangle touches the base (longest side).

Continue to fold until the cravat is the correct size (usually about three folds).

Learning Event 4: SPLINT THE LIMB

WARNING

Do not try to straighten or reposition the fractured limb. Splint the limb in the position you find it. Move the limb as little as possible while applying and securing the splint.

Position the Securing Materials

Push the securing materials (cravats, etc.) under natural body curvatures, such as the knees. Then gently move the securing materials up or down the limb until they are in proper position.

Place securing materials under the limb both above and below the fracture site. If possible, place two cravats above the fracture site and two cravats below the fracture site (above the upper joint, between the upper joint and the fracture, between the fracture and the lower joint, and below the lower joint.)

CAUTION: Do not place securing material directly under the suspected fracture site. The pressure caused by the securing material when it is tightened could result in additional injury to the fracture site.

Position the Rigid Objects

Place the rigid objects so that one is on each side of the injured limb. When possible, position the rigid objects so the joint above the fracture and the joint below the fracture can be immobilized. If the fracture is in

the lower leg, for example, the splint should extend above the knee and below the ankle. (Note: If a forearm is fractured, the wrist is usually immobilized by the splint and the elbow is usually immobilized by a sling and swathe.) Make sure that the ends of the rigid objects are not pressing against a sensitive area such as the armpit or groin. Pressure on these areas can interfere with blood circulation.

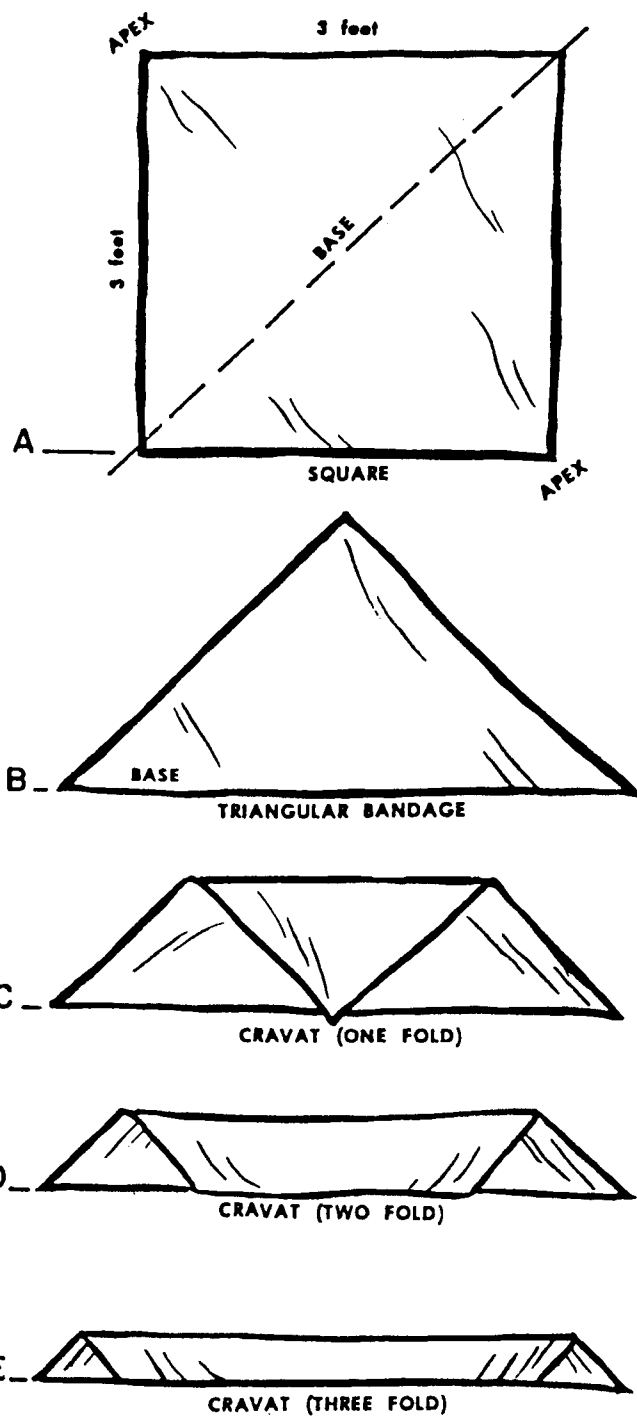


Figure 9-1
 Making Cravats from a Muslin Bandage
 (file: 824f9-1.bmp)

Apply Padding

Place padding between the rigid objects and the limb to be splinted. Apply extra padding to joints and sensitive areas.

Secure the Rigid Objects

Wrap the securing materials around the rigid objects and limb so that the rigid objects immobilize the limb. Tie the ends (tails) of each securing cravat in a non-slip knot on the outer rigid object and away from the casualty. (The knots are tied on the outer rather than the inner rigid object to make loosening and retying the cravats easier should that procedure become necessary.) The securing material should be tight enough to hold the rigid objects securely in place, but not tight enough to interfere with blood circulation.

Check Circulation

Observe the limb below the cravats for signs of impaired circulation as you secure the rigid objects. After they have been secured, recheck the limb's circulation as described in Learning Event 2. If your check before splinting the fracture showed normal circulation and your check now shows poor circulation, loosen the securing materials, reposition the rigid object if the end of the object is pressing against the casualty's body (especially at the armpit or groin), and/or add padding. Retie the securing materials using non-slip knots on the outer rigid object. Make sure that the securing materials keep the rigid objects from slipping. Recheck the circulation. If the limb still has poor circulation, evacuate the casualty as soon as possible.

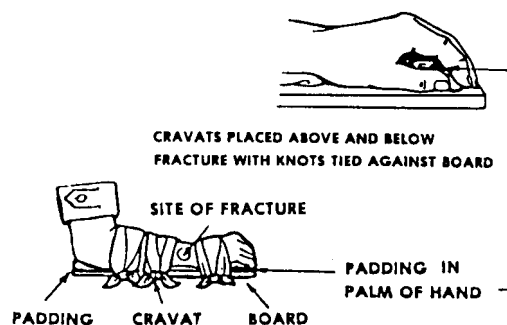


Figure 9-2
Single-board splint applied to a fractured wrist
(file: 824f9-2.bmp)

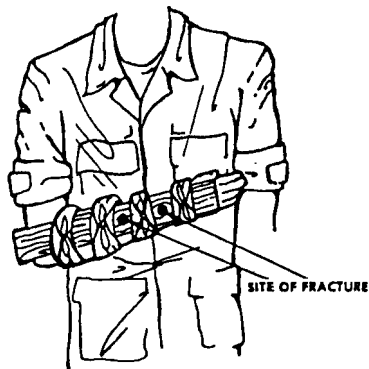


Figure 9-3
Splint Applied to a Fractured Forearm
 (file: 824f9-2.bmp)

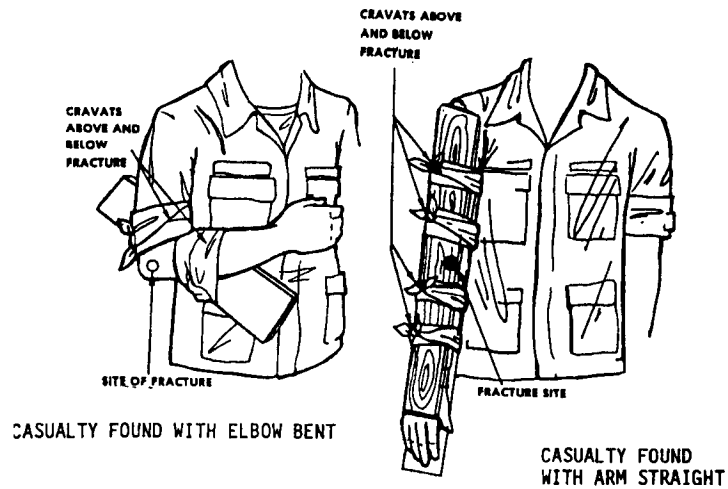


Figure 9-4
Splint Applied to a Fractured Elbow
 (file: 824f9-4.bmp)

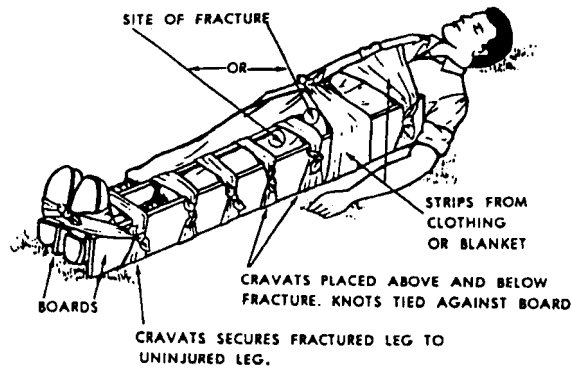


Figure 9-5
Splint Applied to a Fracture of the Upper Leg (Thigh)
 (file: 824f9-5.bmp)

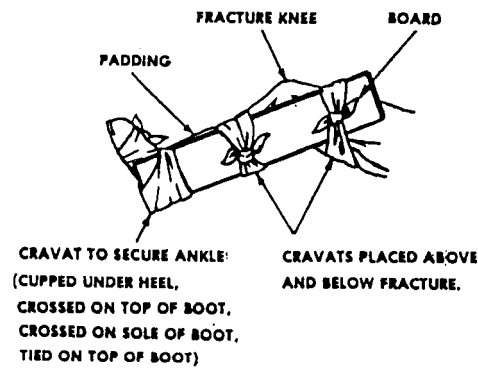


Figure 9-6
Splint Applied to a Fractured Knee (Bent)
 (file: 824f9-6.bmp)

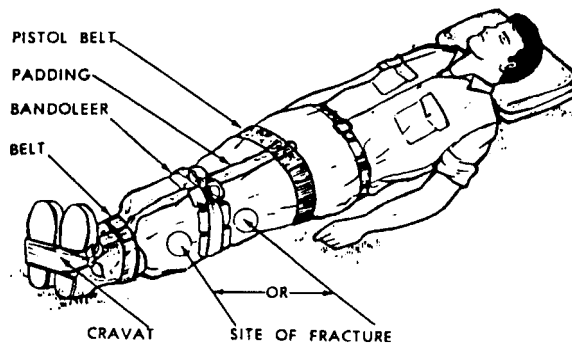


Figure 9-7
Uninjured Leg used as a Splint
 (file: 824f9-7.bmp)

**Learning Event 5:
APPLY A SLING AND SWATHE TO A FRACTURED ARM**

A sling is usually used to secure and support a fractured forearm, wrist, or hand after the fracture has been splinted. When the upper arm is fractured, a sling and swatches can be used to immobilize the arm.

A sling can be made using a triangular bandage, strips of torn material, or the casualty's shirt or jacket.

Apply a Triangular Bandage Sling

A triangular bandage sling is usually made from a muslin bandage, but any material that does not stretch (such as a fatigue shirt, trousers, poncho, blanket, or shelter-half) can be used.

Fold, cut, or tear the material into a triangular shape (same as beginning a cravat).

Insert the material under the injured arm so that the arm is in the center, the apex of the sling is beyond the elbow, and the top corner of the material is over the shoulder of the injured side.

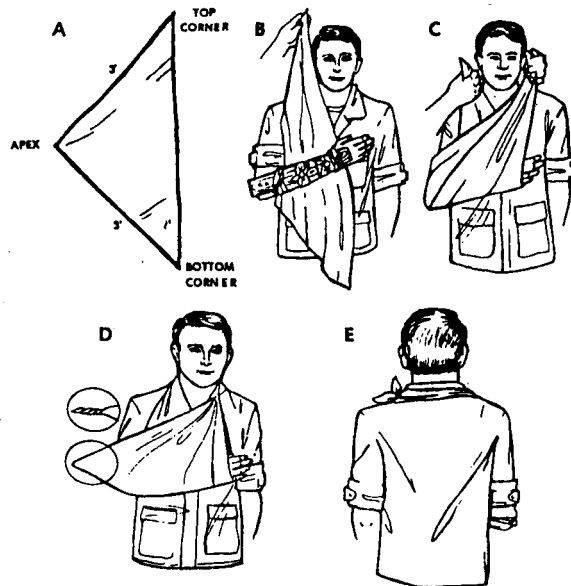


Figure 9-8
Applying a Triangular Bandage Sling
(file: 824f9-8.bmp)

Position the forearm so that the hand is slightly higher than the elbow (about a 10 degree angle).

Bring the lower portion of the material over the injured arm so that the bottom corner goes over the shoulder of the uninjured side.

Bring the top corner behind the casualty's neck.

Tie the two corners together so that the knot will not slip. The knot should fit into the "hollow" at the side of the neck on the uninjured side. (If the casualty's right arm is fractured, for example, tie the knot so it will rest in the hollow on the left side of his neck.)

Twist the apex of the sling and tuck it in at the elbow. (The corner can also be secured using a safety pin.) This secures the elbow and keeps the forearm from slipping out of the sling.

Apply a Jacket Flap Sling



Figure 9-9
BDU Jacket Flap Sling
(file: 824f9-9.bmp)

If the time or the materials to make a triangular bandage sling are not available, the flap of a BDU jacket (coat) or a field jacket (coat) can be used as a sling.

Position the forearm on the casualty's chest with the hand positioned slightly higher than the elbow.

Undo the jacket so that the lower portion (flap) can be brought over the arm to form a sling.

Bring the flap up over the forearm to the pocket area. Position the elbow so the elbow is inside the sling and will not slip out of the sling.

Push a stick or other rigid object through the flap and the upper portion of the jacket so the flap will not slip.

Apply Swathes

A swathe is a large strip of cloth, muslin bandage, field dressing, blanket strip, pistol belt, trouser belt, bandoleer, or other material used to immobilize an arm. The swathe should be three to six inches wide. Two swathes are normally applied when the chest is used as a rigid object (one above the fracture and one below the fracture) or when the elbow is not bent. Note that the sling is applied before the swathes.

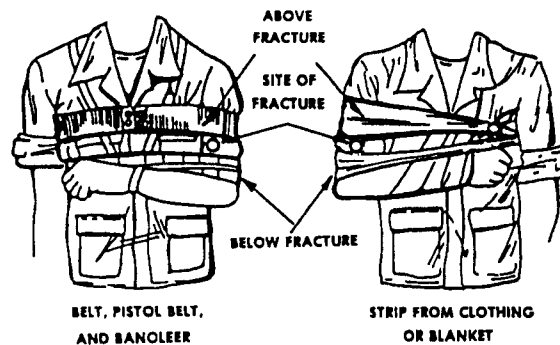


Figure 9-10

Sling and Swathes Applied when Chest used as Rigid Object
(File: 824f9-10.bmp)

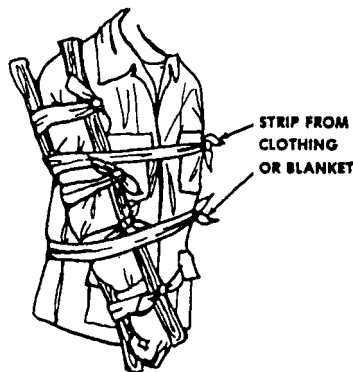


Figure 9-11

Swathes Applied to a Fractured Elbow
(file: 824f9-11.bmp)

CAUTION: Do not apply a swathe on top of the fracture site. The pressure of the swathe could cause additional damage to the nerves and blood vessels around the broken bone.

Normally, a single swathe is used to help immobilize the arm after a fractured forearm has been splinted and a sling applied. Steps for applying the swathe are given below.

Place one end of the swathe at the breast pocket near the uninjured arm.

Wrap the swathe across the sling, around the upper arm on the injured side, behind the casualty's back, under the uninjured arm, and back to the breast pocket.

Tie the two ends in a non-slip knot over the breast pocket on the uninjured side.



Figure 9-12
Sling and Swathe Applied to a Fractured Forearm
(file: 824f9-12.bmp)

PRACTICE EXERCISES: LESSON 9

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the required term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. A soldier has fallen and you suspect he has broken his leg. Someone says, "Difficulty in moving the limb is a sign of a fracture. Ask him to raise his leg as high as he can." What should you do?

- a. Ignore the suggestion since difficulty in moving the injured limb is not a sign of a fracture.
- b. Ask the casualty how his leg feels, but do not ask him to move his leg.
- c. Gently lift the casualty's leg and check for numbness.
- d. Tell the casualty to raise his injured leg as high as he can.
- e. Tell the casualty to raise both legs as high as he can and see if he can lift the injured leg as high as the uninjured leg.

2. When splinting a fractured limb, you should check the circulation below the fracture site:

- a. Before applying the splint.
- b. After applying the splint.
- c. Both before and after applying the splint.

3. A casualty has a fractured arm. You can check his circulation by pressing on his _____ and observe how quickly the color returns.

4. When applying a sling to a fractured arm, the casualty's hand should be _____ his elbow.

- a. Slightly higher than.

- b. Slightly lower than.
- c. Even with.

5. You find a casualty with a fractured leg. The end of the broken bone has penetrated the skin and is sticking out. How should you treat this wound?

- a. Dress the wound without attempting to straighten the limb or to push the bone back under the skin.
- b. Pull on the end of the limb (hand or foot) until the bone returns to its proper position; then dress the wound.
- c. Gently push the bone back under the skin; then dress the wound.
- d. Gently pull on the end of the limb (hand or foot) and gently push the bone back under the skin until the bone returns to its proper position; then dress the wound.
- e. Splint the limb without dressing the wound and without straightening the limb or pushing the bone back under the skin.

6. Which of the following should not be used as a rigid object in splinting a fractured leg?

- a. A tree limb.
- b. A loaded rifle.
- c. The casualty's uninjured leg.
- d. Broken tent pole.

7. You are splinting a broken leg. Which one of the following areas requires extra padding?

- a. Middle of the upper leg (thigh).
- b. Middle of the lower leg (calf).
- c. Knee.
- d. Site of the fracture.

8. Rigid objects should be secured:

- a. Above the fracture site.
- b. At the fracture site.
- c. Below the fracture site.
- d. Above and below the fracture site.
- e. Above, at, and below the fracture site.

9. You have splinted a casualty's upper arm. Before you applied the splint, he had good circulation below the fracture. Now he has poor circulation. What should you do?

10. A casualty has a fracture half way between his shoulder and his elbow. Where should the swathe(s) be applied?

- a. Above the fracture site.
- b. At the fracture site.
- c. Below the fracture site.
- d. Above and below the fracture site.
- e. Above, at, and below the fracture site.

11. A sling and a swathe are being applied to a fractured right forearm. The ends of the sling are to be tied at the side of the neck on the casualty's _____ side and the ends of the swathe are to be tied over the breast pocket on the casualty's _____ side.

- a. Injured; injured.

- b. Injured; uninjured.
- c. Uninjured; injured.
- d. Uninjured; uninjured.

12. If possible, practice splinting a fractured limb. Have another person score your performance using the performance checklist.

ANSWERS TO PRACTICE EXERCISES: LESSON 9

1. b (LE 1)
2. c (LE 2 & 4)
3. fingernails (LE 2)
4. a (LE 5)
5. a (LE 2)
6. b (LE 3)
7. c (LE 3 & 4)
8. d (LE 4)
9. Loosen the cravats securing the splint, reposition the rigid objects, add padding (if needed), retie the cravats, and recheck the circulation below the cravats. (LE 4)
10. d (LE 5)
11. d (LE 5)
12. See the performance checklist on the following pages.

PERFORMANCE CHECKLIST
SPLINT A SUSPECTED FRACTURE

Situation: You have evaluated the casualty and determined that he has a fracture of the (upper arm, forearm, thigh, lower leg -- choose one).

	GO	NO-GO
Reassures casualty.	_____	
Locates fracture site.	_____	
Checks circulation below fracture site.	_____	
Loosens tight clothing.	_____	
Removes any jewelry on the injured limb.	_____	
Dresses open wounds on limb (if present).	_____	
<u>Question</u> : What should you do if a bone is sticking out of the open wound on the limb?		
<u>Answer</u> : _____	_____	
Checks circulation below fracture site.	_____	
Splints the fracture in the position found (does not attempt to straighten limb).	_____	
Places cravats (or other securing material) under limb with at least one cravat above the fracture site and at least one cravat below the fracture site and none over the fracture site.	_____	
Places rigid objects on each side of the fractured limb.	_____	
Places padding between limb and rigid objects.	_____	
Secures rigid objects in place with cravats.	_____	
Ties non-slip knots on the outside rigid object.	_____	
Checks the casualty's circulation below	_____	

the injury.

PERFORMANCE CHECKLIST: SPLINT A SUSPECTED FRACTURE

	GO	NO-GO
If limb has poor circulation, loosens cravats, repositions rigid objects (if needed), adds padding (if needed), and reties the cravats.	(_____	_____)
Cravats tied tight enough to securely hold the rigid objects in place.	_____	
<u>Question:</u> What would you do if the casualty has poor blood circulation below the fracture and adjusting the splint does not help?		
<u>Answer:</u> _____	_____	
<u>The following steps are performed for a fracture of a forearm, wrist, or hand.</u>		
Makes a triangular bandage to use as a sling.	_____	
Positions the injured arm in the center of the sling with apex beyond the elbow and top end over shoulder of injured side and behind the casualty's neck.	_____	
Brings other end of the sling over injured arm and ties ends at the neck on the uninjured side.	_____	
Twists and tucks the apex of the sling at the elbow.	_____	
Wraps swathe around upper arm and chest so the casualty's injured arm is immobilized and the uninjured arm is still free.	_____	
Ties the ends of the swathe in a non-slip knot on the casualty's uninjured side.	_____	

OVERALL EVALUATION
(A no-go on any step gives an overall
evaluation of no-go.)

GO

NO-GO

LESSON 10

IMMOBILIZE A SUSPECTED SPINAL INJURY

TASK

Identify proper procedures for immobilizing a suspected spinal injury.

CONDITIONS

Given multiple-choice items pertaining to spinal injuries.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.
FM 8-230, Medical Specialist.
FM 21-11, First Aid for Soldiers.

INTRODUCTION

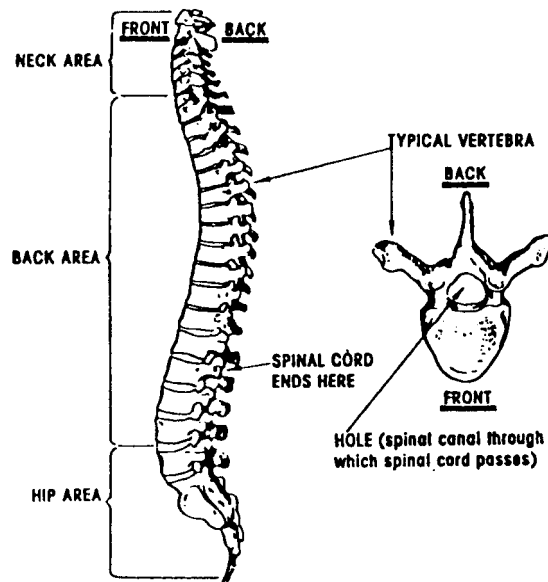


Figure 10-1
Spinal Column
(file: 824f10-1.bmp)

The spinal column (also called the backbone or spine) consists of a series of bones called vertebrae. The top seven vertebrae are the bones of the neck. The spinal column surrounds and protects the spinal cord. The spinal cord consists of nerves which carry impulses between the brain and the rest of the body. If the spinal cord is severed (cut completely), the muscles and sensations controlled by the portion of the spinal cord below the cut will not function.

Learning Event 1:

IDENTIFY SIGNS AND SYMPTOMS OF A FRACTURED SPINE

Always check a casualty who is lying down and breathing for spinal injury, especially if the casualty has suffered a fall or has been hit in the back.

Signs and symptoms of an injured spine include:

Pain or tenderness of the neck or back.

Cut or bruise on the neck or back.

Inability to move part of the body (paralysis), especially the legs.

Lack of feeling in a body part. (Touch the casualty's arms and legs and ask if he feels your hand.)

Loss of bladder and/or bowel control.

Weak respiration.

Head or back in an unusual position.

Learning Event 2:

MOVE A CASUALTY WITH A SUSPECTED SPINAL INJURY, IF NECESSARY

WARNING

Do not move a casualty with a suspected fracture of the spine unless it is necessary to move the casualty from an immediate life-threatening danger (fire, etc.) or if the casualty is not breathing and you must position him for mouth-to-mouth resuscitation. Moving the casualty could result in permanent paralysis or even death.

If a life-threatening danger exists, it may be necessary to move the casualty out of danger before providing treatment. If the casualty must be moved prior to treatment, great care must be taken to avoid causing

additional injury to the casualty. A minimum of four soldiers must be used to move the casualty. (This carry is a four-man variation of the two-man arms carry discussed in Lesson 14.)

The first soldier (the leader--usually a combat medic or combat lifesaver) kneels at the casualty's head facing the casualty's feet, places his hands on each side of the casualty's head and jaw, and pulls back slightly to manually immobilize the head and neck.



Figure 10-2
Manually Immobilizing the Casualty's Head and Neck
(file: 824f10-2.bmp)

The other three soldiers kneel at the casualty's side and place their hands and forearms under the casualty's shoulders, waist, hips, thighs, knees, and ankles.

On the command, "Lift," from the leader, all soldiers rise to their knees in unison, keeping the casualty's head and spine in straight alignment.

If a spine board is available or one can be improvised from a door or board, the casualty should be moved on the spine board.

When the leader gives the command, "Lift," a fifth soldier slides the spine board into position under the casualty.

On the command, "Lower," from the leader, the soldiers bend in unison and gently lower the casualty onto the spine board while keeping the head and spine in alignment.

The soldiers then secure the casualty to the spine board, carefully lift the spine board, and move the casualty to safety. The leader should keep manual traction on the casualty's head while the other four soldiers carry the spine board and casualty.

When a safe location is reached, the soldiers gently lower the spine board and casualty onto a flat surface and fully immobilize the casualty as described in the following learning events.

If a spine board is not available and there is no time to improvise one, the casualty is moved using the four-man arms carry.

On the command, "Turn," from the leader, the soldiers gently turn the casualty toward their chests as the leader gently turns the casualty's head to maintain spinal alignment.

On the command, "Rise," from the leader, the soldiers stand in unison, maintaining alignment of the head and spine. The casualty is then carried out of danger.

When a safe location is reached, the soldiers gently lower the casualty onto a flat surface by reversing the lifting procedures and fully immobilize the casualty as described in the following learning events.

Learning Event 3: IMMOBILIZE THE CASUALTY'S SPINE

If the casualty has signs and symptoms of a fractured spine, immobilize the casualty's back, neck, and head.

Treat any casualty which you think may have a spinal injury as though you were certain he had a fractured spine.

Treat any casualty which has a severe head injury as though he also has a fractured neck.

WARNING

Do not attempt to straighten the casualty's head or back if it is in an abnormal position.

Tell the casualty to keep still. Any movement could cause additional injury.

Send someone to get medical help.

If the casualty is lying on his stomach, keep him from moving until medical help arrives.

If the casualty is lying on his back, use padding to help immobilize his back, neck, and head as described below.

Roll or fold padding (such as a blanket) until it conforms to the shape of the arch of his back. Then carefully slide the padding under the arch of his back. This padding will help support and immobilize his back.

Slide a roll of cloth under the casualty's neck to help support and immobilize his neck.

Place padded rocks, small padded logs, or filled boots on each side of the casualty's head to keep it from moving. The procedure for using filled boots is described in the following paragraphs.

Remove the casualty's boots.

WARNING

Do not remove the casualty's boots if you are in a chemical environment.

Fill the boots almost to the top with sand or small rocks.

Place material (strip of clothing, sock, etc.) on top of the sand or rocks to keep the sand or rocks from falling out.

Tie the top of the boots to keep the material from coming out.

Place the boots around the casualty's head so the head will not turn.

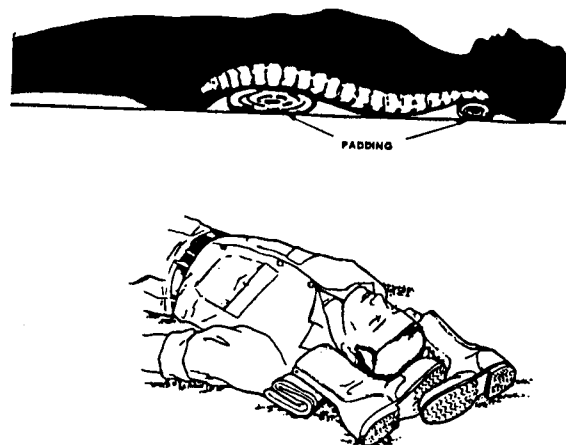


Figure 10-3
Immobilizing a Casualty's Spine (Padding Under Back and Neck, Head Immobilized with Boots)
(file: 824f10-3.bmp)

PRACTICE EXERCISES: LESSON 10

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the required term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. A soldier lying on his back has been injured from an explosion. He says that he cannot move his legs. When you touch one of his legs, he states that he cannot feel anything. This soldier:

- a. May or may not have a spinal fracture; turn the casualty onto his stomach and examine his back.
- b. May or may not have a spinal fracture, but treat the casualty as though you were sure his spine was fractured.
- c. Definitely has a spinal fracture.
- d. Has a closed fracture of the leg.

2. You find a soldier lying on his stomach (prone) with his head turned to one side. The soldier is conscious and tells you that he thinks he has injured his back. What should you do?

- a. Turn him onto his back, place a cloth roll under the arch of his back and immobilize his head with boots or padded rocks.
- b. Have another soldier hold the casualty's feet. Put your arms under the casualty's arms and pull until his back is in proper alignment. Then send the other soldier to get medical help.
- c. Tell the casualty to keep still and not move. Send someone to obtain medical help.

3. A fracture of the spinal column is especially dangerous because:

- a. The nerves located in the spinal column may be damaged.
- b. The artery located in the spinal column may be damaged.
- c. The vein located in the spinal column may be damaged.

d. The muscles surrounding the spinal column may be damaged.

4. If a casualty with a suspected spinal fracture is lying on his back, you should:

a. Slip a rolled up blanket beneath the arch of his back to help immobilize any spinal fracture of the back.

b. Slip a roll of cloth under his neck to help immobilize any spinal fracture of the neck.

c. Immobilize the head, such as placing a rock or log on each side of his head and putting padding between the objects and the casualty's head.

d. Perform all three of the above procedures.

5. A casualty is lying on his stomach and is breathing. You believe that he may have a fractured spine. Under what condition would you move the casualty?

a. You need to move the casualty away from an immediate life-threatening danger.

b. His spine is in an abnormal position and you need to straighten the alignment.

c. You should never move the casualty.

6. A casualty with a suspected spinal fracture is lying face up. When would you not use the casualty's boots to immobilize his head?

7. Briefly list the steps for immobilizing a casualty's spine if the casualty is lying on his back and chemical agents are not present.

ANSWERS TO PRACTICE EXERCISES: LESSON 10

1. b (LE 1 & 3)
2. c (LE 3)
3. a (Introduction)
4. d (LE 3)
5. a (LE 2 & 3)
6. Chemical agents are present.
(LE 3)
7. Instruct casualty to not move. Send someone to seek medical help, if possible. Slide rolled or folded material under the arch of the casualty's back and under his neck. Remove casualty's boots, fill them with sand or small rocks, put material over sand or rocks, and tie the top of the boots. Place boots or other padded objects around casualty's head so the head will not turn. (Do not attempt to straighten spine. Do not move the casualty any more than necessary.)
(LE 3)

LESSON 11

GIVE FIRST AID FOR BURNS

TASK

Identify the proper procedures for treating a casualty with burns.

CONDITIONS

Given multiple-choice examination items pertaining to burns.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.
FM 8-230, Medical Specialist.
FM 21-11, First Aid for Soldiers.

INTRODUCTION

This lesson is basically divided into three areas: classifying burns (Learning Event 1), stopping additional injury (Learning Events 2, 3, 4, and 5), and treating existing burns (Learning Events 5 and 6).

When you first discover the burn casualty, you should eliminate the source of the burn (if still present) in order to protect both the casualty and yourself. Once this has been done, make sure the casualty is breathing, any major bleeding has been controlled, and measures have been taken to control shock. Exactly when the burn wound is treated depends upon the seriousness of the injury and upon other injuries which the casualty suffered. A burn with serious bleeding should be treated quickly. If a burned area is on a fractured limb, the burn should be dressed and bandaged before the limb is splinted. Minor burns on a casualty with a life-threatening injury may not need to be treated until the casualty is seen by medical personnel at the medical treatment facility.

Learning Event 1:

CLASSIFY BURN AS TO TYPE

Burns can be classified by their cause and by their severity. Burns can result from thermal, electrical, chemical, or radiant sources. They are usually rated as being first, second, or third degree in severity.

Thermal Burns

Thermal burns are caused by heat. They can be caused by coming into contact with a flame, hot object, hot liquid, hot gas (such as steam), or the fireball from a nuclear explosion.

Electrical Burns

Electrical burns are caused by an electrical current passing through the body. They can be caused by coming into contact or near contact with a charged ("live") electrical wire or lightning. Electrical burns can be deceiving. The burn may not appear to be serious because only a small area of skin is burned. In reality, however, a great deal of damage may have been done to the casualty's body. Electrical burns involve both an entry burn where the current entered the body and an exit burn where the current left the body. An exit burn may appear on any part of the body and can be in a quite different location from the entry burn. The sole of the foot is a common location for the exit burn.

Chemical Burns

Chemical burns are caused by contact with liquid or dry chemicals such as ammonia, caustic soda, quick-lime, or white phosphorus (WP).

Radiant Energy Burns

Radiant energy injuries are caused by bright visible light (such as lasers and electric welding arcs) or other forms of light energy that are not visible (such as ultraviolet light, infrared light, and microwaves). The primary danger is damage to the eyes.

Laser Beam. A person who looks directly into a laser (light amplification by simulated emission radiation) beam can receive damage to the retinas at the back of his eyes. Laser burns cause a decrease in his sight. The injury may not cause pain.

Welding Arcs. A person who looks directly at a welding arc can receive burns on the surface of his eyes which result in severe pain and sensitivity to light. The pain and sensitivity to light may last two or three days until the burn has healed. Mild symptoms may appear even if the person did not look directly at the welding arc.

Severity

First Degree Burns. First degree burns cause the skin to be red and painful (like a sunburn), but does not produce blisters.

Second Degree Burns. Second degree burns are more serious. The skin is red and painful and blisters are present.

Third Degree Burns. Third degree burns destroy the skin layers and burn down to the fat, muscle, or bone. The third degree burn area may not be painful because the nerves have been destroyed, but the surrounding second and first degree burn areas may be painful.

Learning Event 2: PUT OUT FLAMES

If the casualty's clothing is on fire, cover the casualty with a large piece of non-synthetic material, such as a wool or cotton blanket, and roll the casualty on the ground until the flames are smothered. If non-synthetic material cannot be obtained quickly, get the casualty to the ground and have him roll on the flames until the flames go out.

CAUTION: Do not use synthetic materials such as nylon and rayon because they may melt and cause additional injury.

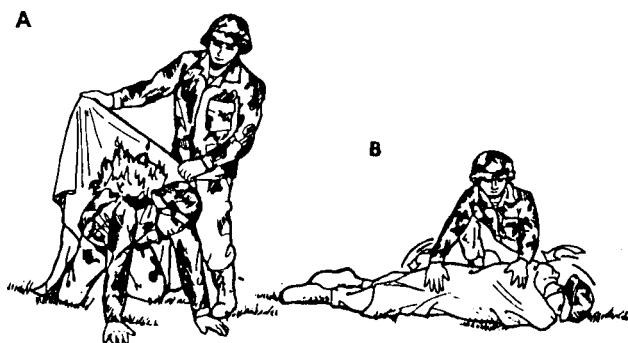


Figure 11-1
Smothering Flames
(file: 824F11-1.bmp)

Learning Event 3: REMOVE A CASUALTY FROM ELECTRICAL CURRENT

If the casualty is still in contact with the source of the electrical current, such as lying on a "live" electrical wire, separate the casualty from the source of the current. Assume that any electrical wire is alive (carrying electrical current) and can be a danger to yourself as well as to the casualty.

WARNING

Do not touch the electrical wire or the casualty as long as he is in contact with the wire. Electrical current can pass from the wire through the casualty to you.

Stop the Current

If the electrical current can be turned off quickly, such as flipping a nearby switch, turn off the current first. If it will take more time to turn off the current than to separate the casualty from the electrical wire, cut off the electrical current after you have removed the casualty from the current and have administered aid.

Separate Casualty and Current

Remove Wire from Casualty. Loop a dry rope, dry clothing, or other material which will not conduct electricity under the casualty's body and lift the casualty from the wire. Have a second person use a non-conducting object to move the wire away from the casualty. Then, gently lower the casualty to the ground.



Figure 11-2
Removing an electrical wire from under a casualty
(file: 824f11-2.bmp)

Remove Casualty from Wire. If you cannot remove the wire (no other soldier to help, for example), then remove the casualty from the wire.

Use non-conducting material to drag the casualty from the wire. Do not let your body come into contact with the casualty during the process.

WARNING

When separating the casualty from an electrical wire, assume the wire is still charged even if you think the current is turned off.

Check for Breathing

Electrical shock often renders the casualty unconscious and causes difficulties in breathing and heartbeat. Check the casualty's respiration's after you have separated him from the wire. Administer mouth-to-mouth resuscitation to the casualty if needed.

WARNING

Never attempt to administer mouth-to-mouth resuscitation until the wire and the casualty have been separated.

Learning Event 4:

REMOVE CHEMICALS THAT CAUSE BURNS

Chemicals that attack the skin should be removed as soon as possible.

Liquid Chemicals

Pour as much water as possible over the burned area. (This is commonly called "flushing" the area.) Use water from a canteen, Lyster bag, or water trailer if it is available. If a sufficient amount of water is not available, use any nonflammable fluid to flush the area.

Dry Chemicals

Use a clean, dry cloth to brush off loose particles of the dry chemical. Take care to avoid getting the particles on your body. After brushing off the particles, flush the area with as much water or other nonflammable liquid as possible.

WARNING

If a large amount of water or other nonflammable liquid is not available, do not apply any water in an attempt to flush the dry chemical from the skin. A small amount of water applied to a dry chemical burn may cause a chemical reaction that transforms the dry chemical into an active, burning substance.

White Phosphorus

White phosphorus is used in marking rounds and grenades. It begins to give off heat and light when exposed to air. Quickly smother the flame with water and cover the area with wet materials or mud. The wet material or mud will keep air from getting to the white phosphorus and thus keep the particles from burning. Get medical help or evacuate the casualty. Medical personnel can remove the phosphorus particles from the casualty's flesh. Do not attempt to remove the particles yourself. Keep air from reaching the phosphorus particles.

WARNING

Do not use grease or oil on a white phosphorus burn. Grease or oil may cause the body to absorb the poisonous white phosphorus particles.

Do not use copper sulfate.

Radioactive Fallout

Burns caused by radioactive particles sticking to the casualty's skin are treated by brushing the particles from the casualty and flushing the skin with water. Take care to keep the radioactive particles and contaminated water from coming into contact with your skin or your clothing.

Chemicals in the Eye

Chemicals can destroy the tissues of the eye. The eye must be flushed with water as quickly as possible.

Position the casualty's head so the eye to be flushed is lower than the other eye. This keeps chemicals from the eye being flushed from flowing into the other eye. Hold the casualty's eyelid open.

Pour the water gently into the eye. Pour from the inner edge of the eye (end closest to the nose) to the outer edge.

Continue to flush the eye with water for at least 20 minutes.

Learning Event 5:

TREAT RADIANT ENERGY (LASER) BURNS OF THE EYE

A radiant energy burn to the eye will affect the casualty's vision. Keep the casualty from looking at the light source and/or remove him from the path of the radiation. Protect the soldier from additional exposure to the radiant energy source and keep the casualty out of bright sunlight.

The casualty's eyes do not need to be bandaged. The casualty may feel more comfortable if a cloth is placed over his eyes. If a bandage is applied, only bandage the involved eye. Do not place anything over his eyes if he needs to walk or continue to perform his mission.

Evacuate the casualty when the mission allows so he can be examined by medical personnel.

Learning Event 6: TREAT SKIN BURNS

At the time of the burn, apply copious amounts of water to the burn site.

Expose Burned Area(s)

Cut and gently lift away any clothing covering the burned area. Do not pull clothing over the burned area. Leave any piece of clothing that sticks to the burned area in place.

WARNING

If you are in a chemical environment, do not expose the wound. Apply the dressing over the casualty's clothing. Do not attempt to decontaminate skin where blisters have formed.

Remove Jewelry

If the casualty is wearing jewelry on a burned arm or hand, remove the jewelry and put it in his pocket. Burns often cause the limbs to swell and the jewelry may have to be cut off later if it is not removed now. Tell the casualty what you are doing and why.

Dress and Bandage Burned Area(s)

Apply a field dressing over the burned area, unless the area is on the face or genitalia, and secure the dressing using the attached tails. The dressing will help to prevent additional contamination. Tie the tails tight enough to hold the dressing in place, but not so tight as to put undue pressure on the injury. If a field dressing is not available or if the burned area is too big to be covered by the dressing, use the cleanest material available to cover the burned area. Secure the material with strips of cloth.

Do not try to clean the burned area before applying the dressing.

Do not break any blisters that have formed.

Do not apply any grease, ointments, or medications to the burned area.

If the burn is an electrical burn, find and dress both the entry and the exit wounds.

If the burn is caused by white phosphorus, keep the dressing wet.

Check for Shock

Fluid lost due to a severe burn can result in shock. Take appropriate measures to prevent shock if they have not already been started. If the casualty is not in shock and is not nauseated, you can give him small amounts of cool water to drink. Stop administering the water if the casualty feels as though he may vomit or if signs or symptoms of shock develop. If second and third degree burns cover over 20 percent of his body surface, an intravenous infusion (I.V.) should be started by the combat lifesaver or the combat medic. Initiating an I.V. is taught in IS0825.

Get Medical Help

Seek medical help or evacuate the casualty, if practical. Casualties with serious burns should be seen by medical personnel as soon as practical.

PRACTICE EXERCISES: LESSON 11

INSTRUCTIONS: Answer the exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the required term in the blank provided. After completing the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. A burn in which the skin is destroyed and muscle tissue is exposed is a:

- a. First degree burn.
- b. Second degree burn.
- c. Third degree burn.

2. A burn in which the skin is red but no blisters are present is a:

- a. First degree burn.
- b. Second degree burn.
- c. Third degree burn.

3. A burn in which the skin is red and blistered is a:

- a. First degree burn.
- b. Second degree burn.
- c. Third degree burn.

4. A person who looks directly into a laser beam may suffer a(n):

- a. Chemical burn.
- b. Electrical burn.
- c. Radiant energy burn.
- d. Thermal burn.

5. You are in a chemical environment and find a soldier with a thermal burn to the side of his chest. You should:

- a. Expose the burned area, apply ointment or grease to the burned area, and apply a field dressing.
- b. Expose the burned area and apply a field dressing.
- c. Apply ointment or grease to the burned area without exposing the wound; then apply a field dressing.
- d. Apply a field dressing to the burned area.
- e. Leave the burned area exposed to the air.

6. The back of a soldier's shirt has caught on fire. You have no non-synthetic material to cover the soldier. You should:

- a. Roll him on the ground until the flames go out.
- b. Have him lie on his stomach until the flames go out.
- c. Have him stand up and pat the flames out with your hands.

7. A casualty has a chemical burn caused by white phosphorus. You have flushed the area with water to put out the flames. Which of the following procedures should you perform next?

- a. Use a knife to cut the particles out of the casualty's skin.
- b. Cover the wound with wet cloths or mud.
- c. Cover the wound with grease or oil.
- d. Leave wound exposed to the air.
- e. Either b or c above.

8. A liquid chemical splashed into a soldier's right eye and he is in pain from the burning sensation. You should immediately:

- a. Place a dressing on the eye.
- b. Turn his head so his right eye is lower than the left eye and flush the right eye with water.

c. Turn his head so his right eye is higher than the left eye and flush the right eye with water.

d. Put oil or grease on the inside surface of the eyelid and leave the eye exposed to the air.

9. You find a person lying across a "live" electrical wire. Which of the following is true?

a. You can safely touch either the person or the wire.

b. You can safely touch the wire, but not the person.

c. You can safely touch the person, but not the wire.

d. You cannot safely touch either the person or the wire.

10. Treatment for a radiant energy burn to the eyes includes:

a. Applying ointment to the eyes.

b. Flushing the eyes with water.

c. Protecting the eyes from bright sunlight.

d. Putting wet dressings over the eyes.

11. Of the following items, which should be used to move a casualty who is lying on an electrical wire?

a. A wet rope.

b. A metal wire.

c. A shirt that has been soaked in sterile water.

d. A dry wooden pole.

12. A person's clothing has caught on fire. You have a nylon blanket and a wool blanket nearby. Which should you use to wrap around the casualty to put out the flames?

a. Nylon blanket.

b. Wool blanket.

c. Either blanket.

d. Neither blanket.

13. A burn which is caused by heat, such as from a fire or hot liquid, is called a(n) _____ burn.

ANSWERS TO PRACTICE EXERCISES: LESSON 11

1. c (LE 1)
2. a (LE 1)
3. b (LE 1)
4. c (LE 1)
5. d (LE 6)
6. a (LE 2)
7. b (LE 4)
8. b (LE 4)
9. d (LE 3)
10. c (LE 5)
11. d (LE 3)
12. b (LE 2)
13. thermal (LE 1)

LESSON 12

RECOGNIZE AND GIVE FIRST AID FOR HEAT INJURIES

TASK

Identify the three types of heat injuries and the treatment for each.

CONDITIONS

Given multiple-choice examination items pertaining to heat injuries.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.
FM 8-230, Medical Specialist.
FM 21-11, First Aid for Soldiers.

INTRODUCTION

Heat injuries usually occur during hot weather or when a person is working near equipment that produces heat. Heat injury can also occur during temperate conditions. Heat injury can occur whenever the normal temperature control mechanisms of the body are overwhelmed. This may occur when fluids are not adequately replaced, soldiers are not adequately rested, or body heat is not adequately dissipated.

Even a healthy person can suffer heat injury. Heat injuries can be painful and, in some cases, fatal. The three principal types of heat injuries are heat cramps, heat exhaustion, and heat stroke.

Learning Event 1:

IDENTIFY SIGNS AND SYMPTOMS OF HEAT CRAMPS

Heat cramps are painful muscle spasms (contractions) caused by loss of water and salt from the body, usually through perspiration. Signs and symptoms of heat cramps include:

Grasping or massaging an arm or leg.

Bending over in an effort to relieve the pain of an abdominal cramp.

Skin wet with perspiration.

Unusual thirst.

**Learning Event 2:
TREAT HEAT CRAMPS**

Move the casualty to a cool, shaded area to rest. If there is no shade, improvise a shade using ponchos, blankets, or other available materials.

Loosen the casualty's clothing around his neck and waist and loosen his boots.

WARNING

Do not loosen the casualty's clothing if you are in a chemical environment.

Have the casualty slowly drink one quart (one canteen) of cool water. (Drinking the water too rapidly may cause the casualty to vomit, thus losing even more fluid from the body.)

Seek medical help if the cramps continue. If medical help is not available, evacuate the casualty to a medical treatment facility.

**Learning Event 3:
IDENTIFY SIGNS AND SYMPTOMS OF HEAT EXHAUSTION**

Heat exhaustion is primarily caused by the body losing water, usually through perspiration, without the water being adequately replaced. Heat exhaustion usually occurs in otherwise fit individuals who are involved in extreme physical exertion in a hot environment. The signs and symptoms of heat exhaustion are very similar to those of shock. The first five signs and symptoms listed are the most common.

Most Common Signs and Symptoms of Heat Exhaustion

Profuse sweating with pale, cool skin.

Weakness or faintness.

Dizziness.

Headache.

Loss of appetite.

Other Signs and Symptoms of Heat Exhaustion

Heat cramps.

Nausea (with or without vomiting).

Chills ("gooseflesh").

Rapid breathing.

Urge to defecate.

Tingling in hands or feet.

Mental confusion.

**Learning Event 4:
TREAT HEAT EXHAUSTION**

Move the casualty to a cool, shaded area to rest. If there is no shade, improvise a shade using ponchos, blankets, or other available materials.

Have the casualty lie on his back and elevate his legs (normal shock position).

Remove the casualty's clothing around his neck and waist and loosen his boots.

Pour water over the casualty and fan him in order to cool his body faster.

WARNING

Do not loosen or remove clothing or pour water over the casualty if you are in a chemical environment.

Have the casualty slowly drink at least a canteen (one quart) of cool water.

Elevate his legs.

Seek medical help, if possible. If the casualty cannot drink the water due to severe nausea or if he vomits, initiate an intravenous infusion and evacuate the casualty to a medical treatment facility.

If the casualty recovers from heat exhaustion, have him perform only light duty for the remainder of the day if the mission permits.

Learning Event 5:

IDENTIFY SIGNS AND SYMPTOMS OF HEAT STROKE

Heat stroke (also called sunstroke) usually occurs in people who work in a very hot, humid environment for a prolonged period of time. In heat stroke, the body's cooling mechanisms (perspiration, etc.) fail and the body's internal (core) temperature increases to dangerous levels. Heat stroke is a medical emergency which can be fatal if the casualty's body is not cooled quickly. The following are signs and symptoms of heat stroke.

Lack of normal perspiration.

Skin that is hot, flushed (red), and dry.

Headache.

Weakness.

Dizziness.

Mental confusion.

Nausea or stomach pains.

Seizures.

Weak and rapid pulse and respiration.

Sudden loss of consciousness.

WARNING

A soldier who is not perspiring or perspiring very little while other soldiers performing the same work are perspiring freely is in danger of being a heat stroke casualty. Take emergency measures immediately.

Learning Event 6: TREAT HEAT STROKE

WARNING

Heat stroke is a medical emergency. If the body temperature is not lowered quickly, brain injury or death may result. Do not leave the casualty alone in order to seek medical aid as long as you can continue cooling efforts. If possible, send someone to get medical help while you treat the casualty.

Move the casualty to a cool, shaded area or improvise a shade.

Loosen or remove the casualty's outer garments.

Position the casualty on his back with his feet elevated and pour cool water over the casualty, fanning him vigorously, and massaging his arms and legs with cool water. (Massaging increases blood circulation and promotes heat loss.) Mist is more effective than pouring water.

WARNING

Do not loosen or remove clothing, pour water over the casualty, or massage his limbs if you are in a chemical environment.

Have the casualty slowly drink one quart of cool water if he is able. If he is unable to drink, initiate an I.V.

If evacuation is delayed, an intravenous infusion should be started by a combat lifesaver or combat medic.

Monitor the casualty's breathing. Administer mouth-to-mouth resuscitation if needed.

Evacuate the casualty as soon as possible. Perform measures to cool the casualty's body while he is being evacuated.

WARNING

Do not delay evacuation in order to start cooling measures. Perform cooling measures en route to the medical treatment facility.

PRACTICE EXERCISES: LESSON 12

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the required term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. A primary cause of heat injury is _____ being lost from the body without being adequately replaced.

2. List the five most common signs/symptoms of heat exhaustion.

3. The heat injury whose primary symptom is painful muscle contractions is _____.

4. Lack of perspiration is a sign of:
 - a. Heat cramps.
 - b. Heat exhaustion.
 - c. Heat stroke.

5. What is different in treating a heat injury casualty in a chemical environment and treating a heat injury casualty in a non-chemical environment?
 - a. In a chemical environment, you do not loosen the casualty's clothing.
 - b. In a chemical environment, you do not have the casualty lie down.
 - c. In a chemical environment, you do not elevate the casualty's legs.

6. A person suffering from heat injury should drink at least _____ of cool water, if possible.

- a. One pint.
- b. One quart.
- c. One gallon.
- d. One and one-half gallon.

7. Which of the following is a life-threatening condition requiring immediate treatment?

- a. Heat cramps.
- b. Heat exhaustion.
- c. Heat stroke.

8. Which of the following is/are proper procedure(s) for treating a heat stroke casualty who is not in a chemical environment?

- a. Move the casualty to a shaded area.
- b. Elevate the casualty's legs and massage them with cool water.
- c. Pour cool water over the casualty.
- d. Evacuate the casualty.
- e. All of the above are proper procedures.

9. Protecting the person from the sun, loosening constricting clothing, and replacing body fluids are treatment procedures for a casualty suffering from:

- a. Heat cramps.
- b. Heat exhaustion.
- c. Heat stroke.
- d. Heat cramps or heat stroke.
- e. Heat exhaustion or heat stroke.

f. Heat cramps, heat exhaustion, or heat stroke.

ANSWERS TO PRACTICE EXERCISES: LESSON 12

1. water. (Introduction)
2. Profuse sweating with pale, cool skin.
Weakness/faintness.
Dizziness.
Headache.
Loss of appetite.
(LE 3)
3. heat cramp (LE 1)
4. c (LE 5)
5. a (LE 2, 4, & 6)
6. b (LE 2, 4, & 6)
7. c (LE 6)
8. e (LE 6)
9. f (LE 2, 4, & 6)

LESSON 13

ADMINISTER FIRST AID TO A NERVE AGENT CASUALTY

TASK

Identify the buddy-aid procedures for treating a nerve agent casualty.

CONDITIONS

Given multiple-choice examination items pertaining to nerve agent poisoning, buddy-aid treatment, and decontamination.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.

FM 8-230, Medical Specialist.

FM 21-11, First Aid for Soldiers.

FM 8-285, Treatment of Chemical Agent Casualties and Conventional Military Chemical Injuries.

INTRODUCTION

Nerve agents are among the deadliest of the chemical agents. Nerve agents can enter the body by inhalation, by ingestion, and through the skin. Nerve agents are absorbed rapidly and the effects are felt immediately upon entry into the body. A soldier showing signs of mild nerve agent poisoning will normally be able to take care of himself. A soldier showing signs of moderate to severe nerve agent poisoning will not be able to help himself and requires assistance. Your first priority, however, is to ensure that you yourself are adequately protected before assisting any nerve agent casualty. You cannot adequately help the casualty if you are also overcome by the nerve agent.

Learning Event 1:

TAKE PROTECTIVE MEASURES

Anytime you believe that you have been exposed to a chemical agent, your first action should be to take adequately protective measures against the agent. Put on your protective mask immediately and give the alarm. If you have signs and symptoms of mild nerve agent poisoning (unexplained runny nose, sudden headache, dizziness, drooling, tightness in the chest,

muscular twitching, stomach cramps, nausea, and/or reduced vision), administer one set of nerve agent autoinjectors to yourself and decontaminate exposed skin. Put on the rest of your protective clothing. Now you are prepared to accomplish your mission and to give aid to casualties as your mission allows.

**Learning Event 2:
IDENTIFY SIGNS OF SEVERE NERVE AGENT POISONING**

A casualty may progress from mild to moderate to severe nerve agent poisoning rapidly. Signs of severe nerve agent poisoning include:

Strange and confused behavior.

Coughing, wheezing, and gurgling sounds while breathing.

Difficulty in breathing.

Severely pinpointed pupils.

Red eyes with tears present.

Severe difficulty in seeing.

Vomiting.

Severe muscular twitching and general weakness.

Loss of bladder and bowel control.

Decrease in heart rate (pulse).

Convulsions.

Paralysis.

Unconsciousness.

Respiratory arrest (no breathing).

**Learning Event 3:
MASK THE CASUALTY**

The casualty may have been able to put on his protective mask before he was overcome by the nerve agent. If so, check his mask to make sure that it is on properly. If the casualty has not masked himself, then you must immediately mask him using the following procedures.

Approach the casualty. If the casualty is moving or flailing about on the ground, approach him from the area of his head and left shoulder. This will help to protect you from accidental injury.

If the casualty is not lying on his back, roll the casualty onto his back with his face up. Do this by squatting next to the casualty, grasping the casualty's clothing at the far shoulder and hip, and rolling him toward you in a gentle, even manner.

WARNING

Do not kneel when administering aid to a chemical agent casualty. If you press your knee against the contaminated ground, you may force the chemical agent into your protective clothing, which will greatly reduce the protection time afforded by your protective clothing.

Position yourself near the casualty's head, face his feet, and squat behind his left shoulder.

Open the casualty's mask carrier and remove his protective mask.

Hold the mask over the casualty's face so that the lenses are facing up, your thumbs are on the outside of the cheek pouches of the mask, and your fingers are on the inside of the cheek pouches.



Figure 13-1
Masking a Chemical Agent Casualty
(file: 824f13-1.bmp)

Spread the mask open and position it on the casualty's chin.

Put your thumbs through the two bottom straps of the head harness.

Cup the casualty's head with the fingers of both hands and lift his head slightly.

Slide the head harness over the casualty's head by moving your thumbs toward the back of his head and down behind his ears.

Make sure the two bottom straps of the head harness are placed below the casualty's ears and the head pad is centered in the middle of the back of his head. The temple straps should be above his ears.

The head harness should not need to be adjusted. If the straps do need to be tightened, use short, firm jerks to tighten them.

Check the mask to make sure it is completely sealed on the casualty's face. If the casualty is conscious and can follow instructions, have him clear his mask (cover the outlet valve and voicemitter and blow hard, then cover the inlet valves and inhale). If the casualty is unconscious and breathing, cover the mask's inlet valves. If the mask collapses, it is properly fitted and sealed. If it does not collapse, reseal the mask.

CAUTION: If the soldier is not breathing, you cannot be sure that the mask has a good seal.

Make sure the buckles are lying flat and the straps form a straight line with the tabs.

Pull the protective hood over the casualty's head, neck, and shoulders.

Learning Event 4:

ADMINISTER THREE NERVE AGENT ANTIDOTE KITS AND CANA

After the severe nerve agent poisoning casualty is masked, administer injections of atropine and 2-PAM chloride.

Check the casualty's pocket flaps and the area around the casualty for expended autoinjectors. The casualty may have administered (or attempted to administer) antidote to himself before being overcome by the effects of the nerve agent.

CAUTION: Use the casualty's Mark I kits. Do not use your personal autoinjector kits on the casualty. You may need them for yourself.

Select Injection Site

Normally, one of the casualty's thighs is used as the injection site. If the casualty is very thin, however, the injection is given in the large muscle of his buttocks.

Thigh. Position yourself near the casualty's left thigh. (This makes it easier to reach into his mask carrier for additional kits.) The injection site is on the outer part of the casualty's thigh at least the width of one hand below the hip joint and at least the width of one hand above the knee.

Buttocks. Roll the casualty onto his stomach or onto his side and position yourself at his hip. The injection site is the upper, outer quadrant of the casualty's buttocks. The upper, outer quadrant is used to avoid hitting the major nerve in the buttocks. If the casualty's jacket is covering the injection site, lift the bottom of the jacket.

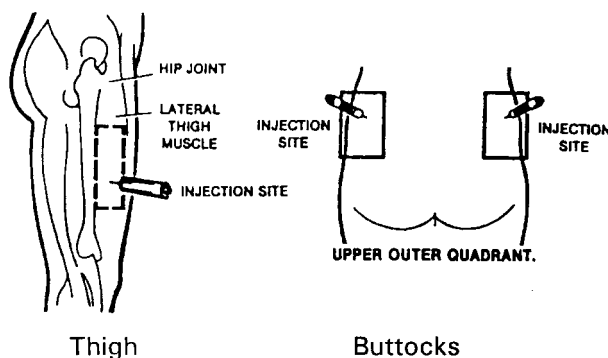


Figure 13-2
Injection Sites
(file: 824f13-2.bmp)

Administer Atropine

After you have positioned yourself, remove one Mark I nerve agent antidote kit from the inside pocket of the casualty's mask carrier. (NOTE: If the temperature is near or below freezing, the casualty may be carrying the autoinjectors in another location.)

Hold the kit by the clip in your non-dominant hand so that it is in front of your body at eye level and the larger 2-PAM chloride autoinjector is on top.

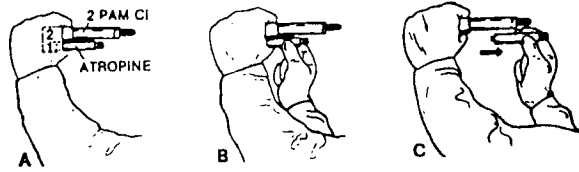


Figure 13-3
Removing the atropine autoinjector
(file: 824f13-3.bmp)

Use your free hand to feel the injection site area and make sure the injection site is free from buttons or other obstructions which could be hit by the needle. If the mask carrier or any other equipment is covering the injection site, move it away from the site.

Grasp the smaller (atropine) autoinjector with the thumb and first two fingers of your dominant hand.

Pull the atropine autoinjector out of the clip with a smooth motion. Do not cover or hold the green (needle) end of the autoinjector. If you do press on the green end, you may accidentally inject yourself.

Form a fist around the autoinjector and place the green (needle) end of the autoinjector against and at a 90° angle to the injection site.

Apply firm, even pressure to the autoinjector until the needle is triggered (clicks). The needle will penetrate the casualty's clothing and automatically inject the medication into the casualty's muscle.

CAUTION: Do not use a jabbing motion to inject the antidote into the muscle.

Hold the autoinjector in place for at least 10 seconds to make sure that all of the medication has been injected; then pull the autoinjector out of the casualty's body at the same 90° angle.

Place the used atropine autoinjector between the last two fingers of the hand holding the clip, with the needle pointing away from your hand. Make sure the needle does not puncture or tear your protective gloves.

Administer 2-PAM Chloride

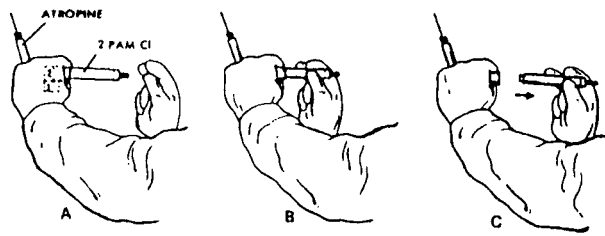


Figure 13-4
Removing the 2-Pam Chloride Autoinjector
(file: 824f13-4.bmp)

Grasp the remaining 2-PAM chloride autoinjector with the thumb and first two fingers of your free hand.

Pull the autoinjector out of the clip in a smooth motion. Do not touch or cover the black (needle) end of the autoinjector.

Form a fist around the autoinjector and place the black end of the autoinjector against the injection site (same thigh or buttocks) at a 90° angle.

Apply firm, even pressure until the needle functions. Do not use a jabbing motion.

Hold the autoinjector in place for at least 10 seconds; then pull out the autoinjector.

Drop the empty plastic clip without dropping the autoinjectors.

Lay the used autoinjectors on the casualty's chest or back.



Figure 13-5
Administering an Injection of 2-Pam Chloride
(file: 824f13-5.bmp)

Administer Second and Third Kits

Administer the second Mark I kit using the same procedures used with the first kit.

Administer the third Mark I kit.

The autoinjectors are administered one kit after the other until all three kits have been administered. There is no waiting period between kits. The casualty may have already given himself injections. Any kit administered by the casualty to himself must be counted as part of the three kit maximum.

Administer CANA

Administer the CANA (convulsant antidote for nerve agent) autoinjector after the third MARK I to prevent convulsions.

NOTE: CANA is NOT for use as self-aid. If you know who you are, where you are, and what you are doing, you do not need CANA.

NOTE: DO NOT use your own CANA on the casualty. You may not have any antidote for your own treatment, if needed.

Remove the CANA autoinjector from the casualty's mask carrier and remove the packaging.

Grasp the CANA autoinjector with your dominant hand with the needle end extending beyond your thumb and two fingers.

With your other hand, pull the safety cap off the autoinjector base. The injector is now armed.

DO NOT touch the black (needle) end because you may accidentally inject yourself.

Position the black (needle) end of the autoinjector against the casualty's injection site (thigh or buttocks) at a 90°.

Apply firm, even pressure (not a jabbing motion) to the injector until it pushes the needle into the casualty's thigh (or buttocks). Make sure you do not hit the casualty's mask carrier or any objects in the individual's pockets.

Hold the injector firmly in place for at least 10 seconds.

Carefully remove the CANA autoinjector from the casualty's injection site. Drop the safety cap.

Secure Used Autoinjectors

Attach used autoinjectors (atropine, 2-PAM chloride, and CANA) to the casualty's outer clothing, usually the left pocket flap of his outer garment. Push the needle of the autoinjector through the pocket flap, penetrating the flap from the back. Then bend the needle down to form a hook. Repeat the procedure with the other autoinjectors. Be careful not to puncture your gloves with the needles. The used autoinjectors will tell medical personnel how much medication the soldier has received. This information will help them determine what additional care is needed.

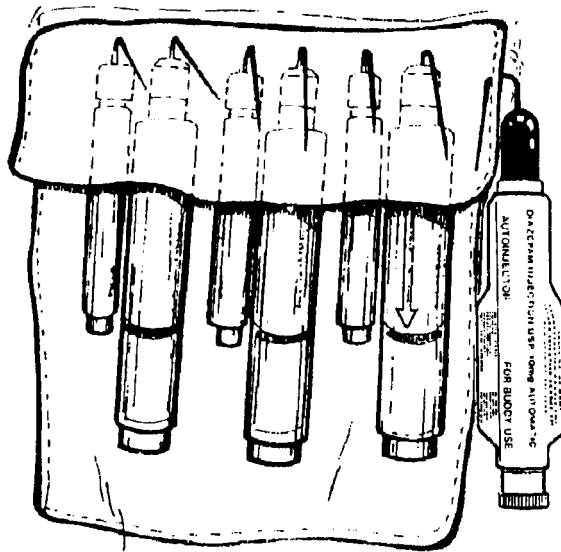


Figure 13-6
Three Sets of Used Autoinjectors and Cana Attached to Casualty's Pocket Flap (file: 824f13-6.bmp)

Learning Event 5:
DECONTAMINATE EXPOSED SKIN

Obtain M291 Kit

Obtain the M291 decontamination kit from the casualty's mask carrier.

The M291 Skin Decontaminating Kit is provided to service members for skin decontamination. This kit may also be used to decontaminate selected individual equipment, such as load bearing equipment, protective gloves, mask, hood, and weapon.

NOTE: The M291 kit is for external use only. Keep decontaminating powder out of the eyes; it may be slightly irritating to the eyes. Use water to wash toxic agent out of eyes. You may also use an 0.5 percent chlorine solution to wash toxic agent out of cuts or wounds.

Decontaminate Hands

Remove one skin decontaminating packet from the carrying pouch. Tear open quickly at notch. Although any notch may be used to open the packet,

opening at the TEAR LINE will place applicator pad in a position that is easier to use.

Remove applicator pad from packet and discard empty packet.

Unfold applicator pad and slip finger(s) into handle.

Thoroughly scrub exposed skin on the casualty's hands (back of hand, palm, and fingers) until completely covered with black powder from the applicator pad.

Decontaminate Face

NOTE: If the casualty needs to breathe before you finish, reseal the mask, clear and check it, and tell the casualty to take a breath; then resume the decontaminating procedure.

Thoroughly scrub exposed skin of the casualty's face until completely covered with black powder from the applicator pad.

Have the casualty hold his breath and close his eyes. Grasp his mask beneath chin and pull hood and mask away from chin enough to allow one hand between the mask and the face. Hold mask in this position until you discard the applicator pad.

Scrub up and down across face beginning at front of one ear to nose to other ear.

Scrub across face to corner of nose.

Scrub extra stroke at corner of nose.

Scrub across nose and tip of nose to other corner of nose.

Scrub extra stroke at corner of nose.

Scrub across face to other ear.

Next, scrub up and down across face to mouth to other end of jawbone.

Scrub across cheek to corner of mouth.

Scrub extra stroke at corner of mouth.

Scrub across closed mouth to center of upper lip.

Scrub extra stroke above upper lip.

Scrub across closed mouth to other corner of mouth.

Scrub extra stroke at corner of mouth.

Scrub across cheek to end of jawbone.

Next, scrub up and down across face to chin and to other end of jawbone.

Scrub across the under jaw to chin, cupping.

Scrub extra stroke at center of chin.

Scrub across the under jaw to the end of the jawbone.

Turn your hand out, and quickly wipe the inside of the mask that touches the face.

Discard applicator pad.

Immediately seal mask, clear, and check it.

Decontaminate Neck

Remove second skin decontaminating packet from carrying pouch.

Tear open quickly at notch.

Remove applicator pad from packet and discard empty packet.

Without breaking the seal between the face and mask, thoroughly scrub skin of neck and ears until completely covered with black powder.

Redo hands until completely covered with black powder.

Discard applicator pad.

Put protective gloves on the casualty.

Fasten the casualty's hood.

Remove powder with soap and water when operational conditions permit. It does not matter how long the powder stays on the skin.

Bury the used pads and packets if circumstances permit.

NOTE: The M291 kit is replacing the M258A1 kit. For U.S. Army personnel, replaced by the M291, the M258A1 kit will be used for decontamination of individual equipment only.

SPECIAL NOTE: The combat lifesaver can administer additional atropine and CANA carried in his aid bag. Additional information is contained in subcourse IS0825.

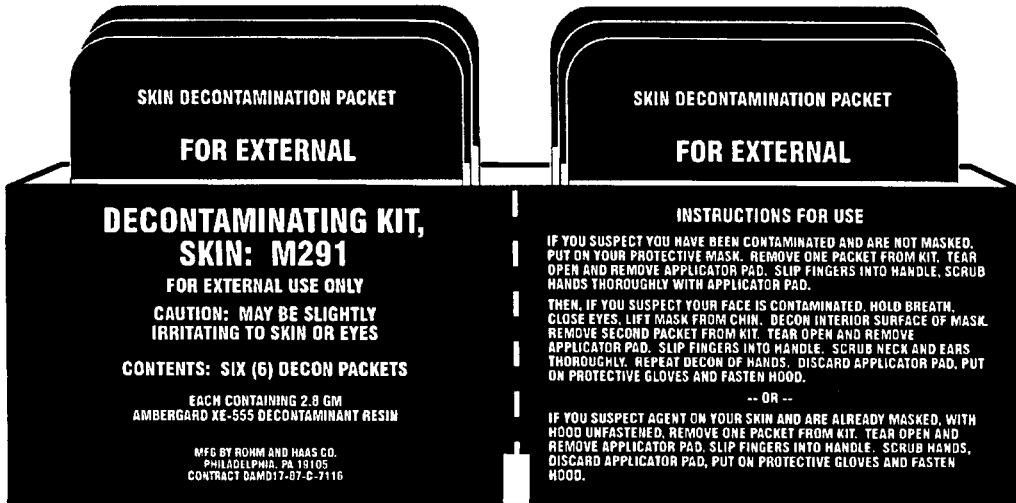


Figure 13-7
Decontaminating Kit, Skin: M291
(file: 824f13-7.bmp)

PRACTICE EXERCISES: LESSON 13

INSTRUCTIONS: Answer the exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the required term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

SITUATION: Both you and another soldier have been exposed to nerve agents. Neither of you is masked. The other soldier suddenly collapses and you are having signs and symptoms of mild nerve agent poisoning. In what order should you act? (questions 1 - 4)

1. First action.

- a. Put on your protective mask.
- b. Put the casualty's protective mask on him.
- c. Administer nerve agent antidote to the casualty.
- d. Administer nerve agent antidote to yourself.

2. Second action.

- a. Put on your protective mask.
- b. Put the casualty's protective mask on him.
- c. Administer nerve agent antidote to the casualty.
- d. Administer nerve agent antidote to yourself.

3. Third action.

- a. Put on your protective mask.
- b. Put casualty's protective mask on him.

4. Fourth action.

- a. Put on your protective mask.
- b. Put the casualty's protective mask on him.
- c. Administer nerve agent antidote to the casualty.
- d. Administer nerve agent antidote to yourself.

5. A casualty is of normal size. At what site should you inject the nerve agent antidote?

6. Which of the following is not a sign of severe nerve agent poisoning?

- a. Convulsions.
- b. Strange behavior.
- c. Vomiting.
- d. Dilated pupils.

7. A casualty is very thin. At what site should you inject the nerve agent antidote?

8. You have just administered three Mark I kits and CANA to a soldier. What should you do with the used autoinjectors?

- a. Leave the plastic clips and autoinjectors on the ground.
- b. Put the plastic clips in the pocket of the soldier's clothing and leave the autoinjectors on the ground.
- c. Stick the needles of the autoinjectors through the pocket flap of the soldier's clothing, bend the needles to secure them to the pocket flap, and leave the plastic clips on the ground.

d. Put the plastic clips in the pocket of the soldier's clothing and bury the used autoinjectors.

e. Drop the plastic clips onto the ground and place the used autoinjectors in the soldier's protective mask carrier.

9. You are administering Mark I kits to a casualty with severe nerve agent poisoning. How long should you wait between the kits?

a. Have a 1-minute waiting period between the kits.

b. Have a 5-minute waiting period between the kits.

c. Have a 10-minute waiting period between the kits.

d. Administer the kits with no waiting period between kits.

10. What is the maximum number of Mark I kits you should administer to a casualty with severe nerve agent poisoning?

11. When administering an autoinjector from a Mark I kit, you should leave the needle in the casualty's muscle for at least _____ seconds.

12. When administering aid to a casualty in a chemical environment, you should be in a:

a. Squatting position.

b. Kneeling position.

13. When administering a nerve agent antidote or CANA autoinjector, you should:

a. Place the needle end of the autoinjector against the injection site and press until the needle functions.

b. Position the injector two to three inches above the injection site with the needle end directly above the injection site; then hit the needle end of the injector against the injection site. Repeat until the needle functions.

c. Press on the needle end of the autoinjector until the needle pops out; then position the injector with the tip of the needle two to three

inches above the injection site. Inject the needle into the muscle with a quick jab.

14. When administering a nerve agent antidote or CANA autoinjector, the injector should be at a _____ degree angle to the surface of the injection site.

15. A soldier in combat is showing signs of severe nerve agent poisoning. You should assume that he _____ administer self-aid to himself.

- a. Can.
- b. Cannot.

16. When using the M291 decontamination kit, you should open a packet at the notch, preferably at the tear line.

- a. True.
- b. False.

ANSWERS TO PRACTICE EXERCISES: LESSON 13

1. a (LE 1)
2. d (LE 1)
3. b (LE 3)
4. c (LE 4)
5. Outer part of the thigh below the hip joint and above the knee.
(LE 4)
6. d (LE 2)
7. Upper outer quarter of buttocks. (LE 4)
8. c (LE 4)
9. d (LE 4)
10. Three. (LE 4)
11. ten (LE 4)
12. a (LE 3)
13. a (LE 4)
14. ninety (LE 4)
15. b (Introduction)
16. a (LE 5)

LESSON 14

TRANSPORT A CASUALTY USING A TWO-MAN CARRY OR AN IMPROVISED LITTER

TASK

Construct an improvised litter.

CONDITIONS

Given materials for constructing an improvised litter.

STANDARD

Score a GO on the performance checklist.

TASK

Move a casualty using an appropriate two-man carry.

CONDITIONS

Given a simulated casualty and an assistant.

STANDARD

Score a GO on the performance checklist.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.
FM 8-10-6, Medical Evacuation in a Theater of Operations.
FM 21-11, First Aid for Soldiers.

INTRODUCTION

A soldier who is injured or ill may need to go to a medical treatment facility (usually an aid station) to receive medical care. A soldier who is not seriously injured or ill may be able to walk to the medical treatment facility. At other times, the casualty's condition or the military situation may prevent him from reaching a medical facility on his own. Sometimes a vehicle (tracked ambulance, etc.) can reach the soldier and transport him to the aid station. At other times, he must be carried to the aid station or to a collection point (aid post) where an evacuation vehicle can pick him up and transport him to the aid station. This lesson and the following lesson give instructions for transporting such a casualty.

Learning Event 1:

CHOOSE THE APPROPRIATE METHOD TO MOVE A CASUALTY ON THE BATTLEFIELD

If a casualty is to be moved (evacuated), you must decide which method is appropriate. Follow the general rules given below.

Do not move a casualty with a suspected fracture of the spine unless there is an immediate, life-threatening danger, such as a fire. If the casualty must be moved, use a back board if available.

If possible, use a vehicle to transport the casualty.

If the casualty is to be carried, use a standard litter if one can be obtained and if two or more litter bearers (including yourself, if applicable) are available. A litter allows a casualty to be moved a greater distance than do manual carries. Also, a casualty is less likely to aggravate existing injuries or suffer additional injuries if a litter is used.

If a standard litter is not available and if the time, materials, and litter bearers are available, construct and use an improvised litter. A door, ladder, cot, bench, chair, or similar objects can be used as an improvised litter. Methods for constructing other improvised litters are given in Learning Events 2 through 5.

If a litter cannot be used (insufficient time and/or insufficient materials available) and another person is available to help carry the casualty, use an appropriate two-man manual carry (Learning Events 7 through 11) to transport the casualty.

If no other help is available, use an appropriate one-man carry (Lesson 15) to transport the casualty.

Learning Event 2:

MAKE AN IMPROVISED POLE AND PONCHO LITTER

An improvised litter can be made using two tent poles and a poncho. Variations of this litter include using straight tree limbs or similar rigid objects for the poles. When the casualty is placed on the litter, his weight will hold the litter together.

Open the poncho and lay it flat on the ground.

Lay two poles across the poncho so the poncho is divided into thirds.

Reach in and pull the hood toward you and lay it flat on the poncho. Make sure the drawstrings are not hanging out of the hole. (The hood and drawstrings could catch on brush or other obstacles if left hanging.)

Fold one outer third of the poncho over the pole.

Fold the other outer third of the poncho over its pole.

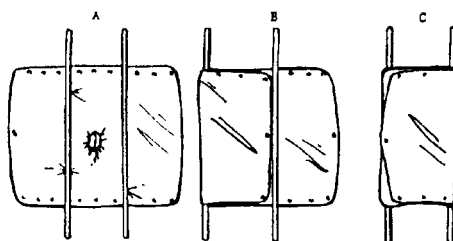


Figure 14-1
Constructing an Improvised Pole and Poncho Litter
(file: 824f14-1.bmp)

Learning Event 3:
MAKE AN IMPROVISED POLE AND JACKET LITTER

An improvised litter can be made using two tent poles and two or three field jackets. Tree limbs or other straight, rigid objects can be used instead of the poles. Heavy shirts or other jackets can be used instead of field jackets.

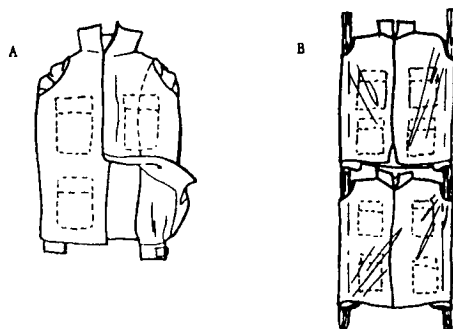


Figure 14-2
Pole and Jacket Improvised Litter
(file: 824f14-2.bmp)

Close (zip or button) the jackets (or other garments).

Turn the garments inside out, but leave the sleeves inside. Turning the garments inside out puts buttons and zippers on the inside. This keeps the casualty from lying on buttons or zippers (if on top) and keeps them from getting snagged on bushes or other obstacles (if on bottom).

Pass the poles through the sleeves.

**Learning Event 4:
MAKE AN IMPROVISED POLE AND SACK LITTER**

An improvised litter can be made using two tent poles or similar rigid objects and two empty heavy fabric sacks, such as potato sacks.

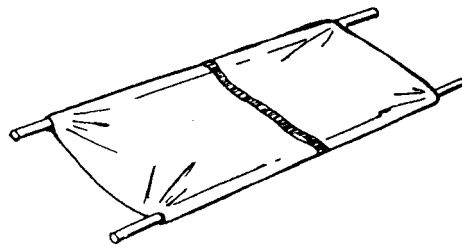


Figure 14-3
Pole and Sack Improved Litter
(file: 824f14-3.bmp)

Cut holes in the two corners of the closed end of each sack.

Place the sacks lengthwise so the open end of the sacks are facing each other.

Slide the poles or limbs through the holes.

Overlap the open ends of the sacks about three inches to provide extra strength in the middle of the litter.

**Learning Event 5:
MAKE AN IMPROVISED BLANKET LITTER**

An improvised litter can be made using only a blanket or other material. The blanket is laid on the ground and two opposite edges of the blanket are rolled toward the middle. When the casualty is placed on the blanket, the

rolled edges of the blanket are used as grips. Four or more litter bearers should be used when transporting a casualty using the blanket litter.

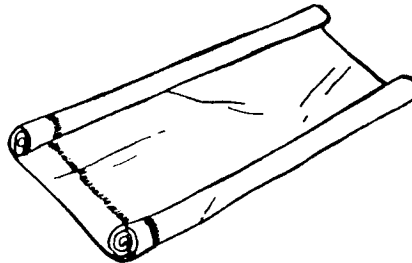


Figure 14-4
Blanket Litter
(file: 824F14-4.bmp)

Learning Event 6:
EVACUATE A CASUALTY BY LITTER

Use care when placing the casualty on the litter to avoid causing additional injury to the casualty. A modified two-man manual carry (usually a modified two-man arms carry or a modified two-man fore-and-aft carry) is used to place the casualty onto the litter. Normally, four soldiers are used to transport the litter. The litter team, however, can be composed of more or fewer members based upon the military situation and the distance and terrain to be covered.

General Rules

Explain the Procedure to the Casualty. If the casualty is conscious, tell him what you are going to do. The explanation will help to calm his fears and will help you to get his cooperation.

Walk Around the Casualty. Walk around the casualty rather than stepping over him. If you step over the casualty, he may flinch or tighten his muscles and aggravate his injuries. In addition, mud or other debris may fall from your boots into his eyes or wound.

Perform Necessary Measures Before Transporting. Make sure the casualty is breathing properly, open wounds have been dressed and bandaged, and fractures have been splinted before transporting the casualty (unless the casualty is being moved away from a life-threatening danger).

Have One Person in Charge. One person must give the instructions to the remainder of the team so actions will be performed in unison.

Position Litter

Position the casualty on his back with his arms at his sides. Place the litter (standard or improvised) near and parallel to the casualty.



Figure 14-5
Litter Placed Parallel to Casualty
(file: 824f14-5.bmp)

Place Casualty Onto Litter

Modified Two-Man Arms Carry.

Two litter bearers position themselves on the same side of the casualty (opposite side from litter) and kneel on one knee.

Bearer #1 slips his arms under the casualty's back and waist.

Bearer #2 slips his hands under the casualty's hips and knees.

Both bearers lift in unison upon command from the leader.

The bearers move the casualty over the litter or have another soldier push the litter under the casualty.

The bearers lower the casualty onto the litter in unison upon the leader's command.

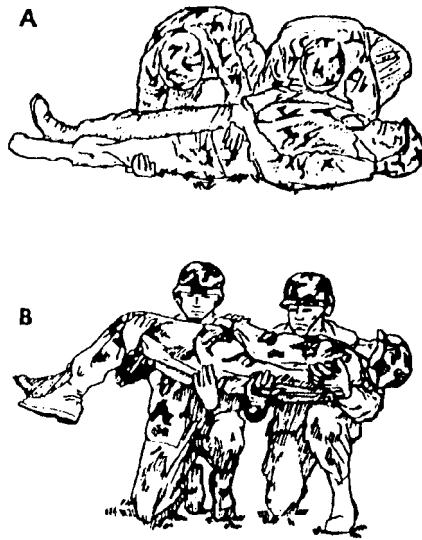


Figure 14-6
Lifting a Casualty using the Modified Two-Man Arms Carry
(file: 824f14-6.bmp)

Modified Two-Man Fore-and-Aft Carry.

Bearer #1 kneels behind the casualty's head, slips his arms under the casualty's arms and across the casualty's chest, and locks his hands together. If the two bearers are different in height, the taller should be Bearer #1.

Bearer #2 spreads the casualty's legs apart and squats or kneels between the casualty's legs while facing Bearer #1.

Both bearers rise in unison upon the leader's command.



Figure 14-7
Lifting a Casualty using the Modified Two-Man Fore-and-Aft Carry
(file: 824f14-7.bmp)

The bearers move the casualty over the litter.

Both bearers lower the casualty onto the litter in unison upon the leader's command.

Lift Litter

If there are four litter bearers, each bearer positions himself at one of the handles, faces so that the casualty will be carried feet first (assuming the casualty will be carried feet first), and kneels on the knee nearest the litter. The leader of the litter team should position himself at the handle nearest the casualty's right shoulder and direct the other bearers. This position allows the leader to monitor the casualty during the evacuation.

Upon command of the leader, the four litter bearers lift the litter in unison and move the casualty to the aid station or collection point.

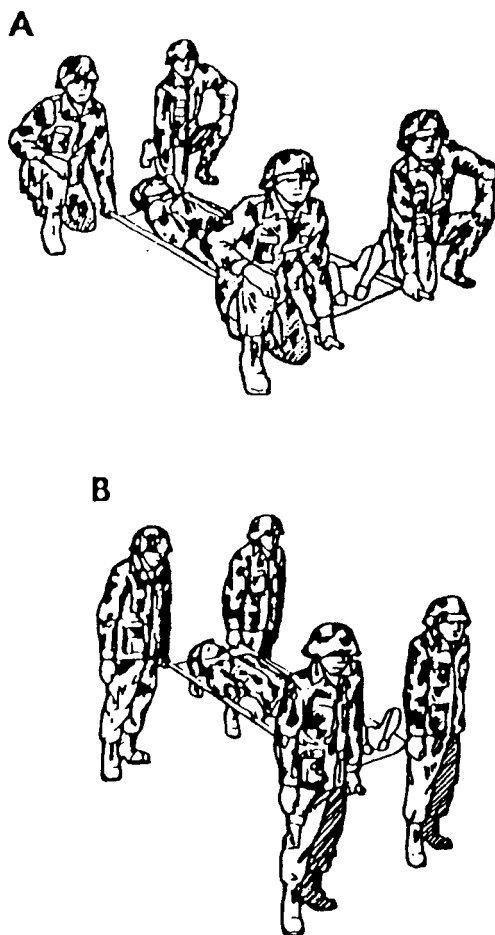


Figure 14-8
Lifting a Litter
(file: 824f14-8.bmp)

Learning Event 7:

MOVE A CASUALTY USING THE TWO-MAN FORE-AND-AFT CARRY

Sometimes, a litter is not available and cannot be improvised. In such cases, manual carries are used to evacuate the injured soldier. A two-man manual carry is usually preferred over a one-man manual carry. The two-man fore-and-aft carry can be used to move a conscious or unconscious casualty.

It is not as tiring as other carries; therefore, it is usually the preferred two-man carry for moving a casualty for a long distance.

A



B



Figure 14-9
Two-man fore-and-aft carry
(file: 824f14-9.bmp)

Put the casualty on his back, arms by his sides.

The taller of the two bearers kneels at the casualty's head and faces toward the casualty's feet. He then slides his hands under the casualty's arms, across the casualty's chest, and locks his hands on the casualty's chest.

CAUTION: The taller bearer should always position himself at the casualty's head.

The second bearer spreads the casualty's legs apart and kneels between the casualty's legs with his back to the casualty's head. He then places his hands under the casualty's knees.

Both bearers rise together and lift the casualty.

Both bearers walk forward, carrying the casualty.

Learning Event 8:

MOVE A CASUALTY USING THE TWO-MAN SUPPORT CARRY

The two-man support carry can be used to transport either a conscious or an unconscious casualty. It is especially useful if the casualty is conscious and needs assistance walking.

The bearers kneel on each side of the casualty and face the same direction as the casualty.

Each bearer takes the casualty's nearest arm, brings it around his neck, and grasps the casualty's wrist in his outside hand.

Each bearer puts his other arm (the arm that is nearest the casualty) around the casualty's waist.

Both bearers rise in unison, lifting the casualty. If the casualty is conscious, he can help the bearers lift his weight and may be able to walk with assistance. The arms around the casualty's waist should support most of the weight.

CAUTION: If the casualty is unconscious, do not release his wrists.

CAUTION: If the casualty is taller than the bearers, the bearers can remove their arms from around the casualty's waist and use them to lift and support the casualty's thighs. This will keep the casualty's feet from dragging.



Regular with conscious casualty



Modified for tall carry

Figure 14-10
Two-man support carry
(file: 824f1410.bmp)

Learning Event 9:
MOVE A CASUALTY USING THE TWO-MAN ARMS CARRY

The two-man arms carry can be used to move a conscious or unconscious casualty for a moderate distance.

CAUTION: More than two bearers may be required if the casualty is heavy or if the casualty's head or legs need additional support. If a casualty with a back or neck injury has to be moved by manual carry, a four-man arms carry is used to keep the casualty's body in alignment. This carry was discussed in Learning Event 2 of Lesson 10 in this subcourse.

Position the casualty on his back and place his arms on his abdomen. If the casualty is unconscious, his hands may be loosely tied together at the wrists.

Both bearers position themselves on the same side of the casualty--one at the casualty's chest and one at his thighs.

Both bearers kneel on one knee.

The bearer at the casualty's chest slips one arm beneath the shoulders and the other arm beneath his waist.

The bearer at the casualty's thighs slips one arm beneath the casualty's hips and the other arm beneath his knees.

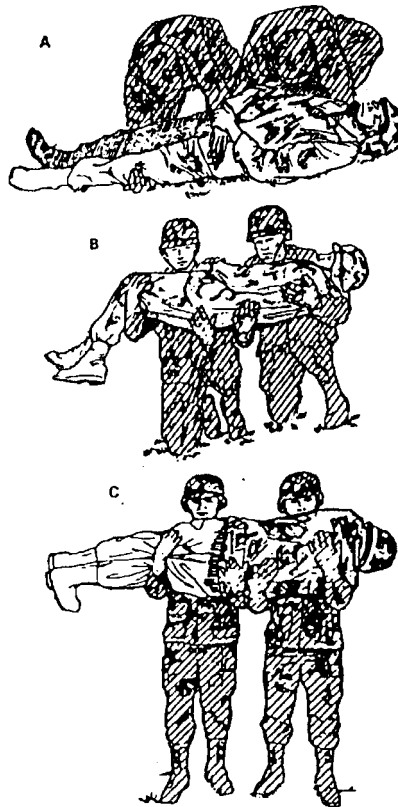


Figure 14-11

Two-Man Arms Carry

(file: 824f1411.bmp)

Both bearers shift their weight backward in unison and lift the casualty to knee level, keeping the casualty as level as possible.

Both bearers turn the casualty's front toward to their chests.

Both bearers rise to their feet in unison.

Both bearers move forward, carrying the casualty high on their chest.
(This lessens fatigue while transporting the casualty.)

Learning Event 10:

MOVE A CASUALTY USING THE TWO-HAND SEAT CARRY

The two-hand seat carry can be used to move a conscious or unconscious casualty for a short distance. It can also be used to place a casualty onto a litter.



Front view



Rear view

Figure 14-12
Two-hand seat carry
(file: 824f1412.bmp)

Position the casualty on his back.

The bearers position themselves on opposite sides of the casualty's hips, face each other, and kneel.

Each bearer passes one arm under the casualty's back and the other arm under the casualty's thigh.

The bearers grasp each other's wrists securely.

Both bearers rise in unison, lifting the casualty.

Both bearers move forward, carrying the casualty.

Learning Event 11:

MOVE A CASUALTY USING THE FOUR-HAND SEAT CARRY

The four-hand seat carry is only used to carry a conscious casualty who can help support himself while he is being carried. This carry is especially useful in transporting a person with a head or foot injury for a moderate distance. It can also be used to place a casualty onto a litter.

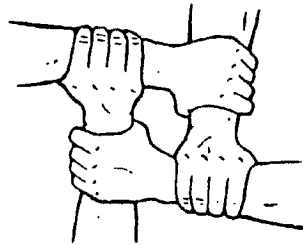


Figure 14-13
Four-Hand Seat Carry
(file: 824f1412.bmp)

Both bearers position themselves behind the casualty and face each other.

Each bearer grasps his own left wrist with his right hand and grasps the other bearer's right wrist with his left hand. This forms the seat for the casualty.

The casualty stands on his own or another soldier helps the casualty to a standing position.

Both bearers lower their bodies so the seat is low enough for the casualty to sit (about even with the casualty's knees).

The casualty sits on the bearers' forearms and places his arms around the bearers' shoulders for balance and support.

Both bearers stand erect in unison, lifting the casualty.

Both bearers move forward.

PRACTICE EXERCISES: LESSON 14

INSTRUCTIONS: Follow the special instructions for exercises 9 through 13. Answer the other exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the required term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. You and three other litter bearers are going to evacuate a casualty. You are going to direct the other bearers. Where should you position yourself?

2. A soldier says, "All improvised litters require two rigid objects, such as tent poles or tree limbs." Is he correct?
 - a. Yes.
 - b. No.

3. Of the following, which is usually the preferred method of transporting an injured soldier?
 - a. Litter.
 - b. One-man carry.
 - c. Two-man carry.

4. Which two-man carry is only used with a conscious casualty?

5. You are constructing a pole and sack improvised litter. You have cut the corners of the closed ends of the sacks. How should the sacks be positioned on the pole?
 - a. Both open ends should be toward the casualty's head.
 - b. The closed ends of the sacks should be together.

- c. The open ends of the sacks should be together.
- d. Both closed ends should be toward the casualty's head.

6. When preparing field jackets for a pole and jacket improvised litter, you should close each jacket and turn it inside out with:

- a. The sleeves on the outside of the jacket.
- b. One sleeve outside and one sleeve inside the jacket.
- c. The sleeves inside the jacket.

7. You and another soldier are going to evacuate a casualty using a fore-and-aft carry. The other soldier is several inches taller than you. Will the height difference affect the carry?

- a. Yes, you should support the casualty's arms.
- b. Yes, you should support the casualty's legs.
- c. No.

8. You are going to move a casualty using the two-man support carry. The casualty is unconscious and is taller than you and the other bearer. How will this affect the way you perform the carry?

- a. You will hold on to the wrist of the casualty's arm that is around your neck.
- b. You will remove your arm from around the casualty's waist and use it to lift and support the casualty's thigh.
- c. You will tie the casualty's hands together.
- d. You will perform a and b above.
- e. You will perform a, b, and c above.

SPECIAL INSTRUCTIONS for exercises 9 through 13.

Identify the two-man carries shown below by writing the letter of the illustration in the blank next to its proper name.

- 9. _____ Four-hand seat carry.
- 10. _____ Two-man arms carry.
- 11. _____ Two-man fore-and-aft carry.
- 12. _____ Two-man support carry, regular.
- 13. _____ Two-man support carry, tall casualty.

see Illustrations. Illustrations for exercises 9 through 13.
(file: 824i14-1.bmp)

14. If possible, practice making improvised litters. Check your performance against the performance checklist.

15. If one or more individuals are available to help, practice placing the casualty onto the improvised litter, lifting the litter, and carrying the litter. Check your performance against the performance checklist.

16. If one or more individuals are available to help, practice performing two-man manual carries. Check your performance against the performance checklist.

ANSWERS TO PRACTICE EXERCISES: LESSON 14

1. Near the casualty's right shoulder.
(LE 6)
2. b (LE 1 & 5)
3. a (LE 1)
4. Four-hand seat carry. (LE 11)
5. c (LE 4)
6. c (LE 3)
7. b (LE 7)
8. d (LE 8)
9. B (LE 11)
10. D (LE 9)
11. C (LE 7)
12. A (LE 8)
13. E (LE 8)
14. See checklist on page 13.
15. See checklist on page 14.
16. See checklists on pages 15 and 16.

PERFORMANCE CHECKLIST

CONSTRUCT AN IMPROVISED LITTER

Situation: You need to evacuate a casualty. You have the time and materials to construct an improvised litter. Construct an improvised litter from the materials provided.

GO

NO-GO

POLE AND PONCHO LITTER

Opens the poncho so it is flat on the ground.

Lays two poles lengthwise across the poncho, dividing the poncho into thirds.

Makes sure the hood and drawstrings will not catch on objects.

Folds one outer third of the poncho over its pole, then folds the other outer third of the poncho over its pole.

POLE AND JACKET LITTER

Closes two or more jackets (shirts).

Turns garments inside out leaving sleeves inside.

Lays jackets on ground in proper alignment.

Passes pole through the sleeves on each side.

POLE AND SACK LITTER

Cuts holes in both corners of the closed end of two sacks.

Places the sacks lengthwise so the open ends of the sacks are facing each other.

Slides two poles through the holes.

Overlaps open ends of the sacks about 3 inches.

OVERALL EVALUATION

(A no-go on any step gives an overall evaluation of no-go.)

GO

NO-GO

PERFORMANCE CHECKLIST

PLACE A CASUALTY ON A LITTER AND TRANSPORT THE CASUALTY

Situation: You need to evacuate a casualty. You have a litter (standard or improvised) and an assistant, but you must instruct him in providing assistance.. Use a modified manual carry to place the casualty on the litter and move the casualty.

	GO	NO-GO
Positions the litter parallel to the casualty.	_____	
<u>Modified Two-Man Arms Carry</u>		
Kneels on one knee at the side of the casualty opposite from the litter and has the assistant kneel at his side.	_____	
Supports the casualty's back, waist, hips, and knees with help from his assistant.	_____	
Lifts casualty, moves the casualty over the litter, and lowers the casualty onto the litter with all movements performed in unison with the assistant.	_____	
<u>Modified Two-Man Fore-and-Aft Carry</u>		
Kneels behind the casualty's head and slips his arms under the casualty's arms and has the assistant face him, squat or kneel between the casualty's legs, and grasp under casualty's knees. (Student can switch with assistant.)	_____	
Lifts casualty, moves the casualty over the litter, and lowers the casualty onto the litter with all movements performed in unison with the assistant.	_____	
Lifts litter in unison with assistant.	_____	
Casualty does not fall from litter.	_____	

OVERALL EVALUATION

GO **NO-GO**

(A no-go on any step gives an overall evaluation of no-go.)

PERFORMANCE CHECKLIST

TRANSPORT A CASUALTY USING A TWO-MAN MANUAL CARRY

Situation: You need to evacuate a casualty. Another soldier is available to act as your assistant, but you must instruct him in providing assistance. Move the casualty using two-man manual carries.

GO

NO-GO

Question: Which of the two-man carries is/are used only if the casualty is conscious?

Answer: _____

TWO-MAN FORE-AND-AFT CARRY

Positions casualty on his back with arms by his sides. _____

Taller bearer kneels at the casualty's head, slides hands under the casualty's arms, and locks his hands together over the casualty's chest. _____

Other bearer kneels between the casualty's legs with his back to the other bearer and places his hands under the casualty's knees. _____

Bearers rise in unison, lifting the casualty without dropping him. _____

TWO-MAN SUPPORT CARRY

Bearers kneel on each side of casualty facing the same direction. _____

Each bearer takes casualty's nearest arm, brings it around his neck, and grasps the casualty's wrist with his outside hand. _____

Each bearer puts his arm that is nearest the casualty around the casualty's waist. _____

Both bearers rise in unison, lifting the casualty without dropping him.

PERFORMANCE CHECKLIST: TWO-MAN MANUAL CARRY

GO

NO-GO

If the casualty is taller than the bearers, bearers remove their arms from around the casualty's waist and use them to lift the casualty's thighs so his feet will not drag.

TWO-MAN ARMS CARRY

Positions casualty on his back with arms on his abdomen.

Bearers kneel on one knee on the same side of the casualty at the casualty's chest and thighs.

Bearers slide their arms under the casualty. One bearer supports casualty's shoulders and waist; the other bearer supports casualty's hips and knees.

Bearers lift the casualty to knee level in unison and turn the casualty's front to their chests.

Bearers rise to their feet in unison without dropping the casualty.

TWO-HAND SEAT CARRY

Positions the casualty on his back.

Bearers kneel on opposite sides at casualty's hips.

Bearers slip arms under the casualty's back and thigh, then grasp each other's wrists securely.

Bearers rise to their feet in unison without dropping the casualty.

FOUR-HAND SEAT CARRY

Bearers behind the casualty and facing each other. _____

PERFORMANCE CHECKLIST: TWO-MAN MANUAL CARRY

	GO	NO-GO
Each bearer grasps his own wrist with his right hand and grasps the other bearer's wrist with his other hand.	_____	

Bearers lower their bodies until the seat is about even with the casualty's knees and instructs casualty to sit on their forearms and put his arms around their shoulders.	_____	
--	-------	--

Bearers stand erect in unison, lifting the casualty without dropping him.	_____	
---	-------	--

OVERALL EVALUATION	GO	NO-GO
(A no-go on any step gives an overall evaluation of no-go.)		

LESSON 15

TRANSPORT A CASUALTY USING A ONE-MAN CARRY

TASK

Transport a casualty using an appropriate one-man carry.

CONDITIONS

Given a simulated casualty.

STANDARD

Score a GO on the performance checklist.

REFERENCES

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.
FM 8-10-6, Medical Evacuation in a Theater of Operation.
FM 21-11, First Aid for Soldiers.

INTRODUCTION

Manual carries must be performed correctly; otherwise, the casualty could suffer additional injury. One-man manual carries are used to move a casualty when the time or materials needed to make a litter are not available and/or other personnel are not available to assist you in moving the casualty. One-man carries are also used to move a casualty from a life-threatening situation (burning vehicle, etc.) before the casualty is examined and treated. In general, a casualty should not be moved before the required emergency care is given unless it is necessary to move him and yourself from a dangerous situation.

Learning Event 1:

CHOOSE AN APPROPRIATE ONE-MAN CARRY

Manual carries are tiring to the bearer. Choose an appropriate carry based upon the casualty's condition, the nature of the casualty's injury, the military situation, the distance to be covered, the weight of the casualty, your strength and endurance, and obstacles that will be encountered.

Fireman's Carry

The fireman's carry is usually used to quickly move an unconscious or disabled casualty for a moderate or long distance. This carry leaves one of the bearer's arms free to carry a rifle, move around obstacles, etc.

Support Carry

The support carry is only used with a conscious casualty who can walk or at least hop on one leg. The carry can be used for a long distance if the casualty does not tire.

Arms Carry

The arms carry is generally used to move a conscious or unconscious casualty for a short distance.

Saddleback Carry

The saddleback carry is only used for a conscious casualty who can put one or both of his arms around your neck. It is generally used to carry a casualty for a moderate or long distance.

Pack-Strap Carry

The pack-strap carry is generally used to carry a conscious or unconscious casualty for a moderate distance. This carry is not used if the casualty has a broken arm.

Pistol-Belt Carry

The pistol-belt carry is generally used to carry a conscious or unconscious casualty for a long distance. It is the preferred carry if you must use your rifle, climb banks, or move over obstacles since the carry leaves both of your hands free.

Pistol-Belt Drag

The pistol-belt drag is generally used to move a conscious or unconscious casualty for a short distance. This carry is primarily used when the rescuer must keep very close to the ground.

Neck Drag

The neck drag is generally used to move a conscious or unconscious casualty for a short distance. This carry allows the rescuer to stay close to the ground, but not as close as the pistol-belt drag. The carry can be used when moving behind a low wall, under a vehicle, or through a culvert. The neck drag is not used if the casualty has a broken arm.

Cradle Drop Drag

The cradle drop drag is generally used to move a conscious or unconscious casualty up or down steps or to quickly move a casualty from a life-threatening situation (fire, etc.).

Learning Event 2: TURN A CASUALTY

Some carries require the casualty to be lying prone (on his abdomen); others require him to be lying supine (on his back). To turn the casualty either to the prone or supine position, follow these steps.

Kneel at the casualty's uninjured side.

WARNING

If you are in a chemical environment, squat--do not kneel.

Place the casualty's arms above his head and cross his far ankle over the near one.

Grasp the casualty's clothing at his far shoulder and hip and gently pull so the casualty rolls toward you. Continue until the casualty is on his abdomen or back.

Place the casualty's arms at his sides and straighten his legs.

Learning Event 3: RAISE A CASUALTY TO A STANDING POSITION

Some one-man carries require that the casualty be raised to a standing position. If the casualty is unconscious, you may be able to assist him to stand up. If the casualty is unconscious, however, you need to raise him to a standing position without his help. Two methods of raising the casualty from a prone position are presented. The second (alternate) method is used if you believe the method will be safer for the casualty due to the location of his injuries.

Regular Method

Position the casualty in a prone position.

Straddle the casualty, slip your hands under his chest, and lock your hands together.

Lift the casualty and begin walking backwards until he is on his knees.

Continue walking backward until his legs are straight and his knees are locked.

Walk forward and bring the casualty to a standing position. Keep the casualty tilted slightly backward so his knees will remain locked. If his knees do not remain locked, walk backward until they lock and then move forward until the casualty is in the standing position.

Grasp one of the casualty's wrists and raise his arm. Use your other arm to hold the casualty erect.

Move under the casualty's arm to his front, lower his arm, and hold the casualty around his waist.

Place your foot between the casualty's feet and spread his feet so his feet are about six to eight inches apart.

Alternate Method

Position the casualty in a prone position.

Kneel on one knee (or squat) at the casualty's head, facing his feet.

Put your hands under his armpits, down his sides, and across his back.

Rise, lifting the casualty to his knees.

CAUTION: Keep the casualty's head from snapping back.

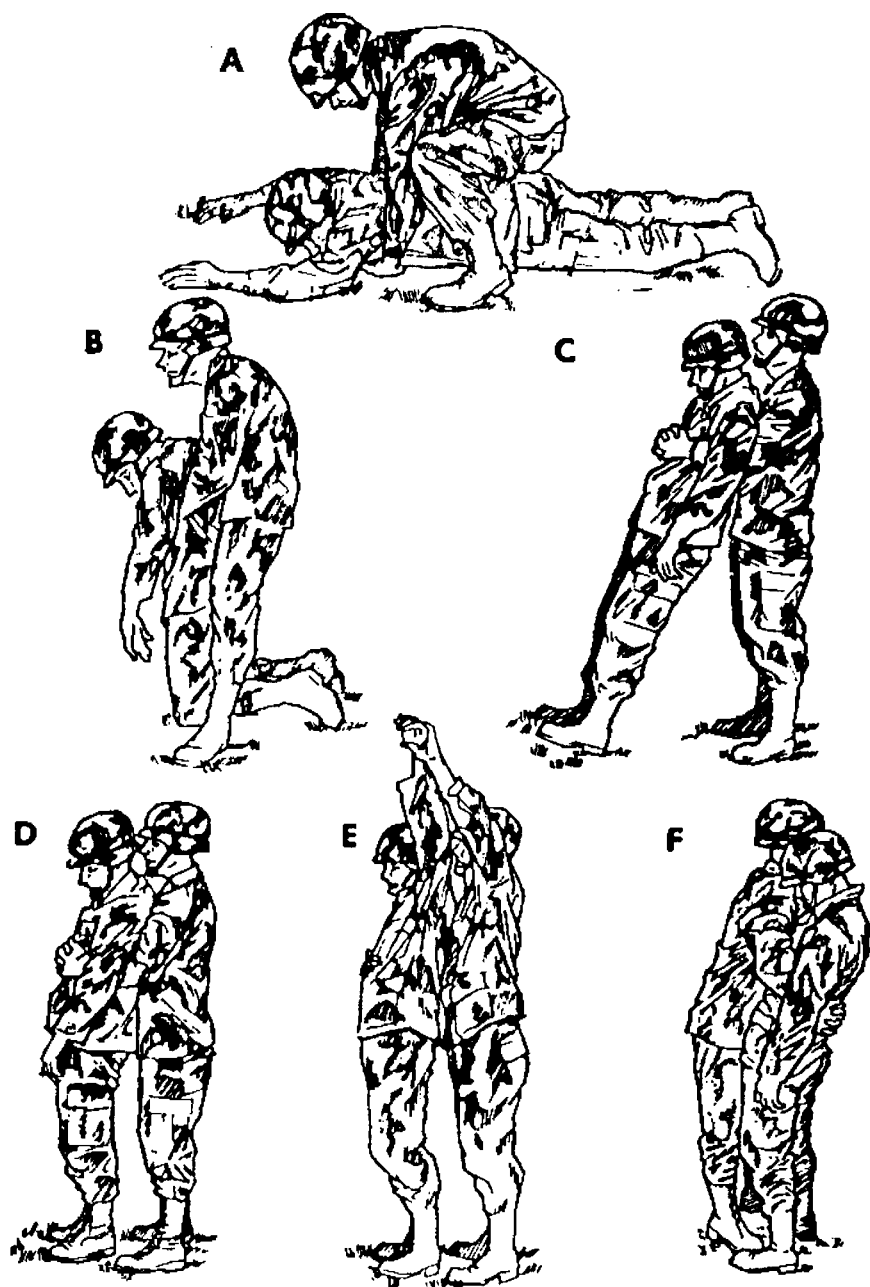


Figure 15-1
Raising a Casualty to His Feet (Regular Method)
 (file: 824f151.bmp)

Lower your arms, secure a hold on the casualty, and raise him to a standing position with his knees locked.

Put your arms around the casualty's waist and tilt his body slightly backward to keep his knees from buckling.

Place your foot between his feet and spread them so that his feet are six to eight inches apart.

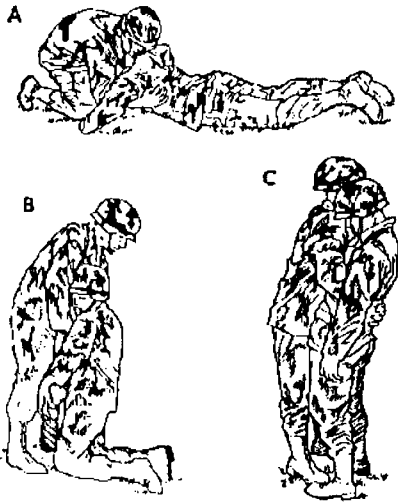


Figure 15-2
Raising a Casualty to His Feet (Alternate Method)
(file: 824f152.bmp)

Learning Event 4:
PERFORM THE FIREMAN'S CARRY

Raise the casualty to a standing position.

Grasp the casualty's wrist and lift his arm over his head while continuing to support the casualty with your other arm.

CAUTION: If the casualty has an injured arm, grasp the wrist of the uninjured arm.

Bend at the waist and kneel, pulling the casualty over your shoulder. At the same time, slip your arm from his waist, pass the arm between the casualty's legs, and grasp behind the casualty's knee.

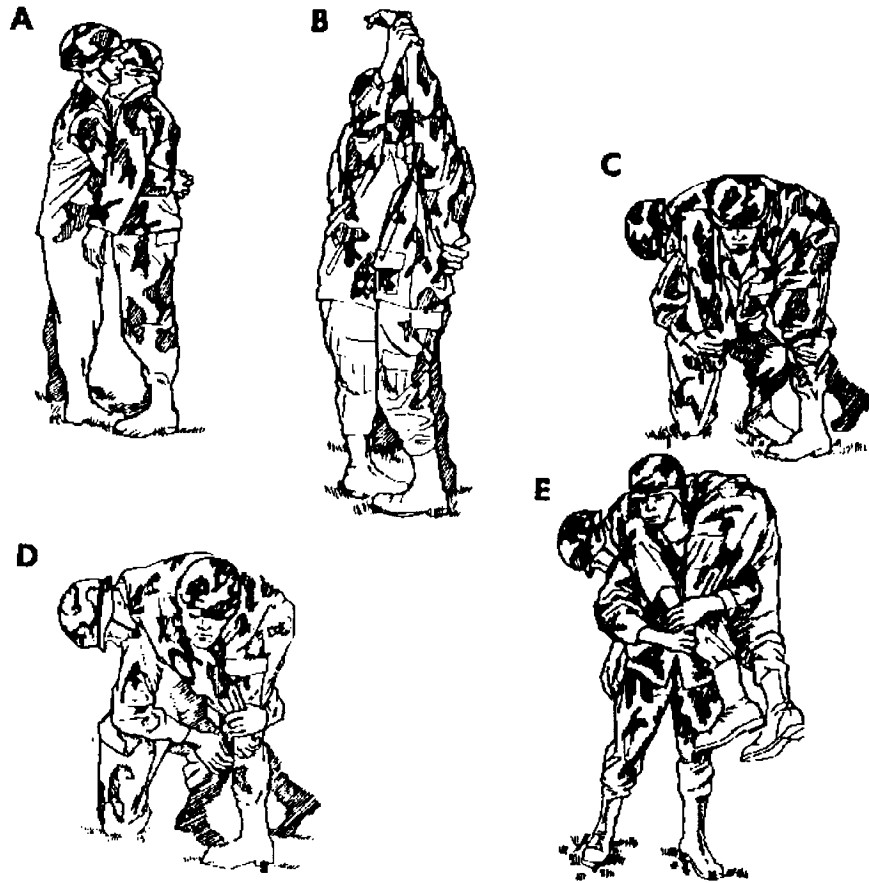


Figure 15-3
Fireman's Carry
(file: 824f153.bmp)

Move the hand grasping the casualty's wrist to the hand at the casualty's knee.

Grasp the casualty's wrist with the hand at the casualty's knee, freeing your other hand.

Place your free hand on your knee and slowly rise to a standing position. Use the hand on your knee to help you rise without straining your back.

Adjust the casualty's body so his weight is distributed comfortably.

Move forward, carrying the casualty.

**Learning Event 5:
PERFORM THE SUPPORT CARRY**

Position the casualty in a sitting position.

Squat at the casualty's side so you are facing in the same direction as the casualty.

CAUTION: If the casualty has an injured leg, position yourself with the injured leg next to you.

Bring the casualty's near arm over your shoulder and grasp his wrist with your hand that is away from the casualty.



Figure 15-4
Support carry
(file: 824f154.bmp)

Put your near arm around the casualty's waist.

Stand up, helping the casualty to rise to a standing position.

[NOTE: You can also raise the casualty to a standing position using the steps given in Learning Event 3.]

Assist the casualty to walk or hop on one leg. Adjust your walking motion as needed to help the casualty maintain his balance.

**Learning Event 6:
PERFORM THE ARMS CARRY**

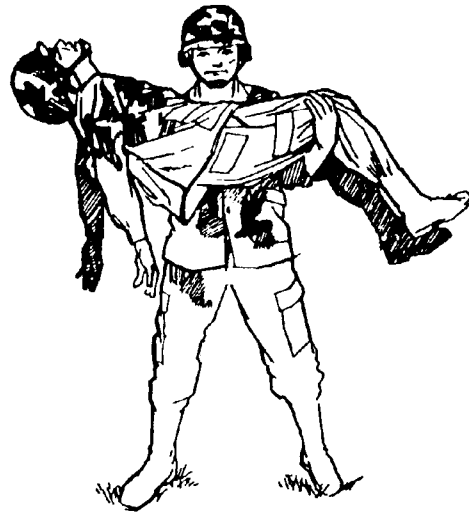


Figure 15-5
Arms carry
(file: 824f155.bmp)

Raise the casualty to a standing position .

Slide one of your arms under the casualty's arm, behind his back, and under his other arm.

Move to the casualty's side, bend down, and place your other arm behind the casualty's knees.

Lift the casualty from the ground and stand erect.

Carry the casualty high on your chest to lessen fatigue.

**Learning Event 7:
PERFORM THE SADDLEBACK CARRY**



Figure 15-6
Saddleback Carry
(file: 824f156.bmp)

Raise casualty to a standing position. (Since the casualty is conscious, he may be able to rise with assistance.)

Grasp the casualty's wrist and lift his arm over his head while continuing to support the casualty with your other arm.

Turn so that your back is to his front and bring his arm over your shoulder. Support the casualty's waist with your other arm, if needed.

Have the casualty put his other arm around your neck. If possible, he should grasp one of his wrists with his other hand.

Stoop and move your arms back and around the outside of the casualty's thighs.

Bring your hands around the back of his thighs; then bring them to the inside of his thighs. Continue to move your hands until they reach your sides and you have lifted the casualty's thighs.

Stand up and clasp your hands together in front of you.

Adjust the casualty's weight to make the weight distribution more comfortable and walk forward.

Learning Event 8:

PERFORM THE PACK-STRAP CARRY



Figure 15-7
Pack-Strap Carry
(file: 824f157.bmp)

Raise the casualty to a standing position (Learning Event 3).

Grasp one of the casualty's wrists and lift his arm above his head while continuing to support the casualty's waist with your other arm.

Turn and bring the casualty's raised arm over your shoulder as you turn so your back is to the casualty's front. Bend your knees somewhat so your shoulder fits under his arm.

Release his waist, grasp his other wrist, and bring that arm over your other shoulder.

CAUTION: Hold both wrists so his hands are in a palms down position (palms toward your abdomen). Twisting the casualty's hands could result in injury to his wrists, elbows, or shoulders when he is lifted and carried.

Bend forward and hoist the casualty as high on your back as possible so his weight is resting on your back.

Walk forward, keeping bent so the casualty's weight is balanced on your back and his feet are not dragging.

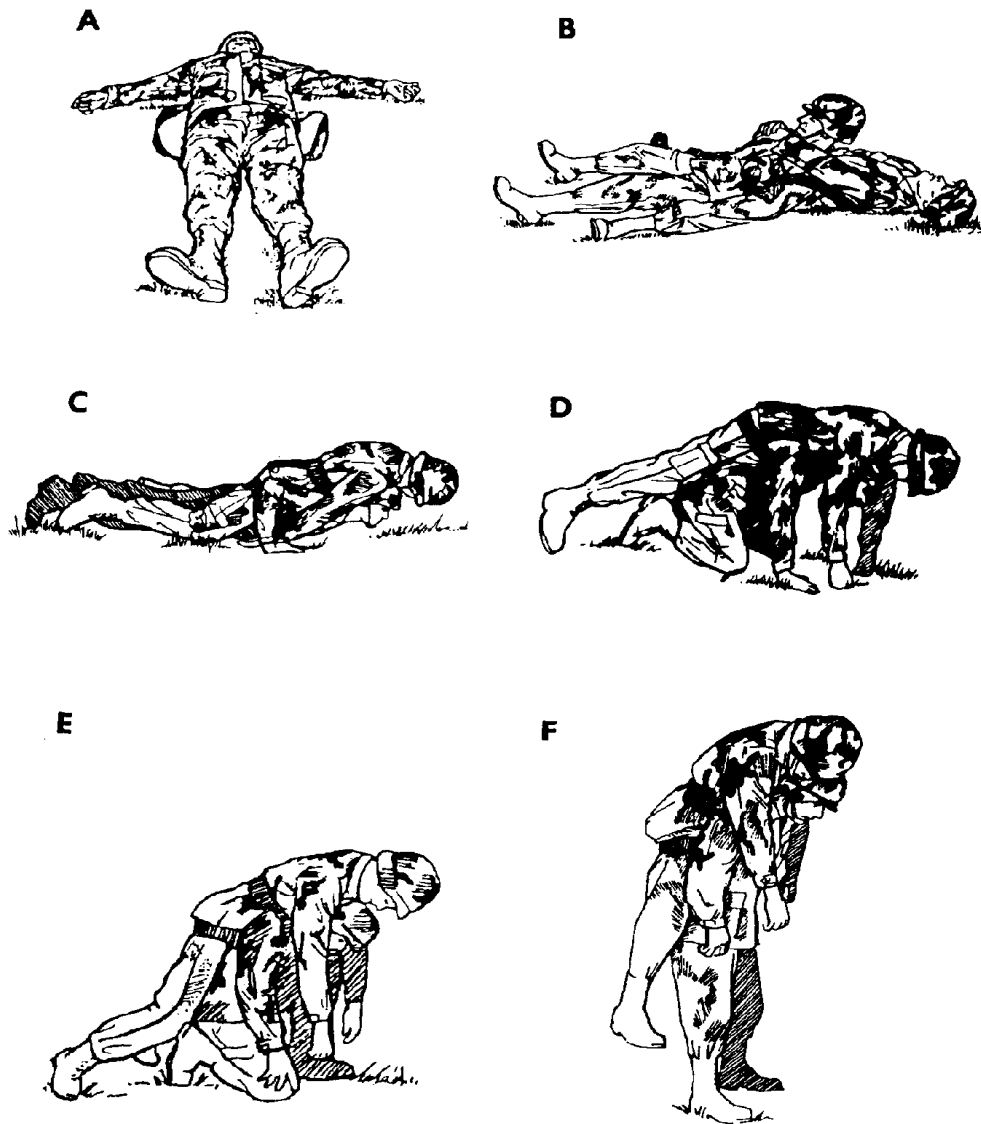


Figure 15-8
Pistol-Belt Carry
 (file: 824f158.bmp)

Learning Event 9:
PERFORM THE PISTOL-BELT CARRY

Form the sling by joining two fully-extended pistol belts together to form one large loop. If pistol belts are not available, use any material which will not break and which will not cut or bind the casualty (a rifle strap, two cravat bandages, etc.) to make the sling.

Position the casualty on his back.

Slip the sling under the casualty with the top part of the loop under his lower back, the bottom part under his thighs, the belt buckles centered behind the casualty, and a loop end extending from each side.

Move the casualty's legs apart and lie between them on your back.

Thrust your arms through the loop ends. Adjust the sling so the loop ends fit over your shoulders.

Grasp the casualty's wrist and his trouser leg on his injured side.

Roll toward the casualty's uninjured side and onto your abdomen. (Both you and the casualty are now in a prone position.)

Release the casualty's wrist and leg and push yourself up until you are on your knees.

Rise to a kneeling position with your hands on your knees for support.

Rise to your feet. Lean forward to balance the casualty's weight.

Adjust the casualty's weight to a more comfortable position, if needed, and walk forward. Your hands are free to carry a rifle or other object, climb obstacles, etc.

If the casualty is unconscious and you do not have to carry anything in your hands, grasp his wrists (palms down) to help keep the casualty balanced while you are walking.

If the casualty is conscious, have him put his arms around your neck and grasp his wrist with one hand.

Learning Event 10: PERFORM THE PISTOL-BELT DRAG

Extend two pistol belts to their full length and join them together to make one large loop. Other materials, such as a rifle sling or two cravats, can be used if pistol belts are not available. In some cases, three pistol belts may be needed.

Position the casualty on his back.

Slip the bottom of the loop across the casualty's chest, under his armpits, and under his shoulders.

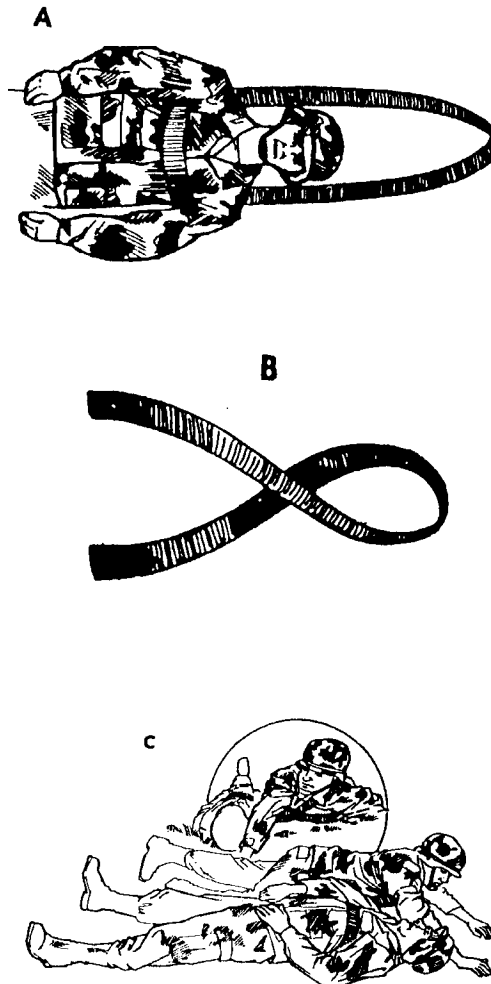


Figure 15-9
Pistol-Belt Drag
 (file: 824f159.bmp)

Twist the remainder of the loop to form a figure 8. The casualty is in the bottom part of the figure 8 and the top part is above his head. Adjust the loop so the buckles cross in the center of the figure 8.

Lie on your side facing the casualty with your head in the same direction as the casualty's head. Support yourself on your elbow.

Slip the arm on which you are resting through the top loop of the figure 8 and bring the loop over your shoulder (bottom shoulder).

Turn onto your abdomen. The pistol belts are now across your chest and the loop is over the shoulder farthest from the casualty.

Crawl, dragging the casualty with you.

**Learning Event 11:
PERFORM THE NECK DRAG**



**Figure 15-10
Neck Drag**
(file: 824f1510.bmp)

Tie the casualty's hands together with material that will not cut his wrists, such as the casualty's field dressing or a cravat. Do not tie the materials tight enough to interfere with the blood circulation. If the casualty is conscious, have him interlock his fingers.

Face the casualty's head and straddle his hips on your knees.

Loop the casualty's arms around your neck.

Crawl forward on your hands and knees, dragging the casualty beneath.

CAUTION: Keep the casualty's head from dragging on the ground.

**Learning Event 12:
PERFORM THE CRADLE DROP DRAG**

Position the casualty on his back.

Kneel at the casualty's head.

Slide your hands (palms up) under his shoulders and grasp the clothing under his armpits.

Partially rise so the casualty is pulled to a semi-sitting position. If possible, bring your elbows together and use both forearms to support the head. If not, support his head on one of your arms.

Rise to a stooped position and walk backward, dragging the soldier.



Figure 15-11
Cradle Drop Drag
(file: 824f1511.bmp)

CAUTION: If you are going down steps, walk down them carefully going backward. Support the soldier's head and shoulders, letting his hips and legs drop from step to step.

PRACTICE EXERCISES: LESSON 15

INSTRUCTIONS: Follow the special instructions for exercises 1 through 8. Answer the other exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the required term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

SPECIAL INSTRUCTIONS FOR EXERCISES 1 THROUGH 8: Identify the one-man carries listed below by writing the letter of the illustration on the following page in the blank next to the proper name.

1. _____ Arms carry.
2. _____ Fireman's carry.
3. _____ Neck drag.
4. _____ Pack-strap carry.
5. _____ Pistol-belt carry.
6. _____ Pistol-belt drag.
7. _____ Saddleback carry.
8. _____ Support carry.

see Illustrations. Illustrations for exercises 1 through 8.
(file: 824i151.bmp)

9. List the one-man carries which are not used with an unconscious casualty.

10. What one-man carry is normally used when you need to move an unconscious casualty down a flight of stairs?

11. You are moving an injured soldier using the pack-strap carry. The casualty's hands should be positioned with the:

- a. Palms up.
- b. Palms down.
- c. Palms facing each other.
- d. Backs of the hands facing each other.

12. You must move an unconscious soldier for a short distance. You need to keep both the soldier and yourself as close to the ground as possible in order to keep from being seen by the enemy. Which of the following carries/drags should you use?

- a. Fireman's carry.
- b. Four-hand seat carry.
- c. Neck drag.
- d. Pistol-belt drag.

13. Of the following one-man carries, which one is usually preferred for quickly moving an unconscious or disabled casualty for a moderate distance?

- a. Arms carry.
- b. Fireman's carry.
- c. Saddleback carry.
- d. Support carry.

14. A casualty is lying on his back. He has a dressed wound on his left side. In order to turn him onto his abdomen, you should:

- a. Kneel at his left side, grab his far shoulder and hip, and pull so the casualty rolls onto his front.
- b. Kneel at his left side, grab his near shoulder and hip, and push so the casualty rolls onto his front.

c. Kneel at his right side, grab his near shoulder and hip, and push so the casualty rolls onto his front.

d. Kneel at his right side, grab his far shoulder and hip, and pull so the casualty rolls onto his front.

15. You want to move a heat stroke casualty to a shady area a few feet away. Which one of the following carries/drags would you use?

- a. Cradle drop drag.
- b. Neck drag.
- c. Pistol-belt carry.
- d. Saddleback carry.

16. You must carry a casualty for a long distance. Also, you want to have your hands free to climb a steep embankment. What carry should you use?

- a. Arms carry.
- b. Pack-strap carry.
- c. Pistol-belt carry.
- d. Saddleback carry.

17. If one or more individuals are available to help, practice performing one-man manual carries described in this lesson, especially the fireman's carry and the pistol-belt carry. (You will need two pistol belts or other material to make a loop for the pistol-belt carry and pistol-belt drag.) Check your performance against the performance checklists and the lesson materials.

ANSWERS TO PRACTICE EXERCISES: LESSON 16

1. H (LE 6)
2. C (LE 4)
3. D (LE 11)
4. F (LE 8)
5. G (LE 9)
6. E (LE 10)
7. B (LE 7)
8. A (LE 5)
9. Support carry; Saddleback carry.
(LE 1)
10. Cradle drop drag. (LE 1)
11. b (LE 8)
12. d (LE 1)
13. b (LE 1)
14. d (LE 2)
15. a (LE 1)
16. c (LE 1)
17. See the performance checklists on the following pages.

PERFORMANCE CHECKLIST

TRANSPORT A CASUALTY USING ONE-MAN FIREMAN'S CARRY

Situation: You have decided to evacuate a casualty using the fireman's carry. The casualty is lying on his back. His left side is injured. Raise the casualty using the regular method.

	GO	NO-GO
Kneels at casualty's right side.	_____	
Places casualty's arms above his head.	_____	
Grasps casualty's far shoulder and far hip/thigh.	_____	
Rolls casualty onto his stomach as a unit.	_____	
Straddles the casualty, facing casualty's head.	_____	
Puts his hands under the casualty's chest and locks his hands.	_____	
Raises casualty to knees by walking backward.	_____	
Continues to move backward until casualty's knees lock.	_____	
Walks forward until casualty is in standing position.	_____	
Lifts casualty's arm and moves under the arm to stand facing the casualty while still supporting casualty.	_____	
Places arms around casualty's waist, places one foot between casualty's feet, and spreads the feet so they are 6 to 8 inches apart.	_____	
Grasps casualty's wrist, raises casualty's arm, stoops, and pulls casualty across shoulders.	_____	
Places his free arm between casualty's legs, brings hand around leg, and grasps the casualty's wrist.	_____	
Rises to standing position with casualty supported across shoulders and one hand free to carry weapon.	_____	
Walks forward without falling or dropping casualty.	_____	

OVERALL EVALUATION

(A no-go on any step gives an overall evaluation of no-go.)

GO

NO-GO

PERFORMANCE CHECKLIST

TRANSPORT A CASUALTY USING THE ONE-MAN PISTOL-BELT CARRY

Situation: You have decided to evacuate a casualty using the pistol-belt carry. The casualty is unconscious and lying on his back. His left side is injured.

	GO	NO-GO
Forms a sling by joining two fully-extended pistol belts together to form one large loop.	_____	
Slips the sling under the casualty so the top part of the loop is under his lower back, the bottom part of the loop is under his thighs, the belt buckles are centered behind the casualty, and a loop end extends from each side.	_____	
Lies between the casualty's legs on his back.	_____	
Thrusts arms through the loop ends and slips them over his shoulders.	_____	
Grasps the casualty's wrist and his trouser leg on his left (injured) side.	_____	
Rolls toward the casualty's right (uninjured) side and onto his abdomen so both are in a prone position.	_____	
Releases the casualty's wrist and leg and pushes himself up until he is on his knees.	_____	
Rises to a kneeling position, places hands on knees, and rises to his feet.	_____	
Balances the casualty's weight and adjusts the casualty to a more comfortable position, if needed.	_____	
Grasps casualty's wrists (palms down) to help balance him while walking or grasps a rifle in his hands.	_____	
Walks forward without falling or dropping casualty.	_____	

OVERALL EVALUATION	GO	NO-GO
(A no-go on any step gives an overall evaluation of no-go.)		

LESSON 16

OVERVIEW

TASK

Identify the functions of the combat lifesaver and the contents of the combat lifesaver aid bag.

CONDITION

Given multiple-choice items pertaining to the role of the combat lifesaver and to the combat lifesaver aid bag.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

AR 350-41, Training in Units.

FM 8-230, Medical Specialist.

FM 21-11, First Aid for Soldiers.

Soldiers Training Publications (STP) 8-91B15-SM-TG, Soldier's Manual and Trainer's Guide: MOS 91B, Medical Specialist, Skill Levels 1/2/3/4/5.

STP 21-1-SMCT, Soldier's Manual of Common Tasks, Skill Level 1.

STP 8-91-SM CMF 91 General Medical Tasks.

Learning Event 1:

IDENTIFY THE PURPOSE OF THE COMBAT LIFESAVER

The Army battle doctrine was developed for a mobile and widely dispersed battlefield. The doctrine recognizes that battlefield constraints will limit the ability of trained medical personnel, including combat medics (medical specialists MOS 91B), to provide immediate, far-forward care. Therefore, a plan was developed to provide additional care to injured combat soldiers. The combat lifesaver is part of this plan.

The combat lifesaver is a non-medical soldier who provides emergency care as a secondary mission as his primary (combat) mission allows. The combat lifesaver may also assist the combat medic in providing care and preparing casualties for evacuation when the combat lifesaver has no combat duties to perform.

Normally, one member of each squad, team, crew, or equivalent-sized unit will be trained as a combat lifesaver.

A major advantage of the combat lifesaver is that he will probably be nearby if a member of his squad or team is injured. It may take a combat medic several minutes or longer to reach the casualty, especially if there are several other casualties and/or the medic is at another location. The combat lifesaver is trained to provide immediate care which can save a casualty's life, such as stopping severe bleeding and administering intravenous fluids to help control shock.

Learning Event 2:

IDENTIFY TASKS PERFORMED BY THE COMBAT LIFESAVER

Combat lifesaver training is a bridge between the self-aid/buddy-aid (first aid) training, including the soldier health maintenance (preventive medicine) tasks, given all soldiers during basic training and the medical training given to the combat medic.

The combat lifesaver is proficient in all buddy-aid tasks. Some buddy-aid tasks, such as providing care to a frostbite casualty, have been enhanced to allow the combat lifesaver to provide care to a wider range of injuries (trench foot, generalized hypothermia, etc.).

Other tasks are medical in nature and would normally be performed by the 91B medical specialist (combat medic). For example, the combat lifesaver is taught to initiate an intravenous infusion (I.V.) as treatment for hypovolemic shock. Although the combat lifesaver is trained to perform certain medical tasks, he is not trained in all of the tasks that a combat medic performs. For example, the combat medic is trained in cardiopulmonary resuscitation (CPR) while the combat lifesaver is only trained in performing mouth-to-mouth resuscitation. Table 1 contains a listing of the combat lifesaver tasks.

Self-Aid/Buddy-Aid (SABA) Tasks (covered in IS0824)

- Clear an object from the throat of a conscious casualty
- Perform mouth-to-mouth resuscitation
- Put on a field dressing, pressure dressing, and tourniquet
- Apply a dressing to an open chest wound
- Apply a dressing to an open abdominal wound
- Apply a dressing to an open head wound
- Prevent shock
- Splint a suspected fracture
- Give first aid for burns
- Recognize and give first aid for heat injuries
- Administer first aid to a nerve agent casualty
- Transport a casualty using a one-man carry
- Transport a casualty using a two-man carry or an improvised litter
- Protect yourself against heat
- Protect yourself against cold
- Protect yourself against biting insects
- Protect yourself against diarrhea and dysentery
- Practice personal hygiene to maintain fitness

Other Combat Lifesaver Tasks (covered in IS0825)

- Evaluate a casualty (expanded version of the SABA task, Evaluate the casualty)
- Initiate an intravenous infusion for hypovolemic shock
- Measure and monitor a casualty's pulse
- Measure and monitor a casualty's respirations
- Apply a SAM splint to a fractured limb
- Insert an oropharyngeal airway in an unconscious casualty
- Administer first aid to chemical agent casualties (additional treatment of a nerve agent casualty beyond the SABA task, Administer first aid to a nerve agent casualty, and treatment of injuries due to other types of chemical agents)
- Identify and treat cold injuries (includes the SABA task, Give first aid for frostbite)
- Manage combat stress reaction (battle fatigue)
- Administer acetaminophen and pseudoephedrine hydrochloride tablets
- Transport a casualty using a military vehicle

TABLE 1. LIST OF COMBAT LIFESAVER TASKS

Table 1
List of combat lifesaver tasks
(file: 825t16-1.bmp)

Learning Event 3:

IDENTIFY MEDICAL SUPPLIES CARRIED BY THE COMBAT LIFESAVER

The combat lifesaver carries a small aid bag containing supplies for dressing wounds, splinting fractures, initiating intravenous infusions, and treating certain minor problems such as the common cold.

The combat lifesaver's aid bag (with contents) weighs a little over nine pounds and occupies about 0.44 cubic feet. The combat lifesaver must be

familiar with the contents of his aid bag and how they are used. Table 2 contains a list of the contents of the combat lifesaver medical equipment set (MES) and their uses. The national stock number for the entire combat lifesaver medical equipment set (bag plus all supplies) is **6545 01 254 9551**.

Some items, such as the bags of intravenous fluids, must be replaced when their expiration date nears. Usually, the combat lifesaver's unit will perform the needed stock rotation. If the combat lifesaver maintains his own bag, he must replenish his supplies in accordance with his unit's standing operating procedures (SOP).

During combat, the combat lifesaver will need to be resupplied rapidly as his supplies can be quickly depleted. The combat lifesaver can obtain additional supplies from combat medics, from battalion aid stations or other nearby medical treatment facilities, and from ambulances evacuating casualties.

NSN	NOMENCLATURE	QTY
6505010171625	Acetaminophen tablets, USP, 325mg, 50 tablets per bottle	2 BT
6510009268882	Adhesive tape, surgical, porous, woven, 1 in X 10 yds	1 SP
6515003002900	Airway pharyngeal, large adult	1
6515013652076	Airway pharyngeal, small adult	1
6505009269083	Atropine injection aqueous type 0.7ml syringe with needle	5
6510009137909	Bandage adhesive 3/4 X 3 inches flesh	18
6510011642694	Bandage gauze elastic, 5 yd X 2 in	4
6510002011755	Bandage muslin compressed brown 37 X 37 X 52" triangular w/pins	4
6545009129870	Case medical instrument and supply set polyamide nylon nonrigid	1
6515012824878	Catheter & needle unit, d12 I.V. 18ga radiopaque, disp	2
6505012740951	Diazepam injection USP, 5mg/2ml syringe-needle unit	5
6510001594883	Dressing first aid field camouflaged 4"w X 6.25-7.25"lg, abs	6
6515001817449	Gloves, patient exam med-lrg	3 PR
6515001150032	Intravenous inj set, 7 comp macrodrip 10 drops/ml	2
6510010100307	Pad povidone-iodine impre, ster 2 X 1.375" brown	12
6505001187096	Povidone-iodine oint USP 10% 1/8oz (3.54 Gram) I.S.	8
6505001490098	Pseudoephedrine hydrochloride tablets USP 30mg, 24 tabs/container	1 CO
6505011549922	Ringer's injection lactate USP 500ml plastic bag	2
6515009357138	Scissors bandage 1.5"Cut lg 7.25" O/a lg both blades blunt crs	1
6515012254681	Splint universal 36 X 4.5" malleable alum radiolucent ltwt	1
6515011467794	Tourniquet nonpneumatic adult 14 X 1" blood taking dsgn rubber	1

TABLE 2. COMBAT LIFESAVER MEDICAL EQUIPMENT SET

Table 2
Combat lifesaver medical equipment set
(file: 825t16-2.bmp)

PRACTICE EXERCISES: LESSON 16

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best completes the sentence or which indicates whether the statement is true or false or by writing the answer in the blank provided.

After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. According to Army battle doctrine, a combat medic will be able to reach a wounded soldier within one minute after the soldier is injured.

- a. True.
- b. False.

2. During combat, a combat lifesaver sees a fellow soldier collapse. The combat lifesaver must stop his combat duties and administer emergency care to the casualty.

- a. True.
- b. False.

3. One member of each rifle squad and one member of each tank crew should be a combat lifesaver.

- a. True.
- b. False.

4. A combat lifesaver receives the same medical training as a combat medic (MOS 91B).

- a. True.
- b. False.

5. A combat lifesaver should be proficient in all first aid (buddy-aid) tasks.

- a. True.

b. False.

6. The combat lifesaver's aid bag (medical equipment set) weighs about:

a. Three pounds.

b. Six pounds.

c. Nine pounds.

d. Twelve pounds.

7. During combat, the combat lifesaver can obtain additional medical supplies to replace the supplies which he has used from:

a. A combat medic.

b. A ground ambulance.

c. A nearby medical treatment facility.

d. All of the above.

8. For each item given below, write the number of individual items contained in the combat lifesaver aid bag in the space provided.

a. I.V. bags.

b. Muslin bandages.

c. Field dressings.

d. Atropine autoinjectors.

e. CANA.

ANSWERS TO PRACTICE EXERCISES: LESSON 1

- 1. b (LE 1)
- 2. b (LE 1)
- 3. a (LE 1)
- 4. b (LE 2)
- 5. a (LE 2)
- 6. c (LE 3)
- 7. d (LE 3)
- 8. a. 2
b. 4
c. 6
d. 5
e. 5 (Table 2)

LESSON 17

INITIATE AN INTRAVENOUS INFUSION FOR HYPOVOLEMIC SHOCK

TASK

Initiate an intravenous infusion (I.V.).

CONDITIONS

Given a simulated casualty and needed supplies.

STANDARD

Score a GO on the performance checklist.

REFERENCES

FM 8-230, Medical Specialist.

FM 21-11, First Aid for Soldiers.

STP 8-91B15-SM-TG, MOS 91B Medical Specialist, Skill Levels 1/2/3/4/5.

STP 21-1-SMCT, Soldier's Manual of Common Tasks, Skill Level 1.

INTRODUCTION

One of the most important tasks of the combat lifesaver is to control hypovolemic (low blood volume) shock by initiating an intravenous infusion (I.V.). The I.V. fluid replaces fluid lost from the casualty's circulatory system. The I.V. fluids contain both water and electrolytes (sodium, potassium, calcium, and chloride compounds). Left untreated, hypovolemic shock can result in death.

Learning Event 1:

IDENTIFY SIGNS AND SYMPTOMS OF HYPOVOLEMIC SHOCK

Hypovolemic shock is a condition caused by a sudden decrease in volume of fluid in the body's blood circulatory system. On the battlefield, this condition is usually brought about by severe blood loss or severe burns. Hypovolemic shock can also be caused by dehydration due to severe vomiting, diarrhea, or profuse sweating (heat injury). Watch for signs and symptoms of hypovolemic shock if any trauma resulting in a significant loss of body fluids occurs. When indications of hypovolemic shock are present, take steps to replace lost body fluids by initiating an intravenous infusion (I.V.). The quicker the casualty receives I.V. fluids, the more rapid the improvement in his condition. Signs and symptoms of hypovolemic shock include the following:

Rapid or severe bleeding:

External bleeding from a visible wound.

Internal bleeding from a trauma with no visible wound (usually seen as swelling or discoloration).

Severe burns (second and third degree burns over 20 percent or more of the casualty's skin surface).

Anxiety. (This is an early sign of shock. As fear increases, the heart rate increases, which usually causes the casualty's overall condition to deteriorate.)

Changes in the level of consciousness. (The casualty may quickly go from fully alert to unconscious.)

Confusion. (The casualty may not understand his surroundings and take inappropriate actions. This condition is generally caused by lack of oxygen to the brain. To test the casualty, ask questions which cannot be answered with a simple "yes" or "no." For example: "What is your name? What is the month and year? What day of the week is it?")

Restlessness. (The casualty may have a strong desire to move about or leave.)

Agitation. (The casualty may become agitated to the point of violent behavior and attack people around him.)

Abnormal pulse (irregular or fluctuating pulse in early stages; weak and rapid pulse in later stages).

Low blood pressure (indicated by difficulty in detecting a radial or posterior tibial pulse).

Cool, clammy skin.

Change in skin color:

Blotchy or bluish skin, especially around the mouth.

Pale and yellowish coloration in light-skinned individuals.

Grayish lips and fingernail beds in dark-skinned individuals.

Extreme paleness or grayish color of the casualty's eyelids and the inside of his lips.

Enlarged pupils that do not react to light. (This is a sign of late shock. Test this reaction by shining a light into the casualty's eyes or by closing his eyes, then opening them and observing the pupils for a change in size.)

Rapid, shallow breathing.

Thirst, dry mouth.

Nausea or vomiting.

Pulse rate over 100 beats per minute.

Learning Event 2:

PERFORM PRELIMINARY MEASURES TO TREAT A CASUALTY FOR HYPOVOLEMIC SHOCK

Evaluate the casualty. Maintain the airway, if necessary.

Control any external bleeding.

Normally, you will position the casualty on his back and elevate his feet above the level of his heart level to increase the blood flow to the heart.

If you suspect the casualty has a fractured thigh, leg, or ankle, do not elevate the legs until the suspected fracture has been splinted. Initiate the I.V. before splinting the fracture.

If the casualty has an open chest wound, position him on his side with the wounded side next to the ground.

If the casualty has an open abdominal wound, flex the knees.

If the casualty has an open head wound, allow the casualty to sit up or position him on his side with the wound away from the ground.

If the casualty is on a litter, elevate the foot of the litter if the casualty has no open abdominal or open head injury.

If you must leave the casualty or if he is unconscious, turn his head to one side to prevent him from choking should he vomit.

Avoid rough and excessive handling.

Loosen any restrictive clothing from around the neck, waist, or other areas where it might be binding.

CAUTION: Do not loosen or remove the casualty's clothing if you are in a chemically contaminated area.

WARNING

Do not give the casualty anything to eat or drink since it could cause vomiting. If the casualty vomits, he could inhale his own vomitus and suffocate. You may moisten the casualty's lips with a damp cloth.

Initiate an intravenous infusion to replace lost fluids.

Maintain the casualty's normal body temperature.

In cool temperatures, place the casualty on a poncho and cover him with the sides of the poncho. Use a wool blanket if you have one. Do not allow the casualty to lie in water.

In hot or warm temperatures, do not cover the casualty unless he shows signs of chilling. Place him in the shade and/or try to shield him from direct sunlight.

Watch the casualty for signs of sweating or chilling. Remove covering if the casualty is sweating. Cover the casualty if he shows signs of chilling.

CAUTION: If a tourniquet has been applied, leave it exposed so medical personnel can see it quickly.

Check the casualty's pulse and respiration as often as possible to determine if he is responding to treatment. Also monitor the casualty's level of consciousness and changes in skin color.

Learning Event 3: PUT ON GLOVES

Cleanliness is the main reason for wearing gloves when you initiate an I.V. In battle, you and your casualty may be smeared with dirt, sand, mud, or blood. The gloves will reduce the chance of various possible infections resulting from the I.V. puncture for both you and the casualty.

In addition to the cause for cleanliness, the gloves should be used because it is impossible to know which casualties are infected with conditions such as HIV, HBV, or other bloodborne diseases.

Always push used needles into the ground. This way, no one runs the risk of an accidental needle stick.

If, for some reason, you cannot wear the gloves, start the I.V. anyway.

Learning Event 4:
GATHER AND CHECK I.V. SUPPLIES

Obtain the following supplies from your aid bag:

I.V. solution bag.

Intravenous infusion set.

Catheter and needle unit (also called over-the-needle catheter or catheter/needle unit).

NOTE: In a combat situation, you may be resupplied with an I.V. solution bag and/or an I.V. set different from the ones shown in class.

Constricting band (tubing).

Anti-microbial (povidone-iodine) ointment.

Povidone-iodine impregnated cotton pads.

Adhesive tape.

Scissors.

NOTE: Even though alcohol prep packets and gauze sponge packets are not issued with your aid bag, you may wish to obtain these items and include them in your aid bag.

Remove the I.V. solution bag from its protective cover and check the bag for:

Expiration date. (Do not use outdated solutions.)

Clarity of the fluid. (Make sure the fluid is clear and has no floating particles in the solution.)

Leaks. (Discard any leaky bag. The I.V. solution inside is no longer sterile.)

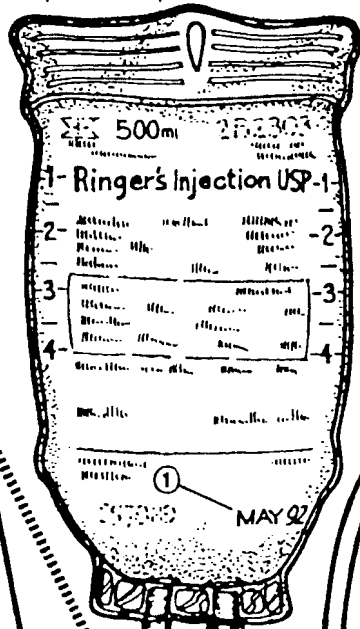
CAUTION: If there is any doubt about the sterility of the solution, do not use it. Obtain another solution bag.

Check the packaging of the I.V. set and catheter and needle unit for tears and water marks. Tears and watermarks indicate the set or the catheter and needle unit may no longer be sterile. Obtain another set or needle unit.

Remove the I.V. set from its box or package and check the tubing for tears, discoloration, and cracks. Obtain another set if the tubing is discolored or damaged.

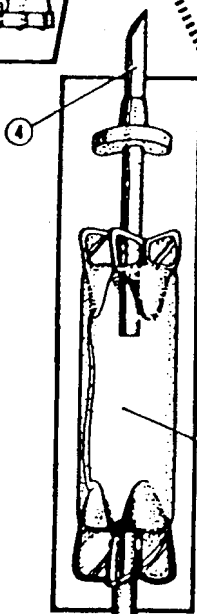
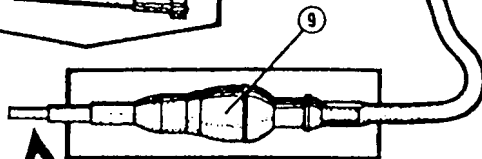
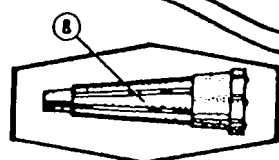
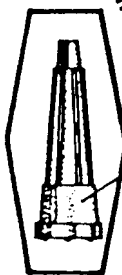
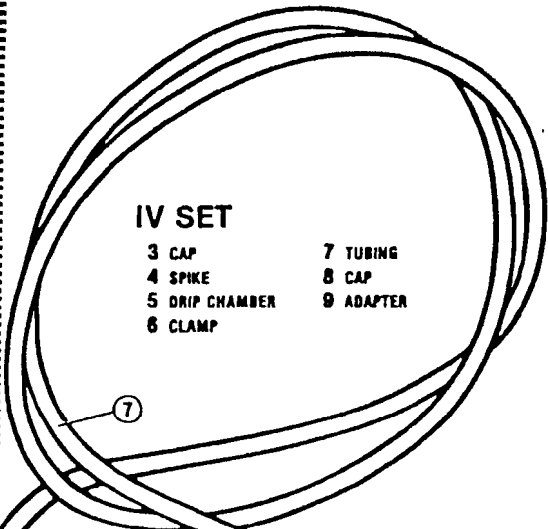
IV BAG

- 1 EXPIRATION DATE
- 2 OUTLET PORT (WITH COVERING)



IV SET

- 3 CAP
- 4 SPIKE
- 5 DRIP CHAMBER
- 6 CLAMP
- 7 TUBING
- 8 CAP
- 9 ADAPTER



CATHETER/NEEDLE UNIT

- 10 CAP
- 11 CATHETER
- 12 HUB
- 13 NEEDLE
- 14 FLASH CHAMBER

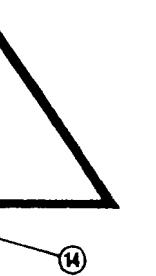
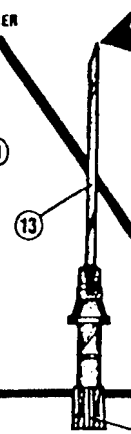
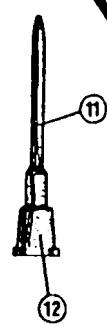
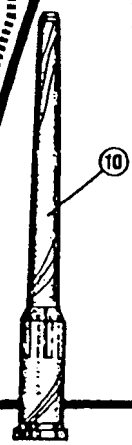


Figure 17-1
I.V. Bag, I.V. Set, and catheter/needle unit
(file: 825f17-1.bmp)

Learning Event 5:
PREPARE THE I.V.

NOTE: The procedures may have to be altered slightly depending upon the type of supplies being used.

After removing the infusion set from the package and checking it for damage, move the clamp along the tubing until it is 6 to 8 inches from the drip chamber. Tighten the clamp once it is in position.

Remove the protective covering from the outlet port (long spout) on the I.V. bag. Do not let the tip of the outlet port touch anything until the spike is inserted.

Remove the protective cap from the spike on the infusion set. Grasp the drip chamber with one hand and the spike cap with the other hand. Remove the cap with a twisting motion without touching the spike.

Insert the spike into the exposed I.V. outlet port with a twisting motion. The spike will penetrate the seal in the outlet port. Do not touch the end of the port or the spike during the procedure.

Hang the bag on an object above the level of the casualty's heart, if possible, or hold the bag up until you have completed removing air from the tubing.

Squeeze the drip chamber until half of the chamber is filled with I.V. solution.

Remove the air from the tubing.

Hold the end of the tubing above the bottom of the bag.

Release or loosen the tubing clamp. (This allows the fluid to flow into the tubing.)

Loosen the protective cap over the adapter. (This allows the air to escape from the tubing.)

Gradually lower the tubing until the solution reaches the end of the adapter.

Reclamp the tubing and retighten the cap over the adapter.

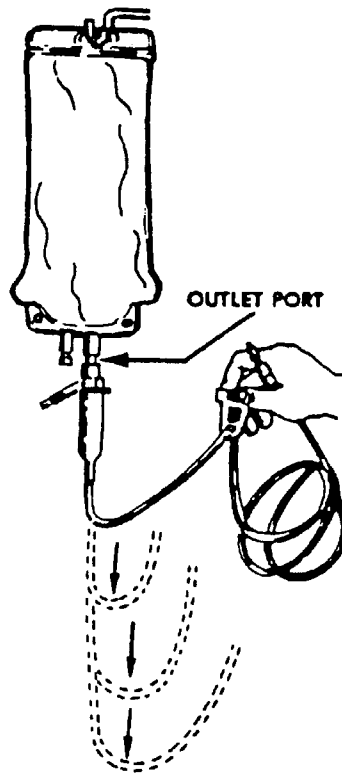


Figure 17-2
Removing air from the tubing
(file: 825f17-2.bmp)

NOTE: In the classroom, loop the tubing over the I.V. stand, if used, to protect it from contamination while you prepare the I.V. site.

WARNING

If air is not removed from the tubing, it can enter the bloodstream and rapidly move to the heart (air embolism). An air embolism can cause the casualty's heart to stop beating (cardiac arrest). It is essential that you make sure there is no air in the tubing.

Cut or tear four strips of tape (about 4-inches in length) and hang them on the bag.

Learning Event 6:
SELECT AND PREPARE AN INFUSION SITE

Expose possible infusion sites by removing, tearing, or cutting away clothing if necessary.

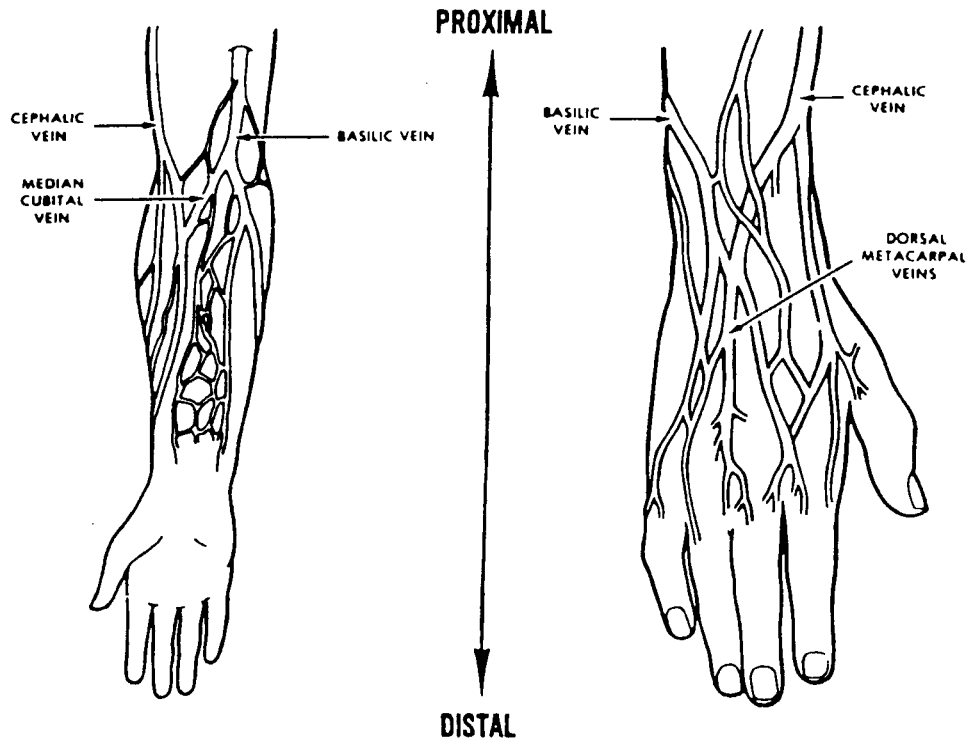


Figure 17-3
Veins on the forearm and hand
 (file: 825f17-3.bmp)

Look and feel (palpate) for a vein. The vein should be as close to the end of the extremity as possible. Make sure the site is free of scars, moles, and excessive hair.

Avoid joints, areas where a pulse is palpable, and veins near or below injuries.

Select a straight vein, one that feels springy when touched and does not roll.

If you have difficulty finding a vein, lower the arm below the level of the heart. If you still cannot find a vein on the arm or hand, try to find a vein on the foot. If this fails, try to find a vein on the leg.

CAUTION: Attempt to penetrate the vein at the most distal point (the one closest to the end of the extremity, farthest away from the heart) that is practical. If you are unsuccessful the first time, move toward the heart for your second attempt. The arm is the most convenient place for performing this procedure.

Apply the constricting band (tubing) 6 to 8 inches above the infusion (venipuncture) site in such a manner that the band can be released using only one hand.

Stretch the band slightly.

Wrap the band around the limb so that one end of the remaining band is longer than the other end.

Loop the longer end and draw it under the shorter end. Be sure the tails point away from the infusion site.

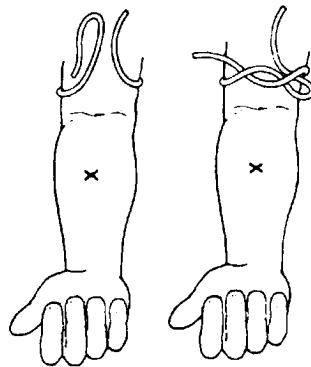


Figure 17-4
Applying a constricting band
(file: 825f17-4.bmp)

WARNING

The constricting band should not remain in place more than two minutes.

Ask the casualty (if conscious) to clench and relax his fist several times, then keep his fist clenched. If the casualty is unconscious, place the limb below the level of heart.

Palpate the vein with your fingertips again (after the clenching) to make sure that the vein is still suitable.

NOTE: If you cannot find a vein in the hand, arm, foot, or leg and no medical help is available, select a spot where you would normally expect a vein to be and perform a blind stick. (A blind stick refers to inserting the needle without being able to see the vein.) Perform a blind stick as a last resort only if there is no other alternative.

Open a packet containing a povidone-iodine impregnated cotton pad and cleanse the skin at the selected infusion site. Wipe the site using a circular motion, beginning at the center of the site and spiraling outward. Do not palpate the vein again or touch the site after cleansing.

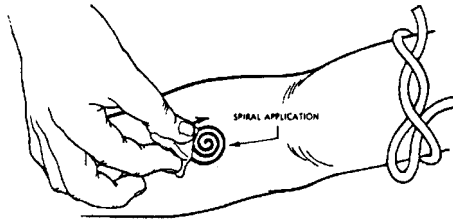


Figure 17-5
Cleansing the infusion site
(file: 825f17-5.bmp)

Learning Event 7:
INITIATE INFUSION

Let the tubing (looped over the I.V. stand) drop down so that it is within reach.

Open the packaging of the catheter and needle unit and remove the unit.

Hold the stem (flash chamber) of the unit with the thumb and forefinger of your dominant hand (the hand with which you write) and use your other hand to remove the protective cap from the unit. Hold the unit so the bevel of the needle is up.

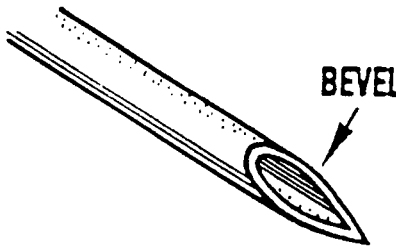


Figure 17-6
Needle with bevel up
(file: 825f17-6.bmp)

CAUTION: Do not touch the exposed needle or catheter.

Pull the skin taut by pressing approximately one inch above or below (usually below) the infusion site with the thumb of your non-dominant hand.

Position the needle slightly to the side of the vein at approximately a 20° to 30° angle.

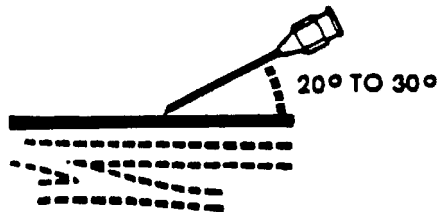


Figure 17-7
Inserting the bevel into the skin
(file: 825f17-7.bmp)

Insert the needle tip into the skin with the bevel up. Insert only the bevel of the needle beneath the skin.

Lower the angle of the catheter and needle until it is almost parallel to the skin surface.

Insert the needle into the vein. A slight "give" is felt as the needle enters the vein.

Check for blood in the flash chamber. If the needle is in the vein, blood will appear in the flash chamber.

If the venipuncture (penetration of the vein) is not successful, pull the catheter and needle unit back slightly, but do not pull the bevel above the skin surface. Attempt to direct the needle point into the vein again.

If you are still unsuccessful, release the constricting band, withdraw the catheter and needle completely, obtain another catheter and needle unit, and attempt another venipuncture at a point proximal to (above) the previous attempt.

If you are still unsuccessful after the second venipuncture attempt, obtain medical assistance, if available. Do not attempt another venipuncture. If medical assistance is not available, evacuate the casualty as soon as practical.

When you have blood in the flash chamber, hold the catheter and needle unit in place.

Advance the catheter and needle unit approximately 1/8 inch farther to ensure that the catheter itself is in the vein.

Stabilize the flash chamber with your dominant hand. Grasp the catheter hub with your non-dominant hand.

Thread the length of the catheter into the vein (to the hub).

CAUTION: Only the catheter is advanced into the vein. The needle is not advanced.

While continuing to hold the catheter hub with your non-dominant hand, press lightly on the skin over the catheter tip with a finger of the same hand. (Pressing lightly on the skin over the catheter tip is necessary in order to decrease or stop the flow of blood from the catheter hub after the needle is removed.)

With your dominant hand, remove the flash chamber with the attached needle from the catheter and lay the flash chamber/needle aside.

Ask the casualty to unclench his fist.

Without switching hands, release the constricting band.

Remove the protective cap from the adapter with your dominant hand and quickly insert the tip of the adapter tightly into the catheter hub.

Relax the finger which was pressing on the skin over the catheter.

WARNING

After the needle is removed, do not attempt to reinsert it into the catheter. Reinsertion could cause a portion of the catheter to be sheared off, enter the bloodstream, and move to the heart where it could cause cardiac arrest.

NOTE In the classroom, you will only simulate the remaining steps of this Learning Event.

Loosen the clamp on the tubing to allow the I.V. solution to flow.

Check the drip chamber to make sure the flow has started.

Adjust the clamp so the I.V. tubing is clamped (constricted) about half way. The fluid should be flowing fast enough that you can barely count the individual drops of fluid.

WARNING

If head injuries are present, run the I.V. as slowly as possible (about ten drops per minute), but keep the solution flowing.

Check the infusion site for signs of infiltration (fluids going into the tissues rather than the vein). The signs of infiltration are:

Unusual pain felt by casualty at site of infusion.

Swelling at the site of the infusion.

Redness at the site of the infusion.

Site is cool to the touch.

Clear fluid leaking around the site.

WARNING

If signs of infiltration are present, clamp the I.V. tubing, remove the catheter from the casualty, obtain a new catheter and needle unit, and attempt the infusion at a site above the last attempt.

If infiltration is not present, proceed to secure the catheter and I.V.

**Learning Event 8:
SECURE THE I.V.**

Remove two strips of tape from the I.V. bag and use them to make a diagonal cross over the

catheter hub. Once the hub is secured, release your hold on the adapter.

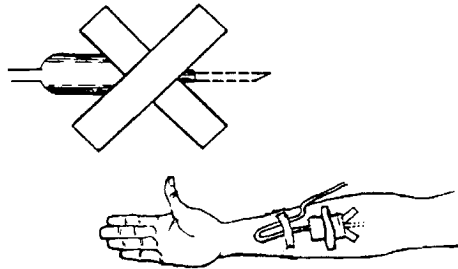


Figure 17-8
Securing the I.V.
(file: 825f17-8.bmp)

NOTE: If you have a sterile gauze pad, open the package and place the gauze pad over the hub and adapter.

Use one piece of tape to secure the adapter. (The tape is placed across the adapter if a gauze pad is not used. If a gauze pad is applied, secure both the pad and the adapter with the tape.)

Make a loose safety loop of tubing on top of the extremity with the tubing below (distal to) the infusion site.

Secure the loop of tubing with the fourth piece of tape.

Position the I.V. bag so the fluid will continue to flow from the I.V. bag into the casualty's vein.

If possible, hang the bag from a stable object with the bag higher than the casualty's heart. Gravity will cause the fluid to flow.

If the bag cannot be hung, place the bag under the casualty's lower back. The pressure from the casualty's body will force fluid from the bag. This method can be used when evacuating the casualty on a litter.

Learning Event 9: REMOVE THE CATHETER

If the infusion site becomes infiltrated or if the fluid in the I.V. bag is used up, use the following steps to remove the catheter.

Adjust the clamp on the tubing so the flow of fluid is stopped.

Loosen and remove the strips of tape. Remove the tape from the loop of tubing; then the strip of tape securing the adapter; then the two strips of tape securing the catheter hub. When removing a strip of adhesive tape, start at the ends of tape and loosen toward the middle.

Remove the catheter from the vein by pulling it out at the same angle used in inserting the needle (almost parallel to the skin).

Cover the puncture site with an adhesive bandage from your aid bag. (The small, sterile dressing on the adhesive bandage will help to stop bleeding and prevent infection.)

Apply manual pressure over the site for about 5 minutes to help control bleeding. (This step may be performed by the casualty.) Anti-microbial ointment and a self-adhesive bandage can also be applied.

PRACTICE EXERCISES: LESSON 17

INSTRUCTIONS: Answer the following exercises by writing the required term in the blanks provided or by circling the proper word choice. After you have completed all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. List ten signs/symptoms of hypovolemic shock:

- a. _____ f.
- b. _____ g.
- c. _____ h.
- d. _____ i.
- e. _____ j.

SPECIAL INSTRUCTIONS: For the remaining exercises, assume the casualty is breathing adequately, you have controlled the bleeding from an injured leg, and you have determined the casualty is suffering from hypovolemic shock. The casualty has no other injury.

2. Position the casualty on his _____.

3. Elevate his legs above the level of his _____.

4. Be careful to avoid _____ handling.

5. Loosen any restrictive clothing unless you are in a _____.

6. (Do/Do not) give him food or drink. his lips, if needed.

7. Initiate an intravenous infusion to _____.

8. The most important reason for wearing gloves is _____.

9. After gathering the equipment you will need for an I.V., check the solution bag for _____, _____, and _____.

10. If the infusion set has _____, _____, or _____, discard it and use a new one.

11. The clamp on the tubing should be _____ to inches from the drip chamber before you tighten it.

12. Remove the spike protective cap with a motion and insert the spike into the outlet port with a motion without touching the end of the port or spike.

13. Hold the solution bag _____ than the casualty's _____.

14. Squeeze the drip chamber until it is _____ full.

15. Remove the air from the tubing by holding the tubing above the bag, loosening the _____ and the _____, gradually lowering the tubing until the solution reaches the _____, and retightening the _____ and the _____.

16. Hang _____ 4-inch pieces of tape from the bag.

17. Select an infusion site as close to the _____ of the extremity as possible. The site should be clear of _____, _____, and _____.

18. Select a vein that feels springy and does not

_____.

19. Wrap the constricting band _____ to _____ inches above the venipuncture site. The constricting band should remain in place no longer than _____ minutes.

20. Tell the casualty to _____ his fist several times.

21. Cleanse the site using a _____ motion from the _____ of the site and moving

_____.

22. Hold the catheter and needle unit in your (dominant/non-dominant) hand and remove the needle cover.

23. Pull the skin taut with the thumb of your (dominant/non-dominant) hand, position the needle slightly to the side of the vein at a _____ to _____ - degree angle with the bevel _____. After inserting the bevel, position the needle so it is almost _____ to the skin.

24. When the needle is in the vein, _____ will appear in the

_____.

25. When the needle is in the vein, advance the catheter/needle unit about _____ inch farther to be sure the catheter is in the vein.

26. Thread the catheter into the vein, press lightly on the skin over the _____, and remove the _____.

27. Have the casualty unclench his fist, remove the _____, remove the adapter cap, and insert the adapter tip quickly and tightly into the _____.

28. Loosen the clamp and check the _____ to be sure the flow has started.

29. Run the I.V. about _____. (If the casualty had a head injury, you would run it at about _____ drops per minute).

30. When fluids go into the _____ rather than the vein, infiltration has occurred.

31. Five signs of infiltration at the infusion site are:

and _____ leaking around
the site.

32. If signs of infiltration are present, _____ the catheter and try again at a site _____ the last site.

33. Four pieces of tape are used to secure the I.V. Two are diagonally crossed over the _____ one piece is used to secure the _____, and the fourth piece is used to secure the _____.

34. When removing a catheter, pull it out at an angle almost _____ to the skin.

35. Study the performance checklist for administering an I.V. given on pages 19, 20, 21, and 22.

ANSWERS TO PRACTICE EXERCISES: LESSON 17

1. Any ten of the following:
 - Rapid or severe bleeding.
 - Severe burns.
 - Anxiety.
 - Changes in the level of consciousness.
 - Confusion.
 - Restlessness.
 - Agitation.
 - Irregular or fluctuating pulse (early stage).
 - Weak and rapid pulse (later stage).
 - Low blood pressure.
 - Cool, clammy skin.
 - Change in skin color.
 - Enlarged pupils.
 - Rapid, shallow respiration.
 - Thirst, dry mouth.
 - Nausea or vomiting.
 - Pulse rate over 100. (LE 1)
2. back. (LE 2)
3. heart. (LE 2)
4. rough, excessive. (LE 2)
5. chemical (or chemically-contaminated) environment. (LE 2)
6. Do not; Moisten. (LE 2)
7. replace lost fluids. (LE 2)
8. cleanliness. (LE 3)
9. passed expiration date, fluid clarity, leaks. (LE 4)
10. cracks, discoloration, tears. (LE 4)
11. 6; 8. (LE 5)
12. twisting; twisting. (LE 5)
13. higher; heart. (LE 5)
14. half. (LE 5)
15. clamp, adapter cap; end of the adapter; clamp, adapter cap; (LE 5)

16. four. (LE 5)
17. end; scars, moles, excessive hair.
(LE 6)
18. roll. (LE 6)
19. 6, 8; 2. (LE 6)
20. clench and relax. (LE 6)
21. circular (or spiraling); center; outward.
(LE 6)
22. dominant. (LE 7)
23. non-dominant; 20, 30; up; parallel.
(LE 7)
24. blood; flash chamber. (LE 7)
25. 1/8. (LE 7)
26. catheter tip; flash chamber/needle.
(LE 7)
27. constricting band; catheter hub.
(LE 7)
28. drip chamber. (LE 7)
29. half open; 10. (LE 7)
30. surrounding tissues (flesh). (LE 7)
31. pain; swelling; redness; coolness; clear fluid. (LE 7)
32. remove; above (proximal to). (LE 7)
33. catheter hub; adapter; safety loop of tubing. (LE 8)
34. parallel. (LE 9)
35. The following performance checklist is provided for three reasons.
First, it is a review of the procedures given in this lesson. Second,
it allows you to become familiar with a checklist similar to the one
which will be used to evaluate your performance. Third, it allows you
to practice on an I.V. training device with another student evaluating

your performance. DO NOT ATTEMPT TO TRAIN ON ANOTHER PERSON WITHOUT PROPER CLASSROOM SUPERVISION.

PERFORMANCE CHECKLIST

INITIATE AN INTRAVENOUS INFUSION

Situation: A casualty is in hypovolemic shock. You have taken care of any major wounds and are preparing to administer fluids intravenously.

	GO	NO-GO
Puts on gloves.	_____	
Removes protective covering from I.V. bag and checks for passed expiration date, leaks, and clarity of solution.	_____	
Removes infusion set from box, checking for cracks, watermarks, etc.	_____	
Moves clamp on tubing 6 to 8 inches from the drip chamber and tightens the clamp.	_____	
Removes protective covering from outlet port without touching port tip.	_____	
Removes spike protective cap on infusion set with twisting motion without touching spike.	_____	
Inserts spike fully into I.V. outlet port with a twisting motion without touching the spike or port tip.	_____	
Holds (hangs) bag up and fills the drip chamber half full by squeezing drip chamber.	_____	
Holds tubing above bottom of bag.	_____	
Loosens clamp on tubing and loosens protective cap over the adapter.	_____	
Gradually lowers tubing until solution reaches the tip of the adapter.	_____	
Reclamps tubing and retightens cap on adapter.	_____	
Protects I.V. tubing (loop over stand, etc.)	_____	
Tears/cuts four strips of tape and hangs strips on bag.	_____	

Looks and feels for vein (usually on arm or hand). _____

PERFORMANCE CHECKLIST: INITIATE AN INTRAVENOUS INFUSION

Selects appropriate vein for infusion (not over a joint: free of scars, moles, and hair; etc.). GO NO-GO

Applies constricting band 6 to 8 inches above site in the manner described in the subcourse. _____

Instructs casualty to clench and relax his fist several times, then to leave fist clenched. _____

Palpates selected vein again. _____

Opens a povidone-iodine impregnated cotton pad and cleanses the selected infusion site, beginning at the center of the site and spiraling outward. _____

Does not touch the site after cleansing. _____

Removes protective cap from catheter and needle unit without touching the needle or catheter. _____

Pulls skin taut by pressing approximately one inch above or below injection site with thumb of non-dominant hand. _____

Positions needle with bevel up slightly to side of the selected vein at a 20° to 30° angle. _____

Inserts bevel of needle into skin. _____

Lowers angle to almost parallel to skin surface. _____

Advances catheter and needle alongside vein and inserts needle into vein. _____

Checks flash chamber for blood. _____

(If no blood present in chamber, withdraws catheter and needle slightly and inserts the needle into the vein.) (_____)

Advances catheter and needle unit 1/8 inch farther _____

to ensure the catheter is in vein.

Threads the catheter into vein to hub without advancing the needle.

PERFORMANCE CHECKLIST: INITIATE AN INTRAVENOUS INFUSION

GO

NO-GO

Presses lightly on skin over catheter.

Removes flash chamber/needle.

Asks casualty to unclench fist and releases constricting band.

Constricting band has not been in place for more than 2 minutes.

Removes adapter cap and inserts adapter into catheter hub.

Opens clamp about half way (simulated in performance test).

Checks flow of solution into drip chamber and adjusts clamp if needed (simulated in test).

Checks for infiltration by asking casualty about pain and checking site for swelling, redness, coolness, and leaking of clear fluid.

Secures hub by making a diagonal cross over hub using two strips of tape.

Secures adapter with a strip of tape.

Loops tubing on extremity distal to infusion site and secures looped tubing with tape.

Checks for infiltration again.

(If infiltration is present, discontinues I.V. and tries again at a proximal site.)

(_____ _____)

Sterility maintained with no additional injury to

the casualty.

PERFORMANCE CHECKLIST: INITIATE AN INTRAVENOUS INFUSION

GO NO-GO

Question: What should you do if the infusion site is red and cool to the touch?

Answer: _____

OVERALL EVALUATION
(A no-go on any step gives an overall evaluation of no-go.)

GO NO-GO

LESSON 18

MEASURE AND MONITOR A CASUALTY'S PULSE

TASK

Determine a casualty's pulse rate and describe the characteristics of the pulse.

CONDITIONS

Given a simulated casualty and a timepiece with a second hand.

STANDARD

Score a GO on the performance checklist.

REFERENCES

FM 8-230, Medical Specialist.

FM 21-11, First Aid for Soldiers.

STP 8-91-SM, Soldier's Manual: CMF 91: General Medical Tasks.

INTRODUCTION

A casualty's pulse is used to measure the casualty's heartbeat rate. When the heart contracts (pumps blood), a pulse is created in the arteries which can be felt and counted. The pulse is a result of a brief expansion of the artery which occurs with each heartbeat. The normal adult heart rate ranges from 60 to 80 beats per minute with an average rate of 72.

Learning Event 1:

LOCATE THE PULSE SITE

The pulse can usually be felt (palpated) easier at a location where an artery crosses a bony area. There are several locations at which a casualty's pulse is taken (pulse beats counted). Three commonly used pulse sites are found at the carotid (neck) artery, the radial (wrist) artery, and the posterior tibial (ankle) artery. The name of the artery is used when referring to the pulse site. For example, the pulse is taken at the carotid artery is called the carotid pulse.

Carotid Pulse Site

The carotid pulse is taken at a groove along the casualty's larynx (Adam's apple) containing a carotid artery. There are two (right and left) carotid arteries. The right carotid artery is located in a groove on the right

side of the larynx and the left carotid artery is located in a groove on the left side of the larynx. Either artery can be used to take the casualty's carotid pulse. The carotid pulse site is a preferred location because the carotid artery is a central artery and is usually accessible without removing the casualty's clothing.

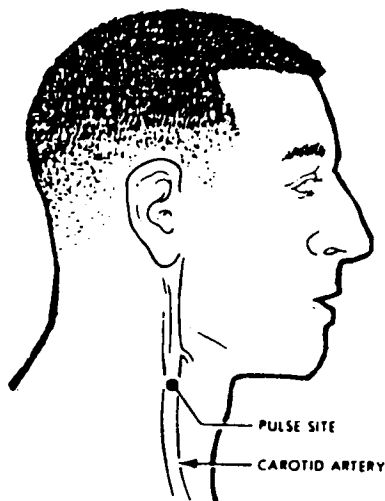


Figure 18-1
Carotid pulse site
(file: 825f18-1.bmp)

Radial Pulse Site

The radial pulse is located on the inside of the wrist near the base of the thumb. Do not use the back of the wrist. Either wrist can be used.

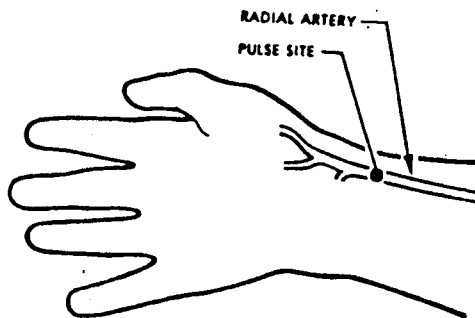


Figure 18-2
Radial pulse site
(file: 825f18-2.bmp)

Posterior Tibial Pulse Site

The posterior tibial pulse is located behind the inner ankle bone. Either ankle can be used.

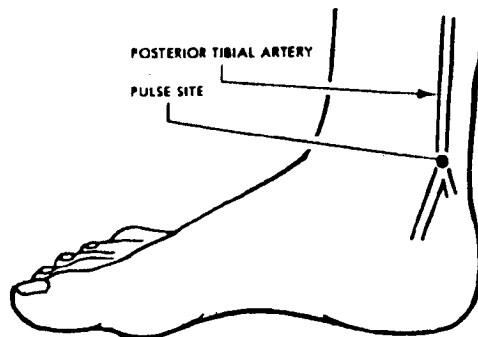


Figure 18-3
Posterior tibial pulse site
(file: 825f18-3.bmp)

Other Pulse Sites

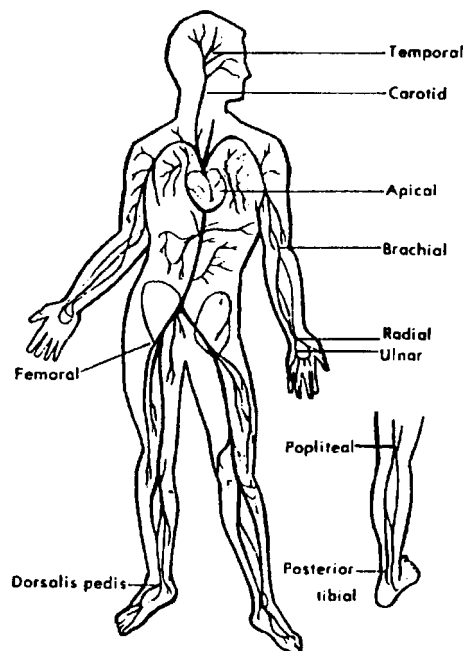


Figure 18-4
Other pulse sites
(file: 825f18-4.bmp)

The temporal pulse is felt at the temple near the ear. The brachial pulse is felt on the inside of the elbow. The femoral pulse is felt in the groin area. The popliteal pulse is felt behind the knee. The dorsalis pedis pulse is felt on top of the foot. A pulse may also be felt directly over

the heart on the left side of the casualty's chest. This pulse is called the apical pulse.

**Learning Event 2:
TAKE THE CASUALTY'S PULSE**

Changes in a casualty's pulse directly reflect changes in his heart rate. Making an accurate assessment of the pulse is important.

NOTE: "Normal" pulse rate and strength may vary from individual to individual.

Palpate the Pulse Site

Place the tips of your index and middle fingers over the pulse site and press gently. Too much pressure on the artery could interfere with blood circulation and stop the pulse.

CAUTION: Do not place your thumb on the pulse site. The thumb has its own pulse. If you use your thumb, you may be taking your own pulse rather than the casualty's pulse.

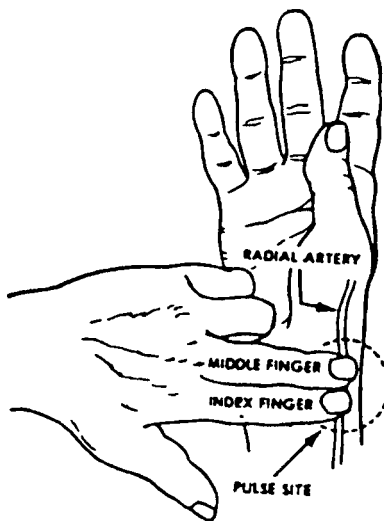


Figure 18-5
Palpating the radial pulse site
(file: 825f18-5.bmp)

Count the Pulse Beats for One Minute

Using a clock with a second hand, count the pulse for one full minute.

A normal pulse rate for an adult when resting is from 60 to 80 beats per minute. The average is 72 beats per minute.

A higher than normal pulse rate (a resting pulse rate of over 80 beats per minute) can be caused by several factors including shock, bleeding, excessive heat, dehydration, fever, pain, emotions, and vigorous activity (such as running).

Tachycardia is an abnormal condition that exists when the casualty's pulse rate is over 100 beats per minute.

A lower than normal pulse rate (a resting pulse rate of less than 60 beats per minute) can be caused by several factors, including heart disease and medications. A pulse rate below 60 may also occur in a soldier who is physically fit.

A pulse rate of less than 50 beats per minute is called bradycardia.

Classify the Strength of the Pulse

A regular pulse is easy to feel and has even beats of good force.

A bounding pulse is one that is easily detected due to the exceptionally large amount of blood being pumped with each heartbeat.

A weak pulse is difficult to detect due to a decreased amount of blood flowing through the arteries, usually due to bleeding or shock.

An absent pulse cannot be detected. Lack of a detectable pulse may indicate that the artery is blocked or injured.

CAUTION: If no pulse or only an indistinct pulse is felt at the radial or posterior tibial site, palpate the carotid pulse site. The carotid pulse site is less likely to be blocked or severely weakened due to trauma or disease. If the carotid pulse cannot be found, try to feel the apical pulse.

Learning Event 3: MONITOR THE CASUALTY'S PULSE

Continue to take the casualty's pulse periodically as needed. Report abnormal readings or any significant changes in rate and/or strength to medical personnel.

PRACTICE EXERCISES: LESSON 18

INSTRUCTIONS: Answer the following exercises by writing the missing word or words in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. The _____ pulse is located in the _____ along the Adam's apple.

2. The _____ pulse is located on the _____ of the wrist near the base of the thumb.

3. The _____ pulse is located behind the inner ankle bone.

4. The apical pulse is located _____.

5. To palpate the pulse, use your _____ and fingers, not your _____.

6. The normal pulse rate for a resting adult is _____ to _____ beats per minute.

7. _____ is a pulse rate over 100 beats per minute.

8. _____ is a pulse rate under 50 beats per minute.

9. A _____ pulse is unusually easy to detected due to the large amount of blood being pumped with each beat.

10. Take another person's pulse and determine his carotid, radial, and posterior tibial pulse rates and classify the strength of his pulse.

ANSWERS TO PRACTICE EXERCISES: LESSON 18

1. carotid; groove. (LE 1)
2. radial; inside. (LE 1)
3. posterior tibial. (LE 1)
4. over the heart. (LE 1)
5. middle, index; thumb. (LE 2)
6. 60 to 80. (LE 2)
7. Tachycardia. (LE 2)
8. Bradycardia. (LE 2)
9. bounding. (LE 2)
10. See checklist on the following page.

PERFORMANCE CHECKLIST

TAKE A CASUALTY'S PULSE

Situation: You are going to take a casualty's pulse to determine heart rate, pulse rhythm, and pulse strength. Take the casualty's pulse using the radial, posterior tibial, and carotid arteries. Use a wristwatch or other clock with a second hand. If possible, have an experienced person available to verify your results.

	GO	NO-GO
Has casualty sit or lie down.	_____	
Locates carotid pulse site in the groove along the casualty's neck.	_____	
Counts casualty's pulse rate for one full minute.	_____	
Pulse rate within four beats per minute of actual pulse rate (instructor's results).	_____	
Locates radial pulse site on inside of wrist at base of thumb.	_____	
Counts casualty's pulse rate for one full minute.	_____	
Pulse rate within four beats per minute of actual pulse rate (instructor's results).	_____	
Locates posterior tibial pulse site behind the inner ankle bone.	_____	
Counts casualty's pulse rate for one full minute.	_____	
Pulse rate within four beats per minute of actual pulse rate (instructor's results).	_____	
Correctly describes pulse strength (normal, strong, or weak).	_____	

OVERALL EVALUATION	GO	NO-GO
(A no-go on any step gives an overall evaluation of no-go.)		

LESSON 19

MEASURE AND MONITOR A CASUALTY'S RESPIRATION

TASK

Determine a casualty's respiration rate and describe characteristics of the respiration.

CONDITIONS

Given a simulated casualty.

STANDARD

Score a GO on the performance checklist.

REFERENCES

FM 8-230, Medical Specialist.

FM 21-11, First Aid for Soldiers.

STP 8-91-SM, Soldier's Manual: CMF 91: General Medical Tasks.

INTRODUCTION

Respiration (breathing) supplies the body with oxygen needed by the body and removes carbon dioxide, a waste product. Respiration has two phases: inhalation (bringing fresh air into the lungs) and exhalation (expelling air from the lungs). When the muscles of the rib cage and the diaphragm muscle contract, the chest expands (rib cage pulled up and out, bottom of chest cavity lowers). When the chest expands, air rushes into the lungs. When the chest muscles and diaphragm muscle relax, the chest cavity returns to its normal (smaller) size and some of the air in the lungs is forced out. Usually, an adult will inhale and exhale about 500 milliliters (about one pint) each time he breathes. Not all of the air is exhaled. After normal exhalation, around 2300 milliliters (ml) of air remain.

Breathing is usually performed automatically (without conscious thought) by the respiratory control center located in the brain. Serious head injuries can interfere with the control center and make mouth-to-mouth resuscitation or other measures necessary. Determining the effectiveness of the casualty's efforts to breathe (rate and depth) and other characteristics can be of great help in evaluating a casualty's condition.

Respiration is also affected by the amount of carbon dioxide in the blood.

An increase in carbon dioxide causes an increase in respiration rate. The respiratory rate is also affected by extremes in body temperature and by emotions such as anger, fear, and anxiety.

**Learning Event 1:
COUNT THE CASUALTY'S RESPIRATION**

You will normally have the casualty lie on his back while you observe the rise and fall of his chest for one full minute. One respiration consists of one inhalation (chest rises) and one exhalation (chest falls). If possible, count the casualty's respiration when he is not aware that you are counting (his awareness could cause his breathing rate and depth to change). If you are taking the casualty's pulse, simply continue to act as though you are still taking his pulse while actually observing his chest.

Count the casualty's respiration for one full minute. Count each rise and fall of the casualty's chest as one respiration. Do not count an incomplete cycle.

**Learning Event 2:
LOOK FOR CHARACTERISTICS OF NORMAL AND ABNORMAL RESPIRATION**

Characteristics of Normal Respiration

The normal range of respiration rate in an adult when resting is 12 to 20 respiration per minute.

Normal respiration results in deep and even movement in the chest. The depth of respiration refers to the amount of air inhaled and exhaled with each breath. If respiration are shallow, the rib cage does not expand to its normal size. If respiration are deep, the rib cage expands fully.

Normal breathing is effortless, automatic, regular (even) in rhythm, and does not produce noise or discomfort.

The exhalation phase of breathing normally takes longer than the inhalation phase.

Characteristics of Abnormal Respiration

Difficulty in breathing is referred to as dyspnea.

If the casualty's respiration rate is above the normal range, his respiration are called rapid. If his respiration rate is below the normal range, his respiration are called slow.

If the movements (rise and fall) of the chest and abdomen are minimal, insufficient air is being taken in with each inhalation. These respiration are called shallow.

A pattern of shallow and slow respiration is called hypoventilation.

A pattern of sustained rapid, deep respiration is called hyperventilation.

If the respiration are shallow and rapid, the casualty is said to be short of breath.

An irregular breathing rhythm may indicate the presence of injury or illness.

Abnormal breathing is labored and requires effort. Difficult breathing sometimes is accompanied by pain and noises (wheezing, rattling, bubbling, etc.).

A person with difficulty in breathing may lean forward with his arms braced against his knees.

A person with breathing difficulties may be restless or anxious.

A person with breathing difficulties may be pale, ashen (gray), or cyanotic (blue) in the face and lips. The mucous membranes inside the mouth may also be bluish due to the decrease of oxygen in the blood.

The cough is a protective mechanism for removing lung secretions and foreign matter such as dust and blood from the respiratory tract.

Learning Event 3: MONITOR THE CASUALTY'S RESPIRATION

The characteristics of the casualty's respiration may change as his condition changes (becomes better or worse). Continue to monitor the casualty's respiration. Report abnormalities and changes to medical personnel. Be prepared to administer mouth-to-mouth resuscitation if the casualty stops breathing or his breathing becomes ineffective.

PRACTICE EXERCISES: LESSON 19

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or by writing the missing term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. One respiration consists of _____ inhalation and exhalation.

2. During a 60-second period, a casualty's chest rose 16 times and fell 15 times. His respiration rate is _____ respiration per minute.

3. The normal respiration rate for an adult at rest is generally considered to be between _____ and _____ respiration per minute.

4. _____ is a pattern of shallow, slow respiration.

5. _____ is a pattern of rapid, deep respiration.

6. _____ is a pattern of rapid, shallow respiration.

7. Should a casualty be aware that you are counting his respiration?

- a. Yes, it will help to keep his breathing steady.
- b. No, awareness could alter the breathing pattern.
- c. It does not matter since breathing is under involuntary control of the brain.

8. Practice counting another person's respiration rate and identifying normal and abnormal qualities of respiration. Compare your actions to the performance checklist.

ANSWERS TO PRACTICE EXERCISES: LESSON 19

1. one; one. (LE 1)
2. 15. (LE 1)
3. 12; 20. (LE 2)
4. Hypoventilation. (LE 2)
5. Hyperventilation. (LE 2)
6. Shortness of breath. (LE 2)
7. b (LE 1)
8. See the performance checklist on the following page.

PERFORMANCE CHECKLIST

TAKE A CASUALTY'S RESPIRATION

Situation: You are going to determine a casualty's respiration rate and identify any abnormal characteristics. Use a wristwatch or other clock with a second hand. If possible, have an experienced person available to verify your results.

	GO	NO-GO
Has casualty lie down.	_____	
Counts casualty's respiration for one full minute.	_____	
Respiration rate is within two respiration per minute of instructor's results.	_____	
Correctly identifies any sign of abnormal respiration (labored or difficult breathing, shallow breathing, noises accompanying breathing, etc.).	_____	
OVERALL EVALUATION (A no-go on any step gives an overall evaluation of no-go.)	GO	NO-GO

LESSON 20

APPLY A SAM SPLINT TO A FRACTURED LIMB

TASK

Apply a SAM splint to a fractured limb.

CONDITIONS

Given a simulated casualty with a fractured limb and a SAM splint.

STANDARD

Score a GO on the performance checklist.

REFERENCES

FM 8-230, Medical Specialist.

FM 21-11, First Aid for Soldiers.

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.

INTRODUCTION

The universal malleable aluminum splint, called the SAM splint, can be used as the rigid objects in splinting a fractured wrist, forearm, upper arm, ankle, or lower leg. It is a piece of flat aluminum completely covered by foam, which serves as padding for the splint. The SAM splint is lightweight (less than 7 ounces) and measures 4.25 inches wide by 36 inches long. The splint is rolled up for easy storing and can be reused.

Learning Event 1:

PREPARE THE CASUALTY FOR APPLICATION OF THE SPLINT

Expose the injury site. Cut away any bulky clothing that may interfere with application of the splint.

WARNING

If you are in a chemical environment, dress any wounds and splint the fracture without exposing the injury. Do not cut away any clothing.

Check for a pulse below the fracture site. If no pulse is found, evacuate the casualty as soon as possible.

Do not attempt to straighten the fractured limb. If a joint is fractured, splint the limb in that position. Adjust the shape of the SAM splint to conform to the shape of the limb.

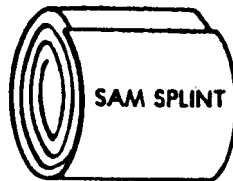


Figure 20-1
Sam splint rolled up
(file: 825f20-1.bmp)

Learning Event 2:

APPLY THE SAM SPLINT TO A FRACTURE OF THE FOREARM, WRIST, LOWER LEG, OR ANKLE

Fractured Forearm or Wrist

Unroll the SAM splint and flatten it.

Fold the SAM splint in half so it is a tall V-shape.

Bend the edges of the splint in until the shape of the splint generally conforms to the curve and shape of the limb being splinted. (Each half of the splint will have a U-shape.) Bending the edges also increases the rigidity of the SAM splint.

Prepare cravats from muslin bandages to be used in securing the splint.

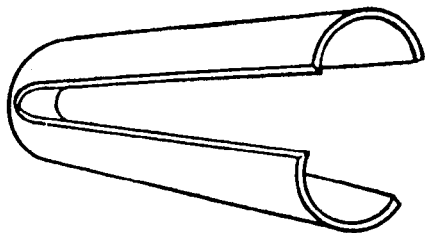
If muslin bandages are not available, cut or tear strips of cloth from a blanket or clothing.

If materials are not available, use the tape in your aid bag to secure the splint.

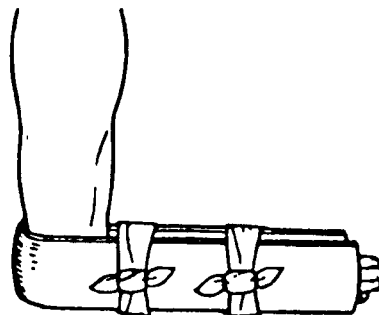
Apply the SAM splint to the fractured limb so the fracture is between the two sides of the splint. Adjust the shape of the SAM splint to conform to the limb, if needed.

Secure the splint using at least two cravats. Secure the splint above the fracture site and below the fracture site. Do not apply a cravat directly over the fracture site.

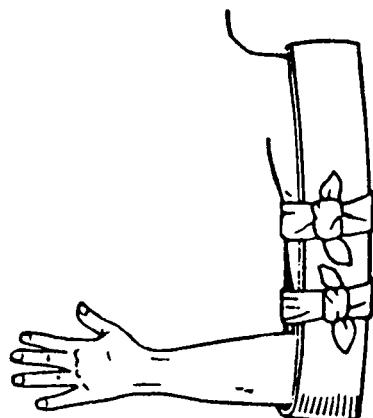
Tie the tails of the cravats in a non-slip knot on the outside of the splint. Tuck the ends of the tails into the cravat to prevent accidental entanglement when the casualty is moved.



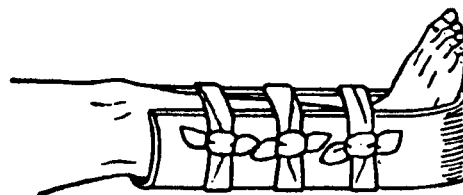
SAM SPLINT FOLDED IN HALF
AND EDGES BENT



SAM SPLINT APPLIED TO
A FRACTURE FOREARM



SAM SPLINT APPLIED TO
A FRACTURED HUMERUS



SAM SPLINT APPLIED TO A
FRACTURED LEG OR ANKLE

Figure 20-2
Sam splint applications
(file: 825f20-2.bmp)

Fractured Lower Leg or Ankle

Quickly shape the splint.

Check the casualty's pulse below the fracture site. Loosen footgear, if needed.

Apply the splint to the casualty's lower leg with the bend on the bottom of the footgear.

Secure the splint with cravats above and below the fracture site, if possible. Tie the tails in a non-slip knot on the outside of the splint.

Learning Event 3:

APPLY THE SAM SPLINT TO A FRACTURE OF THE UPPER ARM (HUMERUS)

Unroll the SAM splint and flatten it.

Fold the SAM splint into an irregular (uneven) V-shape so one side of the V is about four to six inches shorter than the other.

Bend the edges of the splint so the sides of the splint are U-shaped and generally conform to the shape of the limb being splinted.

Prepare securing materials (cravats, strips of cloth, or tape).

Apply the SAM splint to the fractured limb so the short side is in the casualty's arm pit (but not pressing on the arm pit), the long side extends to the shoulder, and the upper arm is between the two sides of the splint.

Adjust the shape of the SAM splint to conform to the limb, if needed.

Secure the splint using at least two cravats. Secure the splint above the fracture site and below the fracture site. Do not apply a cravat directly over the fracture site.

Tie the tails of the cravats in a non-slip knot on the outside of the splint and tuck in the tails.

Learning Event 4:

CHECK THE CASUALTY

Check the casualty's pulse below the most distal cravat.

If you cannot detect a pulse, but the casualty had a pulse before the splint was applied, loosen the cravats and reapply. If the splint is applied to the upper arm, make sure the end of the splint is not pressing into the armpit.

After you have adjusted the splint (if needed) and retied the cravats, check the casualty's pulse again. If the casualty still does not have a pulse, evacuate the casualty as soon as possible.

If the splint was applied to a fractured upper arm, forearm, or wrist, apply a sling and swathe to further immobilize the fracture.

Periodically check the distal pulse to ensure that swelling has not compromised the pulse.

PRACTICE EXERCISES: LESSON 20

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. Which of the following statements is correct?
 - a. Padding must be applied between the SAM splint and the fractured limb.
 - b. The SAM splint contains its own padding material.

2. Which of the following fractures would probably require an improvised splint rather than the SAM splint?
 - a. Fracture of the forearm.
 - b. Fracture of the lower leg.
 - c. Fracture of the ankle.
 - d. Fracture of the thigh.

3. When preparing the SAM splint for use, you should bend the edges of the splint into a:
 - a. U-shape.
 - b. T-shape.
 - c. W-shape.

4. When splinting a fractured forearm, you should secure the splint:
 - a. Above the fracture site.
 - b. Below the fracture site.
 - c. Above and below the fracture site.

5. You should check for a pulse:
- Before you apply the SAM splint.
 - After you apply the SAM splint.
 - Before and after you apply the SAM splint.
6. When splinting a fractured limb, you _____ attempt to straighten the limb before applying the SAM splint.
- Should.
 - Should not.
7. You have applied a SAM splint to a fractured lower leg. You should tie the cravats in a non-slip knot with the knot over the:
- Top (shin) of the lower leg.
 - Inside SAM splint half (next to the other leg).
 - Bottom (calf) of the lower leg.
 - Outside SAM splint half (farthest from the other leg).
8. When applying a SAM splint to a fracture, you normally bend the splint in half to form a V. In splinting one fracture, however, you bend the splint so one side of the V is shorter than the other side. Which of the following fractures is splinted using the irregular shape?
- Fracture of the upper arm.
 - Fracture of the forearm.
 - Fracture of the lower leg.
 - Fracture of the ankle.
9. If possible, practice applying a SAM splint to a simulated casualty. Apply the SAM splint to a fracture of the wrist, forearm, upper arm, ankle, and lower leg.

ANSWERS TO PRACTICE EXERCISES: LESSON 20

1. b (Introduction)
2. d (LE 2 & 3)
3. a (LE 2 & 3)
4. c (LE 2)
5. c (LE 1 & 4)
6. b (LE 2)
7. d (LE 2 & Fig 20-2)
8. a (LE 3)
9. See the performance checklist on the following page.

PERFORMANCE CHECKLIST

APPLY A SAM SPLINT TO A FRACTURED LIMB

Situation: You have found a casualty with a fractured (forearm, upper arm, wrist, or lower leg). Use a SAM splint and muslin bandages to immobilize the fracture.

	GO	NO-GO
Checks for a pulse below the fracture site.	_____	
Forms splint into V-shape with edges bent. (If a fracture of the upper arm, one side is shorter than the other. For other fractures, both sides of the V are about equal in length.)	_____	
Shapes SAM splint to generally conform to shape of limb being splinted.	_____	
Does not try to straighten fractured limb.	_____	
Applies splint to fractured limb so the fracture is between the two sides of the splint.	_____	
Applies at least two cravats to hold splint in place (one above the fracture, the other below the fracture) with no cravat applied over fracture site.	_____	
Cravats tied using a non-slip knot with knot tied over the outer splint (part of splint that is away from the body).	_____	
Checks for a pulse below the cravats.	_____	
(Loosens and reties cravats if pulse was present before the splint was applied and absent after splint was applied.)	(_____	_____)
OVERALL EVALUATION (A no-go on any step gives an overall evaluation of no-go.)	GO	NO-GO

LESSON 21

INSERT AN OROPHARYNGEAL AIRWAY IN AN UNCONSCIOUS CASUALTY

TASK

Identify the procedures for inserting and maintaining an oropharyngeal airway in an unconscious casualty.

CONDITIONS

Given multiple-choice items pertaining to the oropharyngeal airway (J-tube) and its use.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

FM 8-230, Medical Specialist.
STP 8-91B15-SM-TG, MOS 91B Medical Specialist , Skill Levels 1 and 2.

INTRODUCTION

One of the basic tasks of the combat lifesaver is to restore and maintain respiration (breathing). When the casualty is unconscious, there is always a danger his tongue will slide to the back of his throat and block his airway. This situation can be prevented by inserting an oropharyngeal airway. The airway is a hollow tube through which air can freely pass in and out. The oropharyngeal airways (also called the oral pharyngeal airways or artificial airways) in the aid bag resemble the letter "J" and are often referred to as J-tubes.

Learning Event 1: IDENTIFY WHEN THE OROPHARYNGEAL AIRWAY IS USED

The oropharyngeal airway is only used with an unconscious casualty and only if the casualty is breathing on his own (casualty never stopped breathing or breathing was restored).

WARNING

Do not insert the oropharyngeal airway if the casualty is conscious or semiconscious since the casualty may still have a gag reflex. If the airway causes the casualty to gag, he may vomit and inhale

some of the vomitus. Remove the airway anytime the casualty regains consciousness or begins to gag.

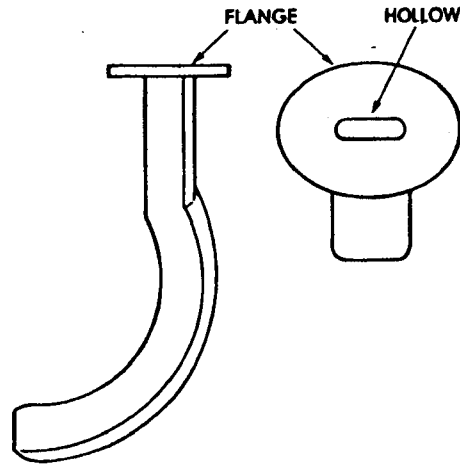


Figure 21-1
Oropharyngeal airway (J-tube)
(file: 825f21-1.bmp)

Learning Event 2:

DETERMINE WHICH OROPHARYNGEAL AIRWAY IS THE APPROPRIATE SIZE

Place the oropharyngeal airway along the outside of the casualty's jaw with one end of the airway at the bottom tip of the casualty's ear. Close the casualty's mouth (jaw in normal position) and bring the other tip of the airway toward the corner of the casualty's mouth. The airway should reach from the bottom tip of his ear to the corner of his mouth. If the airway is too short, it might not be able to hold the casualty's tongue in place.

If the airway is too long, it might injure the casualty's throat. Also, the oropharyngeal airway might completely block the casualty's airway if it is not the correct size.

Choose the airway that is nearest to the proper size (tip of ear to corner of mouth).

Learning 3:

INSERT THE OROPHARYNGEAL AIRWAY

Position the casualty on his back (may already be in this position).

Place your thumb and your index finger of one hand on the casualty's upper and lower teeth near a corner of his mouth so they will cross when the casualty's mouth is opened (crossed-finger method).

Push your thumb and your index finger against the casualty's upper and lower teeth in a scissors-like motion until his mouth opens.

If the teeth do not separate, wedge your index finger behind the casualty's back molars and force the teeth apart.

Once the casualty's mouth is open, maintain his airway. This is normally accomplished using the head-tilt/chin-lift method. Use the jaw-thrust method if the casualty has a possible fracture of the neck or spine or if the casualty has a severe head injury.

Place the tip end (not the flanged end) of the oropharyngeal airway into the casualty's mouth. Make sure the tube is on top of the tongue.

Position the airway with the tip pointing up toward the roof of the casualty's mouth. This will help to keep the tongue from being pushed toward the back of the throat as the airway is inserted.

Slide the airway along the roof of the casualty's mouth, following the natural curvature of the tongue.

When the tip of the airway reaches the tip of the tongue (past the soft palate), rotate the airway 180° so the tip end of the airway is pointing down toward his throat. If the airway is difficult to insert or rotate, grasp the casualty's tongue with the fingertips of the hand not holding the airway and gently pull the tongue forward.

Event Advance the airway until the flange rests against the casualty's lips. The airway should now be positioned so the tongue is held in place and does not slide to the back of the casualty's throat.

Learning Event 4:

MONITOR A CASUALTY WITH AN OROPHARYNGEAL AIRWAY IN PLACE

Check the casualty's respiration to make sure he is still breathing adequately and the oropharyngeal airway is not blocking his airway. Adjust the position of the oropharyngeal airway, if needed. If the oropharyngeal airway completely blocks the casualty's airway, remove the artificial airway and keep the casualty's airway open using the jaw thrust or the head-tilt/chin-lift.

Remove the oropharyngeal airway if the casualty begins to gag or regain consciousness. If the airway is not removed, the casualty may vomit.

NOTE: The casualty may push the oropharyngeal airway out of his mouth as he regains consciousness.

Do tie or tape the airway in place.

NOTE: A combat medic may tie or tape the oropharyngeal airway in place during evacuation to keep the airway from being dislodged if the casualty can be watched constantly.

PRACTICE EXERCISES: LESSON 21

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. An oropharyngeal airway can be inserted if the casualty is:
 - a. Conscious.
 - b. Unconscious.
 - not c. Either conscious or unconscious.

2. The oropharyngeal airway should be long enough to reach from the:
 - a. Bottom tip of the casualty's ear to the tip of his nose.
 - b. Outer corner of the casualty's eye to the tip of his nose.
 - c. Bottom tip of the casualty's ear to the corner of his closed mouth.
 - d. Outer corner of the casualty's eye to the corner of his closed mouth.

3. A casualty may have a fractured neck. Before inserting the oropharyngeal airway, you should open his mouth and maintain his airway using the:
 - a. Head-tilt/chin-lift method.
 - b. Head-tilt/neck-lift method.
 - c. Jaw-thrust method.

4. Which end of the oropharyngeal airway is inserted into the casualty's mouth?
 - a. The wide (top of the J) end.
 - b. The narrow (bottom of the J) end.

5. When the oropharyngeal airway is being inserted into the casualty's mouth, the tip of the airway should point:

- a. Up toward the top of the casualty's mouth.
- b. Down toward the casualty's tongue.

6. A soldier says, "If the oropharyngeal airway inserted into the casualty's mouth is the wrong size, it could actually block the casualty's airway." Is this soldier correct?

- a. Yes.
- b. No.

7. You are inserting an oropharyngeal airway into a casualty's mouth when he starts to gag. What should you do?

- a. Continue to insert the airway at the same speed.
- b. Continue to insert the airway, but at a faster pace.
- c. Continue to insert the airway, but at a slower pace.
- d. Remove the airway.

8. You have inserted an oropharyngeal airway into a casualty's mouth. What should you do now?

- a. Tape the airway in place and monitor the casualty.
- b. Tie the airway in place with a strip of cloth and monitor the casualty.
- c. Leave the airway loose and monitor the casualty.

ANSWERS TO PRACTICE EXERCISES: LESSON 21

1. b (LE 1)
2. c (LE 2)
3. c (LE 3)
4. b (LE 3)
5. a (LE 3)
6. a (LE 2 & 4)
7. d (LE 1 & 4)
8. c (LE 4)

LESSON 22

ADMINISTER FIRST AID TO CHEMICAL AGENT CASUALTIES

TASK

Identify signs and symptoms of chemical agent poisonings and their treatments.

CONDITIONS

Given written items pertaining to the identification and treatment of chemical agent casualties.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

FM 8-230, Medical Specialist.

FM 8-285, Treatment of Chemical Agent Casualties and Conventional Military Chemical Injuries.

FM 21-11, First Aid for Soldiers.

STP 8-91B15-SM-TC, MOS 91B, Medical Specialist, Skill Levels 1 and 2.

INTRODUCTION

Chemical agents affect specific body functions and systems. Chemical agents are classified by their effect on the body and by their military use. Toxic chemical agents are used to produce serious injury or death. Chemical agents include nerve agents, blister agents, choking agents, and blood agents. The protective mask and clothing (MOPP gear) provide protection against chemical agents. If you are a combat lifesaver in a conflict in which chemical agents are used, your first action must be to protect yourself (mask, administer Mark I kit if needed, decontaminate exposed skin if needed, and put on protective clothing). You must also be ready to identify and render the appropriate aid to fellow soldiers who may have been exposed to chemical agents as your combat mission allows.

NOTE: Some of the information in Learning Events 1 and 2 summarize information presented in Lesson 13, Administer First Aid to a Nerve Agent Casualty, in Subcourse IS0824. Refer to IS0824 for additional information.

Learning Event 1:

IDENTIFY SIGNS AND SYMPTOMS OF SEVERE NERVE AGENT POISONING

Nerve agents are usually liquid or gas (vapor). They affect the nerves, muscles, and central nervous system of the body. They are quickly absorbed by the body and their effects can be felt immediately. Nerve agent poisoning can be either mild or severe. A casualty with mild nerve agent poisoning will usually be able to take protective measures (put on mask, decontaminate exposed skin, administer a Mark I nerve agent antidote kit to himself, and put on the rest of his protective clothing). A casualty with severe nerve agent poisoning will not be able to help himself and must receive aid quickly if he is to survive.

Signs and symptoms of mild nerve agent poisoning (unexplained runny nose, sudden headache, dizziness, drooling, tightness in the chest, muscular twitching, stomach cramps, nausea, and reduced vision) may or may not precede signs and symptoms of severe nerve agent poisoning. Signs and symptoms of severe nerve agent poisoning include:

Strange and confused behavior.

Wheezing, coughing, and gurgling sounds while breathing.

Severely pinpointed pupils.

Red eyes with tears present.

Vomiting.

Severe muscular twitching (spasms).

Loss of bladder and bowel control.

Convulsion.

Unconsciousness.

Respiratory failure (not breathing).

Learning Event 2:

TREAT A CASUALTY WITH SEVERE NERVE AGENT POISONING

Mask the Casualty

If the casualty is not masked, put his protective mask on him.

WARNING

Squat, do not kneel, when administering aid to a chemical agent casualty. Kneeling on contaminated ground may force the chemical agent into your protective clothing.

Administer Three Mark I Kits and CANA

After the casualty is masked, administer the casualty's three Mark I nerve agent antidote kits and one CANA (convulsant antidote for nerve agent) autoinjector. Attach used autoinjectors to his clothing. There is no waiting period between the kits, nor between the third kit and CANA.

Decontaminate Face, Mask, and Exposed Skin

The casualty must be decontaminated. If possible, have another soldier decontaminate the casualty's face, mask interior, and exposed skin using the casualty's M291 decontamination kit as the mission permits. This will leave you free to check and treat other casualties.

Evacuate the Casualty

Evacuate the casualty to the nearest medical treatment facility (usually a battalion aid station) as soon as possible. If the casualty cannot be evacuated immediately, have the casualty checked by the medic as soon as possible. If you remain with the casualty, continue to monitor him and administer additional atropine and CANA as needed.

Check for Atropinization

Check the casualty's pulse 5 minutes after you administer the last (third) Mark I kit and CANA. Untie the drawstring and unzip the hood if the casualty's hood has been secured. Insert your gloved hand beneath the casualty's hood and use two fingers (not your thumb) to feel his carotid pulse. (Procedures for taking a carotid pulse are described in Lesson 18 of this subcourse.) A pulse rate of 90 or more beats per minute indicates that the amount of atropine injected into the soldier is sufficient for the moment. This condition is called atropinization. If possible, also observe the casualty's eyes. A casualty that has received sufficient atropine should have dilated pupils. The pupil of each eye should be so large that the colored rim of the iris is barely perceptible or the eye may appear white with a large black hole.

WARNING

Do not remove your protective glove to feel the casualty's pulse. You will be able to feel the carotid pulse through the glove.

Administer Additional Atropine, If Needed

You have five atropine autoinjectors in your aid bag. These atropine autoinjectors are used if the Mark I kits administered to the casualty are not sufficient to achieve or maintain atropinization. No additional 2-PAM chloride is administered. If your check of the casualty's pulse shows a pulse rate of less than 90 beats per minute, administer one atropine autoinjector using the following procedures.

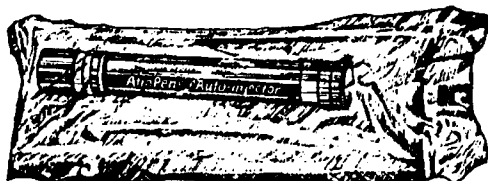


Figure 22-1
Atropine autoinjector
(file: 825f22-1.bmp)

Tear the clear plastic protective bag and remove the autoinjector.

Form a fist around the autoinjector with your dominant hand.

Grasp the yellow safety cap with your other hand.

Pull the yellow safety cap away from the body of the autoinjector. The autoinjector is now ready to function.

CAUTION: Do not touch the green (needle) end of the autoinjector during the process. Touching the green end could cause the autoinjector to function prematurely.

Place the green (needle) end of the autoinjector against the injection site (same site as used for Mark I autoinjectors) at a 90° angle to the site. Normally, the injection site is on the outer thigh below the hip and above the knee. If the casualty is very thin, the upper, outer quadrant of his buttocks is used as the injection site.

Apply firm, even pressure to the autoinjector until the needle functions (clicks). The needle will penetrate the casualty's clothing and automatically inject the medication into the casualty's muscle.

CAUTION: Do not use a jabbing motion to inject the medication into the muscle.

Hold the autoinjector in place for at least 10 seconds to ensure that all of the medication has been injected; then pull the autoinjector needle out of the muscle at the same 90° angle.

Attach the used autoinjector to the casualty's outer clothing, usually a pocket flap of his protective outer garment. Push the needle of the autoinjector through the back of the pocket flap and bend the needle to form a hook. (Used autoinjectors inform medical personnel how much medication the casualty has received.)

CAUTION: Take care to avoid puncturing or tearing your protective gloves while securing the autoinjector.

Administer Additional CANA, If Needed

Administer a second CANA autoinjector if the casualty is still suffering convulsions 5 to 10 minutes after receiving the first CANA. Attach the used autoinjector to the casualty's clothing.

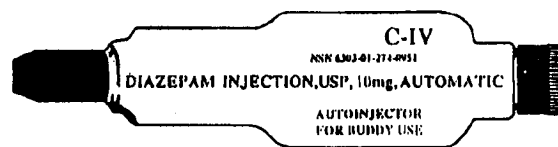


Figure 22-2
CANA autoinjector
(file: 825f22-2.bmp)

Monitor the Casualty

Wait another 5 minutes and check the casualty for atropinization again. If atropinization has not been achieved, administer another atropine autoinjector. Repeat the process every 5 minutes until atropinization has been achieved.

Once atropinization has been achieved, continue to check the casualty every 5 minutes to ensure that the casualty remains atropinized. If the casualty's pulse rate falls below 90, administer another atropine autoinjector and continue to check for atropinization every 5 minutes.

If convulsions are still present 5 to 10 minutes after the second CANA, administer a third CANA. Do not administer more than three CANA auto-injectors.

Attach used autoinjectors to the casualty's clothing.

Learning Event 3:

IDENTIFY SIGNS AND SYMPTOMS OF EXPOSURE TO BLISTER AGENTS

Blister agents can be delivered either as a liquid or as a gas (vapor). Blister agents include mustard (HD), nitrogen mustard (NH), lewisite (L), and phosgene oxime (CX). Blister agents act primarily on the eyes, respiratory tract, and skin. The effects depend upon the type of agent used, the concentration to which the soldier was exposed, the length of time he was exposed, and the manner (route) the agent entered the body (eyes, skin, and/or respiratory tract). A soldier may be exposed to blister agents for a long time without realizing his danger. Exposure to high concentrations can cause vomiting and diarrhea. Prolonged exposure to high concentrations can be fatal.

Eyes

The eyes are very sensitive and are usually the first to be affected by blister agents. Signs and symptoms include:

Sensitivity to light.

Gritty feeling in eyes.

Inflammation of the inner eyelids.

Swelling and spasms of the eyelids.

Watery eyes.

Pain.

Skin

Signs and symptoms of skin exposure to blister agents usually appear 4 to 6 hours after exposure. However, they may not appear for 24 to 48 hours following exposure. Signs and symptoms include the following.

Itching.

Redness (similar to a sunburn).

Swelling and inflammation.

Blisters.

Pain. (If lewisite or phosgene oxide is the agent, pain is immediate and intense.)

Respiratory Tract

Signs and symptoms of respiratory tract exposure to blister agents usually appear 4 to 6 hours after exposure. However, they may not appear for 24 to 48 hours following exposure. Signs and symptoms include:

Throat irritation (dry, burning sensation).

Harsh cough and hoarse voice.

Phlegm (mucous discharge) or frothy sputum.

Runny nose and frequent sneezing.

Other

Other signs and symptoms which can occur include headache, nausea, vomiting, and diarrhea.

Learning Event 4:

TREAT A CASUALTY EXPOSED TO A BLISTER AGENT

Mask the Casualty

If the casualty is not masked, put his protective mask on him. Remember to squat, not kneel.

Irrigate the Casualty's Eyes, If Needed

If the casualty's eyes were exposed to liquid blister agent, you must take quick action to decontaminate his eyes by flushing them with water or other potable (drinkable) fluid using the following procedures. Leaving liquid blister agent in the eye is more dangerous than exposing the casualty's face to blister vapor.

Remove and open the casualty's canteen.

Have the casualty take a deep breath and hold it. The casualty should keep his mouth closed.

Lift the casualty's mask from his chin to expose his eyes.

Tilt the casualty's head to one side with the eye to be flushed lower than the other eye. (This prevents chemicals from the eye being flushed from flowing into the other eye.)

Have the casualty open his lower eye. (If the casualty has to open both eyes in order to keep the lower eye open, let him.)

Pour the water from the canteen gently into the lower eye. Pour from the inner edge of the eye (end closest to the nose) to the outer edge.

Continue to flush the eye with water until the blister agent has been flushed from the eye.

Tilt the casualty's head so the other eye is now lower than the flushed eye.

Flush the second eye in the same manner.

Replace, reseal, and clear the casualty's mask. Tell him to breathe normally.

Decontaminate Face, Mask, and Exposed Skin

Have the casualty decontaminate his face, mask, and exposed skin with his M291 decontamination kit if he is able. If he is not able, have another soldier perform the decontamination procedures for him. The key to successful decontamination is immediate action upon finding the contamination.

CAUTION: If blisters have already formed, do not attempt to decontaminate the blistered areas. The blisters are actually burns. A casualty with blisters over a wide area of his body is considered to be seriously burned.

Evacuate the Casualty

Evacuate the casualty to the nearest medical treatment facility (usually a battalion aid station) as soon as possible. If the casualty cannot be evacuated immediately, have the casualty checked by the medic as soon as practical.

Learning Event 5:

IDENTIFY SIGNS AND SYMPTOMS OF EXPOSURE TO CHOKING AGENTS

Choking agents are specifically designed to attack the lungs. They destroy lung tissue and cause the lungs to fill with fluids. This action, sometimes called "dry land drowning", will eventually result in death. Choking agents include phosgene (CG), diphosgene (DP), chlorine (Cl), and chloropicrin (PS). Of these agents, phosgene is the most dangerous and the most likely to be used in a military conflict. Your protective mask gives adequate protection against choking agents.

Early Signs and Symptoms of Exposure to Choking Agent

Early signs and symptoms will subside rapidly and allow the casualty to carry on with his combat mission. A soldier with these signs and symptoms should be monitored to see if late (severe) signs and symptoms develop. Early signs and symptoms include:

Tears.

Dry throat.

Choking cough.

Tightness in the chest.

Nausea.

Vomiting.

Headache.

Late Signs and Symptoms of Exposure to Choking Agent

Late signs and symptoms usually appear 4 to 24 hours after initial exposure if the casualty was exposed to sufficient concentration of the agent or exposed for a sufficient length of time. Late signs and symptoms include:

Anxiety.

Wheezing.

Rapid, shallow breathing.

Weak but rapid pulse (Tachycardia).

Serious attacks of coughing that produce white or yellowish fluid, sometimes frothy and tinted with blood.

Cyanosis (bluish tint to lips and nailbeds).

Shock.

Respiratory failure.

**Learning Event 6:
TREAT A CASUALTY EXPOSED TO CHOKING AGENTS**

Mask the Casualty

If the casualty is not masked, put his protective mask on him. Remember to squat, not kneel.

Treat Asymptomatic Casualty

Sometimes a casualty who has been exposed to choking agents will show no signs or symptoms of exposure. Also, a casualty who previously showed early signs and symptoms of exposure to choking agents may appear to be free of signs and symptoms. If the military situation allows, a casualty who is asymptomatic (no symptoms) should be assigned light duties that will not put stress on his respiratory system. Monitor the casualty for development of signs and symptoms. Have the casualty evaluated by medical personnel as soon as possible.

Treat Early Signs and Symptoms

A casualty with early signs and symptoms of exposure to a choking agent should be allowed to sit until the signs and symptoms have subsided if the military situation permits. Have the casualty evaluated by medical personnel as soon as possible.

Treat Late Signs and Symptoms

Have the casualty rest in a sitting position and keep him warm. Evacuate the casualty as soon as possible.

**Learning Event 7:
IDENTIFY SIGNS AND SYMPTOMS OF BLOOD AGENT POISONING**

Blood agents (cyanides) are quick-acting agents that interfere with the cells' ability to absorb oxygen. Inhalation is the usual route of entry. Blood agents include hydrocyanic acid (AC) and cyanogen chloride (CK). Some of the signs and symptoms of choking agent poisoning, such as blood-tinted sputum, may also be present since some blood agents also attack the lungs. Exposure to a high concentration of blood agent can cause death within minutes. Signs and symptoms include:

Dizziness and headache.

Cherry-red skin.

Eye, nose, and throat irritation.

Nausea and vomiting.

Slow pulse (Bradycardia).

Fast and deep breathing (hyperventilation), followed by shallow breathing and faintness (hypotension). [Hyperventilation is part of the initial excitatory phase of blood agent poisoning. Hypotension, which follows, is caused by a lack of oxygen and is part of the depressive phase of blood agent poisoning.]

Convulsions.

Respiratory arrest.

Cardiac arrest.

**Learning Event 8:
TREAT A CASUALTY WITH BLOOD AGENT POISONING**

Mask the Casualty

If the casualty is not masked, put his protective mask on him. Remember to squat, not kneel.

Get Medical Help/Evacuate the Casualty

If possible, get medical help (combat medic). If the combat medic is not immediately available, evacuate the casualty to the nearest medical treatment facility as quickly as possible.

PRACTICE EXERCISES: LESSON 22

INSTRUCTIONS: Answer the exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the missing term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. Signs/symptoms of blister agent poisoning are:

a. Eyes feel as though sand present in them, eyelids swollen and twitching, tears present, inner eyelid inflamed.

b. Coughing, vomiting, severe muscular twitching, urination, pinpointed pupils.

c. Cherry-red skin, dizziness, slow heartbeat, sore throat, rapid and deep respiration.

d. Tears, cough, vomiting, and headache. Signs and symptoms appeared quickly and lasted only a short time.

2. Signs/symptoms of blood agent poisoning are:

a. Eyes feel as though sand present in them, eyelids swollen and twitching, tears present, inner eyelid inflamed.

b. Coughing, vomiting, severe muscular twitching, urination, pinpointed pupils.

c. Cherry-red skin, dizziness, slow heartbeat, sore throat, rapid and deep respiration.

d. Tears, cough, vomiting, and headache. Signs and symptoms appeared quickly and lasted only a short time.

3. Signs/symptoms of choking agent poisoning are:

a. Eyes feel as though sand present in them, eyelids swollen and twitching, tears present, inner eyelid inflamed.

b. Coughing, vomiting, severe muscular twitching, urination, pinpointed pupils.

c. Cherry-red skin, dizziness, slow heartbeat, sore throat, rapid and deep respiration.

d. Tears, cough, vomiting, and headache. Signs and symptoms appeared quickly and lasted only a short time.

4. Signs/symptoms of severe nerve agent poisoning are:

a. Eyes feel as though sand present in them, eyelids swollen and twitching, tears present, inner eyelid inflamed.

b. Coughing, vomiting, severe muscular twitching, urination, pinpointed pupils.

c. Cherry-red skin, dizziness, slow heartbeat, sore throat, rapid and deep respiration.

d. Tears, cough, vomiting, and headache. Signs and symptoms appeared quickly and lasted only a short time.

5. You and a fellow soldier are unmasked when your position is attacked using nerve agents. What should be your first action?

a. Help the soldier put on his protective mask.

b. Put on your protective mask.

c. Administer three sets of Mark I kits to the casualty.

d. Administer five atropine autoinjectors to the casualty.

6. You have just administered three Mark I kits and a CANA to a casualty with severe nerve agent poisoning. How long should you wait before you administer additional atropine, if needed?

7. You have administered three Mark I kits and a CANA to a nerve agent casualty and waited the required time. Administer an atropine autoinjector if the casualty's pulse rate is below _____ beats per minute.

8. You are taking a casualty's carotid pulse in a chemical environment. Which one of the following is a correct procedure for taking the casualty's pulse?

- a. Remove your protective glove and use your thumb to take his pulse.
- b. Remove your protective glove and take his pulse using two fingers.
- c. Take the casualty's pulse with your thumb without removing your protective glove.
- d. Take the casualty's pulse using two fingers without removing your protective glove.

9. Which one of the following is a correct procedure for administering an atropine autoinjector?

- a. Administer the injection in the casualty's buttocks unless he is very thin.
- b. Remove the yellow cap from the autoinjector before administering the injection.
- c. Administer the injection using a jabbing motion.
- d. Leave the needle in the casualty's muscle for at least 20 seconds.
- e. All of the above are proper procedures.

10. A nerve agent casualty that has been administered sufficient atropine will have pupils that are:

- a. Unusually small.
- b. Normal in size.
- c. Unusually large.

11. You are in full protective gear. Another soldier has just masked, but has liquid blister agent in his eyes. You should:

- a. Decontaminate his eyes immediately by flushing them with water.
- b. Decontaminate his eyes immediately using his M291 decontamination kit.
- c. Wait until you are in a protected area, then decontaminate his eyes by flushing them with water.
- d. Wait until you are in a protected area, then decontaminate his eyes using his M291 decontamination kit.

12. A soldier is showing late signs and symptoms of choking agent poisoning. What should you do?

- a. Administer one injection of atropine and evacuate the casualty.
- b. Have the casualty rest in a sitting position, keep him warm, and evacuate him.
- c. Have the casualty rest in a sitting position until the signs and symptoms subside.
- d. Administer three injections of atropine and evacuate the casualty if signs and symptoms do not subside.

13. A soldier is showing signs and symptoms of blood agent poisoning. What should you do after masking the casualty?

- a. Evacuate the casualty.
- b. Administer one injection of atropine.
- c. Administer three injections of atropine and evacuate the casualty if signs and symptoms do not subside.
- d. Have the casualty rest in a sitting position and keep him warm until the signs and symptoms subside.

14. When flushing a casualty's eyes, you should tilt his head so one eye is lower than the other and pour water into the:

- a. Upper eye.
- b. Lower eye.

ANSWERS TO PRACTICE EXERCISES: LESSON 22

1. a (LE 3)
2. c (LE 7)
3. d (LE 5)
4. b (LE 1)
5. b (Introduction)
6. Five minutes. (LE 2)
7. 90 (LE 2)
8. d (LE 2)
9. b (LE 2)
10. c (LE 2)
11. a (LE 4)
12. b (LE 6)
13. a (LE 8)
14. b (LE 4)

LESSON 23

IDENTIFY AND TREAT COLD INJURIES

TASK

Identify proper procedures for treating a cold injury casualty.

CONDITIONS

Given written items pertaining to the identification and treatment of cold injuries.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

FM 8-230, Medical Specialist.

FM 21-11, First Aid for Soldiers.

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.

STP 8-91-SM, Soldier's Manual: CMF 91 General Medical Tasks.

INTRODUCTION

Cold weather operations can cause serious injury to a combat soldier. Exposure for prolonged periods to temperature at or below freezing may cause tissue damage or a general body cooling which can lead to death. Soldiers, however, may be in danger of cold injury even when the temperature is above freezing. The seriousness of the injury depends upon the weather (temperature and moisture), clothing, type of combat operation, and the physical and mental makeup of the individual soldier. Soldiers who have had a previous cold injury should take extra precautions against cold injury.

Preventive measures were discussed in Lesson 1, Take Preventive Measures Against Disease and Environmental Conditions, of Subcourse IS0824. The memory device COLD (keep clothing Clean, avoid Overheating your body, wear clothing in Layers, keep clothing Dry) can help in reminding soldiers to take preventive measures.

Learning Event 1:

IDENTIFY SIGNS AND SYMPTOMS OF CHILBLAIN

Chilblain is caused by prolonged exposure of bare skin to cool or cold temperatures [50°F (10°C) or lower]. Signs and symptoms of chilblain include:

Acutely red, swollen, hot, tender, and/or itching skin.

Open sores or bleeding lesions from continued exposure.

Learning Event 2:

TREAT A CASUALTY WITH CHILBLAIN

Apply local warming (putting bare hands over the affected area on the face, putting affected hands inside the uniform under the armpits, putting bare feet against the abdomen of another soldier, etc.).

Do not rub or massage the affected area. Rubbing or massaging the area may cause tissue damage.

Apply a field dressing to lesions (sores).

Have medical personnel evaluate the casualty when practical. Signs and symptoms of tissue damage may be slow to appear.

Learning Event 3:

IDENTIFY SIGNS AND SYMPTOMS OF IMMERSION SYNDROME

Immersion syndrome is caused by prolonged exposure (hours to days) to wet conditions at temperatures from 50°F to 32°F (10°C to 0°C).

Immersion foot, trench foot, and trench hand are types of immersion syndrome injuries.

Signs of immersion syndrome include blisters, swelling, redness, skin hot to the touch, and bleeding. Immersion syndrome usually occurs in three stages.

In the first phase, the affected part is cold and without pain. There is a weak pulse at the site.

In the second phase, the affected limb feels hot (as though burning) and has shooting pains.

In the third phase, the casualty has pale skin, cyanosis (bluish coloring) around the nailbeds and lips, and decreased pulse strength.

Learning Event 4:

TREAT A CASUALTY WITH IMMERSION SYNDROME

Dry the affected part immediately.

Rewarm the affected area gradually in warm air. Do not massage the area. The area will probably become swollen, red, and hot to the touch after it has been rewarmed. Blisters may form also.

Remove wet clothing and replace with dry, warm clothing.

Protect the casualty from injury and infection.

Elevate the affected part to reduce edema (swelling).

Evacuate to a medical treatment facility as soon as practical.

Learning Event 5: IDENTIFY SIGNS AND SYMPTOMS OF FROSTBITE

Frostbite is caused by the freezing of water in the skin and other tissues. Frostbite occurs only when the flesh is exposed to freezing temperatures [below 32°F (0°C)]. Frostbite usually occurs in areas most likely to be exposed to cold conditions such as the feet, toes, nose, ears, chin, cheeks, forehead, fingers, hands, and wrists. The depth and the severity of the injury depend upon the temperature and the duration of exposure. The lower the temperature, the shorter the time required to produce the injury. Frostbite is generally divided into two categories--superficial and deep.

Superficial Frostbite

Superficial frostbite primarily involves injury to the skin and the tissue just beneath the skin. Signs and symptoms of superficial frostbite include:

A reddish (in light-skinned individuals) or grayish (in dark-skinned individuals) area on the skin. (This condition is usually the first indication that frostbite is developing.)

A sudden blanching (whitening) of the affected area.

A tingling sensation, followed by numbness.

Blisters and sloughing (flaking in large sheets) of affected skin. (This sign may occur 24 to 36 hours after exposure.)

Deep Frostbite

Deep frostbite occurs when the tissues below the skin freeze. This may include muscle and bone tissue. The blanching and numbness of superficial frostbite always precede the development of deep frostbite. Signs and symptoms of deep frostbite include:

Lack of feeling in the affected (frozen) tissue.

Pale, yellowish, waxy-looking skin.

Solid flesh (feels wooden to the touch).

Blisters (may occur 12 to 36 hours after freezing).

Red-violet discoloration, usually appearing 1 to 5 days after the injury occurs if the injury is not treated properly.

Learning Event 6:

TREAT A CASUALTY WITH FROSTBITE

If not properly treated, frostbite can result in the loss of fingers, toes, hands, or feet. Frostbite can also result in gangrene -- a life-threatening condition.

Move the casualty to a sheltered area.

Loosen constricting clothing.

Remove jewelry.

Gradually warm the casualty. (If possible, have the casualty warm himself. Apply local warming by putting bare hands over the affected area on the face or putting affected hands inside the uniform under the armpits. If a casualty has a frostbitten foot, have him remove his boot and sock from affected foot, have another soldier open his clothing to expose his abdomen, have the casualty put his foot against the soldier's abdomen, and have the soldier close his clothing over his abdomen and the casualty's foot.)

WARNING

If a casualty with frozen feet must walk to a medical treatment facility, do not thaw the feet. Thawing and refreezing increases the damage to the feet.

If a casualty with frozen feet must be exposed to freezing temperatures during evacuation, do not thaw the feet prior to evacuation.

Do not expose the frostbitten area to extreme heat which could result in burns.

Do not apply ointments or medications to the frostbitten area.

Do not rub, massage, or soak the frostbitten area.

Do not give alcoholic beverages or tobacco products to the casualty.

Give the casualty something warm to drink.

Protect the frostbitten area from cold and additional injury.

Evacuate the casualty to a medical treatment facility as soon as possible.

Learning Event 7:

IDENTIFY SIGNS AND SYMPTOMS OF GENERALIZED HYPOTHERMIA

Generalized hypothermia (low body temperature) occurs when the entire body is cooled to an unusually low temperature. It is caused by continued exposure to low or rapidly dropping temperatures, cold moisture, snow, or ice. Generalized hypothermia is a medical emergency which can result in death if not treated promptly.

Moderate Hypothermia

Signs and symptoms of moderate hypothermia include:

Lethargic behavior.

Pale, cold skin.

Acetone (sweet, fruity) breath odor.

Shivering; then shivering stops.

Severe Hypothermia

Signs and symptoms of severe hypothermia include:

Ice cold skin.

Slow, shallow respiration.

Faint, irregular pulse or lack of detectable pulse.

Glassy eyes (shock).

Mental confusion.

Unconsciousness.

**Learning Event 8:
TREAT A CASUALTY WITH GENERALIZED HYPOTHERMIA**

Moderate Hypothermia

Move the casualty out of the wind to a sheltered environment.

Replace wet clothing with dry clothing or sleeping bags.

Cover the casualty with blankets or other insulating material.

Give the casualty warm, nutritious fluids to drink.

Do not give alcoholic beverages or tobacco products to the casualty.

Wrap the casualty from head to toe and evacuate to a medical treatment facility in a recumbent (lying down) position.

Severe Hypothermia

Cut away wet clothing and replace with dry clothing.

Ensure that the casualty's airway remains open.

Perform mouth-to-mouth resuscitation if the casualty's breathing rate drops below five respiration per minute. Use J-tube if needed and the casualty is unconscious.

Apply an additional heat source. The casualty's body is not able to generate sufficient body heat and must receive warmth from another source. One method is to place the casualty in a sleeping bag with his outer clothing removed and have another soldier remove his outer clothing and get into the sleeping bag also. Cover both soldiers with additional clothing. The casualty's body will absorb the heat given off by the second soldier's body.

Evacuate the casualty to a medical treatment facility as soon as possible. Evacuate the casualty even if you cannot detect respiration or a heartbeat.

Handle the casualty gently.

**Learning Event 9:
IDENTIFY SIGNS AND SYMPTOMS OF SNOW BLINDNESS**

Snow blindness is a temporary loss of sight caused by ultraviolet rays from the sun reflecting off snow or ice. Snow blindness is more likely to occur in hazy, cloudy weather than when the sun is shining. Cloudy weather reduces the amount of visible light reaching the eyes; therefore, soldiers are less likely to take proper preventive measures such as wearing sunglasses. Ultraviolet rays, however, are not visible and are not reduced by the haze or clouds. Signs and symptoms of snow blindness include:

Scratchy feeling in the eyes as though dirt or sand were present in the eyes.

Decreased vision.

Eyes watering.

Reluctance or inability to open eyes.

Headache.

Pain as late as 3 to 5 hours later.

**Learning Event 10:
TREAT A CASUALTY WITH SNOW BLINDNESS**

Snow blindness can usually be prevented by wearing regular or improvised sunglasses. To treat a casualty with snow blindness:

Cover the casualty's eyes with a dark cloth to protect his eyes from the light if the mission permits.

Reassure the casualty. (The condition usually heals within a few days with no permanent damage.)

Evacuate him to a medical treatment facility as soon as possible.

PRACTICE EXERCISES: LESSON 23

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. Which of the following is a medical emergency caused by the entire body cooling to an unusually low temperature?

- a. Chilblain.
- b. Frostbite.
- c. Generalized hypothermia.
- d. Immersion syndrome.
- e. Snow blindness.

2. A soldier has frostbitten toes. How can you rewarm them?

- a. Soak the casualty's bare foot in hot water.
- b. Soak the foot in cool water to which ice or snow has been added.
- c. Put the casualty's bare foot against your abdomen and cover the foot with clothing.
- d. Put the casualty's foot as close as possible to a roaring fire.
- e. All of the above are acceptable methods of treating frostbite.

3. Which of the following is true concerning snow blindness?

- a. Snow blindness results in permanent blindness if not treated quickly.
- b. Snow blindness can only occur if the temperature is below freezing.
- c. The primary treatment for snow blindness is to protect the eyes from light.

4. A pale yellowish area on a soldier's cheek that feels solid to the touch is a sign of:

- a. Chilblain.
- b. Frostbite.
- c. Generalized hypothermia.
- d. Immersion syndrome.
- e. Snow blindness.

5. Treatment for hypothermia includes:

- a. Soaking the casualty in hot water.
- b. Applying external heat such as body heat from a fellow soldier.
- c. Using an oropharyngeal airway (J-tube) to keep the casualty's airway open if the casualty is conscious.
- d. All of the above.

6. A soldier has red, swollen, itchy areas on exposed flesh. The temperature is above freezing and the flesh has not been exposed to an excessively moist environment. The soldier is probably suffering from:

- a. Chilblain.
- b. Frostbite.
- c. Generalized hypothermia.
- d. Immersion syndrome.
- e. Snow blindness.

7. A soldier is in a cold climate. His fingers on his left hand feel swollen, hot, and tender. The soldier should:

- a. Remove the glove from his left hand and put the hand inside his uniform under his armpit.

- b. Remove the glove from his left hand and rub the hand in the snow.
- c. Remove the glove from the affected hand and leave the hand exposed until the swelling goes down.
- d. Soak the affected hand in hot water.

8. A casualty has been standing in cold water with wet feet for several hours. The soldier says his feet feel as though they are on fire with pain shooting through his feet. Which of the following is not a proper treatment for this condition?

- a. Dry the feet immediately.
- b. Remove wet socks and replace with dry socks.
- c. Massage the foot until the pain stops.
- d. Elevate the casualty's feet.

9. A soldier is walking on a snow-covered terrain. He begins to complain about sand in his eyes and his eyes are watering. He is probably suffering from:

- a. Chilblain.
- b. Frostbite.
- c. Generalized hypothermia.
- d. Immersion syndrome.
- e. Snow blindness.

10. Which of the following is an early sign of frostbite?

- a. A tingling feeling which goes away shortly.
- b. Severe muscle cramps in the affected area.
- c. Blisters on the affected area.
- d. Frozen (wooden) flesh.

11. A soldier with deep frostbite of the foot must walk through snow and freezing weather in order to reach a medical treatment facility. How should his foot be treated?

a. The foot should be thawed; then the casualty should put on dry socks and boots and begin walking.

b. The foot should not be thawed until the casualty reaches the medical treatment facility.

c. The foot should be thawed, then packed in snow in order to refreeze the foot before he begins his walk.

12. Pale and cold skin, lethargic behavior, shivering which stops without warming procedures being applied, and shallow breathing are signs of:

a. Chilblain.

b. Frostbite.

c. Generalized hypothermia.

d. Immersion syndrome.

e. Snow blindness.

13. A casualty has suffered frostbite and moderate general hypothermia. A soldier says, "Give him a warm whiskey and a cigarette; that will warm him up." Should you follow the soldier's advice?

a. Yes.

b. No.

ANSWERS TO PRACTICE EXERCISES: LESSON 23

1. c (LE 7)
2. c (LE 6)
3. c (LE 10)
4. b (LE 5)
5. b (LE 8)
6. a (LE 1)
7. a (LE 1 & 2)
8. c (LE 3 & 4)
9. e (LE 9)
10. a (LE 5)
11. b (LE 6)
12. c (LE 7)
13. b (LE 6 & 8)

LESSON 24

MANAGE A CASUALTY WITH COMBAT STRESS REACTION (BATTLE FATIGUE)

TASK

Identify characteristics of combat stress reaction and its treatment.

CONDITIONS

Given written items pertaining to the identification and treatment of combat stress.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

FM 8-51, Combat Stress Control in a Theater of Operations: Tactics, Techniques, and Procedures.

FM 8-230, Medical Specialist.

FM 21-11, First Aid for Soldiers.

FM 22-51, Leader's Manual for Combat Stress Control.

INTRODUCTION

A soldier can suffer a wound from an enemy bullet, be burned by an explosion, or fracture a leg by jumping from a building. In all of these injuries, physical injury to the casualty can be seen (blood from a wound, burned flesh, abnormal position of a limb, etc.). Another type of casualty, however, does not present such an obvious injury. This is the combat stress casualty, but since World War II, combat stress has also been called battle fatigue. Such soldiers are as much a casualty as a soldier who has been wounded by a bullet. Like any other injury, the quicker a combat stress casualty is treated, the better are his chances for a quick recovery.

Battle fatigue is a type of combat stress reaction (CSR). In this subcourse, battle fatigue and combat stress reaction will be considered to be the same.

Learning Event 1:

IDENTIFY THE CAUSES OF COMBAT STRESS

In combat, all soldiers experience some type of stress. This stress may result from physical exhaustion, constant alertness, the trauma of seeing fellow soldiers wounded or killed, the fear of being killed or maimed, the fear of killing other people, worry about family problems back home, fear of failure or disgrace, or a combination of these or other fears. Combat stress reaction is a psychological reaction to these stresses. Loss of sleep, physical fatigue, and illness can also be contributing factors. Combat stress reaction is usually temporary and does not require a soldier to be removed from combat conditions. Sometimes, however, the combat stress reaction is severe and the soldier cannot function effectively. He may become a threat to his own safety your and to the safety of his fellow soldiers.

Learning Event 2:

IDENTIFY THE SIGNS AND SYMPTOMS OF MILD COMBAT STRESS REACTION

Mild combat stress reaction does not seriously interfere with the soldier's effectiveness. It is the natural result of the heavy mental and emotional work of facing danger under difficult conditions. Almost all combat soldiers will suffer mild combat stress reaction now and then. Some of the physical, mental, and emotional signs and symptoms of mild combat stress reaction are listed below.

Physical Signs and Symptoms

Tense, jumpy, startled at sudden sounds or movement.

Headache, backache, pain in old wounds.

Fidgeting, fine trembling of the hands, fumbling.

Cold sweat, dry mouth, pale skin.

"Tired" eyes, blurred vision.

Pounding heart, feeling dizzy.

Feeling "out of breath," breathing too rapidly.

Fingers and toes tingle, cramp, and go numb.

Upset stomach, "dry heaves," or actual vomiting.

Diarrhea or constipation.

Frequent urination.

Uncontrollable emptying of bowels and bladder when danger suddenly appears.

Fatigue, feeling drained of energy.

Blank, haunted "1000-yard stare."

Mental and Emotional Signs and Symptoms

Anxiety, keyed up, worrying.

Irritability, swearing, complaining, bothered by little things.

Difficulty in paying attention or remembering details.

Difficulty in thinking, speaking, and communicating.

Sleeping difficulties, such as being awakened by bad dreams.

Grieving, fearful, crying for a dead or wounded buddy.

Feeling guilty about mistakes made or at things that had to be done.

Anger, resentment, or feeling let down by leaders or fellow soldiers.

Decrease in confidence in self and his unit.

Learning Event 3:

TREAT A CASUALTY WITH MILD COMBAT STRESS REACTION

The following techniques can be used to help a soldier suffering from mild mission combat stress reaction. If these techniques do not work, have a medic evaluate the casualty. The techniques can also be used to help prevent combat stress.

Appear to be calm and in control of the situation.

Keep the combat stressed soldier focused on the unit's immediate mission. Get everyone to think of succeeding and to talk about ways the team can handle the current situation.

Expect the soldier to continue his duties. Get him to perform a simple, well-learned task or drill according to the local standing operating procedure (SOP).

Have the soldier use relaxation techniques (take a deep breath and let it out slowly, shrug shoulders to release tension, etc.).

Remind the soldier, and others as needed, that combat stress reaction is not a sickness or cowardliness. It is the body (and mind) reacting to an abnormal and uncomfortable situation.

Encourage the soldier to relax, drink water (not alcohol), take nourishment, bathe, and sleep (four hours or more if possible, "catnaps" if not) as the tactical and safety permit.

Allow and encourage the soldier to ventilate his feelings.

Keep the soldier busy when he is not resting.

Learning Event 4:

IDENTIFY THE SIGNS AND SYMPTOMS OF MODERATE/SEVERE COMBAT STRESS REACTION

A soldier suffering from moderate or severe combat stress reaction is ineffective and usually requires evacuation. Since a major difference between moderate and severe combat stress reaction is the casualty's reaction to treatment, both conditions are usually combined under the term "more serious" combat stress reaction. It can occur at a slow or fast rate, depending on the person and the situation. The following are some of the physical, mental, and emotional signs and symptoms of more serious combat stress reaction.

Physical Signs and Symptoms

Cannot keep still, constantly moving around.

Shaking of arms or whole body

Cowering in terror.

Flinching or ducking at almost any sudden sound or movement.

Paralysis of a body part (hand, arm, leg, etc.) with no obvious physical explanation.

Sudden blindness or deafness (partial or complete) with no obvious physical explanation.

Total immobility (freezing) under fire.

Total physical exhaustion (just stands or sits).

Staggering or swaying when standing.

Vacant stare.

Mental and Emotional Signs and Symptoms

Rapid talking, constantly making suggestions.

Argumentative behavior, starting fights, deliberate recklessness, "vicious" within his own squad or group, uncontrollable anger.

Social withdrawal (silence, sulking, prolonged sadness).

Inattentive to self-care and hygiene.

Indifference to danger.

Apathetic (no interest in food or anything else).

Loss of memory (cannot remember orders, how to perform duties, or where he is).

Inability to concentrate or make decisions.

Severe speech problems, including stuttering and inability to talk.

Fear of sleeping, even in a relatively safe area.

Seeing or hearing things which are not there (usually after severe sleep loss).

Rapid emotional swings, crying spells, wishing to be dead, hysteria, frantic activity, strange behavior.

Panic running under fire.

Learning Event 5:

TREAT A CASUALTY WITH MODERATE/SEVERE COMBAT STRESS REACTION

A soldier suffering from moderate or severe combat stress reaction usually requires routine evacuation and should be managed separately from other casualties. Such casualties usually recover completely after resting in a safe area, being able to clean up, and receiving hot, nutritious meals. Most evacuated combat stress reaction casualties (70 to 85 percent) are capable with good management of returning to their combat units within three days. Most of the remainder will return to their own unit or to another unit within two weeks. Early on, combat stress reaction casualties need to talk, ventilate to any medical person. All combat stress patients should be treated with the expectation of their going back to duty.

A casualty with moderate or severe combat stress reaction can be a danger to himself and to other soldiers. The techniques used with a casualty with mild combat stress reaction can also be used with a casualty with moderate combat stress. The following procedures are used with a soldier suffering from more serious combat stress.

Calmly try to talk the casualty into cooperating if he is responsive.

If the casualty's actions endanger the mission, himself, or other soldiers, do whatever is necessary to bring him under control.

If the soldier appears to be unreliable, unload his weapon. If he is dangerous, take his weapon away from him.

Physically restrain the casualty if he is a danger to himself or to others.

If possible, have a medic evaluate and evacuate the casualty.

Evacuate the casualty to a medical treatment facility if the casualty's condition does not improve or if the casualty is a clear danger. Restrain the casualty during transportation, if needed.

When a combat stress reaction casualty returns to the unit, welcome him back. Be willing to talk about what happened and express your confidence in him.

PRACTICE EXERCISES: LESSON 24

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence. After you have answered all of the exercises, check answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. Which of the following can cause combat stress?
 - a. Physical exhaustion resulting from heavy fighting.
 - b. Fear of being hurt in combat.
 - c. Fear of not being able to live up to the expectations of fellow soldiers.
 - d. Worry about a family member back home who is ill.
 - e. All of the above.

2. Which of the following statements is/are correct?
 - a. Combat stress reaction is a sign of cowardliness.
 - b. Mild combat stress reaction can be considered a natural reaction to uncommon stress.
 - c. Moderate to severe combat stress reaction casualties seldom recover without months or years of psychiatric care.
 - d. All of the above are correct.

3. A soldier appears to be tense and jumps when he hears a popping sound. He is perspiring and complains of having a dry mouth and feeling light-headed and nauseous. This soldier probably has:
 - a. Mild combat stress reaction.
 - b. Moderate to severe combat stress reaction.

4. Normally, a soldier with mild combat stress reaction:
 - a. Should be evacuated.

b. Does not need to be evacuated.

5. Encouraging a soldier to drink water, eat, and get some sleep is appropriate if the soldier is suffering from:

a. Mild combat stress reaction.

b. Moderate to severe combat stress reaction.

c. Mild, moderate, or severe combat stress reaction.

6. Your squad is getting ready to attack an enemy position. A soldier says he cannot fight because his right leg is completely paralyzed. You quickly check the soldier, but can find no sign of injury. This soldier is showing signs of:

a. Mild combat stress reaction.

b. Moderate to severe combat stress reaction.

7. A casualty has gone without sleep for the past two or three nights because of nightmares. He has been unusually withdrawn and quiet, but is starting to be very talkative and argumentative. He is holding his rifle and yelling about fellow soldiers actually being enemy soldiers. Which of the following is the best method of handling the situation?

a. Grab a knife and threaten the soldier with it.

b. Begin yelling at the soldier, telling him that he is an enemy soldier.

c. Call the battalion commander and have the commander order the soldier to report to sick call.

d. Act calm and persuade the soldier to put the rifle down.

8. Which of the following statements is most accurate concerning combat stress reaction casualties which are evacuated?

a. About 35 percent return to their unit within a week.

b. About 50 percent return to their unit within a week.

c. About 75 percent return to their unit within three days.

d. About 95 percent return to their unit within three days.

ANSWERS TO PRACTICE EXERCISES: LESSON 24

1. e (LE 1)
2. b (LE 1, 2, 3, & 5)
3. a (LE 2)
4. b (LE 3 & 5)
5. c (LE 3, & 5)
6. b (LE 4)
7. d (LE 5)
8. c (LE 5)

LESSON 25

ADMINISTER ACETAMINOPHEN AND PSEUDOEPHEDRINE HYDROCHLORIDE TABLETS

TASK

Identify when acetaminophen and pseudoephedrine hydrochloride tablets should and should not be given, the appropriate dosage, and the effects of an overdose.

CONDITIONS

Given multiple-choice items pertaining to administering acetaminophen and pseudoephedrine hydrochloride tablets.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

Physicians' Desk Reference for Non-prescription Drugs.

Learning Event 1:

IDENTIFY WHEN ACETAMINOPHEN SHOULD AND SHOULD NOT BE ADMINISTERED

Acetaminophen (such as Tylenol®) can be used to treat a number of minor problems including simple headaches, muscular aches and pains, bursitis, neuralgia, sprains, overexertion, menstrual discomforts, fever, arthritis, rheumatism, ulcers, gastritis, and hiatus hernia.

Acetaminophen should not be administered to a person with a known allergy (hypersensitivity) to it, and, if the allergy appears, the drug should be discontinued.

Acetaminophen should not be administered to a pregnant woman or one nursing a baby without the advice of a health professional.

Excessive acetaminophen can be dangerous. An overdose can harm the liver.

Learning Event 2:

ADMINISTER ACETAMINOPHEN

One or two acetaminophen tablets (325 milligrams) can be given three or four times daily, but not more than eight tablets daily.

Acetaminophen tablets can be administered for minor discomforts described in the previous learning event if no contraindications (conditions which cause the treatment to be undesirable or dangerous) are present.

If a casualty's aches and pains persist for more than 10 days or his fever persists for more than 3 days, stop administering the medication to the casualty and refer him to medical personnel for evaluation.

**Learning Event 3:
RECOGNIZE AND TREAT ACETAMINOPHEN OVERDOSE**

Sometimes a soldier will carry his own supply of acetaminophen. A soldier can take too many tablets (either an accidental overdose or as a suicide attempt).

Signs and Symptoms of Acetaminophen Overdose

Nausea.

Vomiting.

Profuse perspiration.

General malaise (a sense of feeling ill).

Treatment for Acetaminophen Overdose

Empty the unconscious casualty's stomach promptly by lavage.

If the casualty is conscious, have him vomit.

Evacuate the casualty to a medical treatment facility.

**Learning Event 4:
IDENTIFY WHEN PSEUDOEPHEDRINE HYDROCHLORIDE TABLETS SHOULD AND SHOULD NOT BE ADMINISTERED**

Use pseudoephedrine hydrochloride tablets (such as Sudafed®) to relieve the signs and symptoms of allergic reactions to pollen or other allergens. The condition is commonly referred to as hay fever if it is seasonal and as perennial (non-seasonal) allergic rhinitis if it lasts throughout the year. Signs and symptoms of these allergic reactions include a runny nose, nasal congestion, upper respiratory problems, sneezing, and watery eyes.

Pseudoephedrine hydrochloride tablets can also be administered to temporarily relieve nasal congestion due to the common cold.

This medication should not be administered to a person who is allergic to any ingredients in the tablet or if the person has a high fever.

Pseudoephedrine hydrochloride tablets should not be administered to a person with any of the following situations unless a physician has approved the medication: heart problems or vascular disease, diabetes, thyroid disease, hypertension (high blood pressure), pregnancy, nursing a baby, enlarged prostate gland, taking a hypertensive drug, or taking an antidepressant drug.

Learning Event 5:

ADMINISTER PSEUDOEPHEDRINE HYDROCHLORIDE TABLETS

Administer two tablets every 4 to 6 hours as needed. Do not exceed more than 8 tablets in a 24-hour period.

Have the casualty evaluated by medical personnel if a high fever or signs of overdose develop or if the casualty's signs and symptoms do not improve within seven days.

Discontinue if signs of an overdose develop.

Learning Event 6:

RECOGNIZE AND TREAT PSEUDOEPHEDRINE HYDROCHLORIDE OVERDOSE

Signs and symptoms of pseudoephedrine hydrochloride overdose include dizziness, nervousness, sleeplessness, and high fever.

If sign and symptoms of overdose develop, discontinue treatment and evacuate the casualty.

PRACTICE EXERCISES: LESSON 25

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or complete the sentence by writing the required term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. A soldier complains of minor headache and muscle ache. You should give him _____ for his condition.

- a. Pseudoephedrine hydrochloride tablets.
- b. Acetaminophen tablets.

2. A soldier complains of a runny nose, sneezing, and other signs and symptoms of hay fever. You should administer:

- a. Pseudoephedrine hydrochloride tablets.
- b. Acetaminophen tablets.

3. A pregnant soldier has a common cold. Which of the following should you administer to her?

- a. Pseudoephedrine hydrochloride tablets.
- b. Acetaminophen tablets.
- c. Neither pseudoephedrine hydrochloride tablets nor acetaminophen tablets unless a physician has approved the medication for the soldier.

4. You are administering acetaminophen to a soldier. The soldier should not take more than _____ tablets within a 24-hour period.

5. You are administering pseudoephedrine hydrochloride tablets from your aid bag to a soldier with hay fever. You can administer _____ tablet(s) every _____ hours, but no more than _____ tablets within a 24-hour period.

6. General malaise is a symptom of

ANSWERS TO PRACTICE EXERCISES: LESSON 25

1. b (LE 1)
2. a (LE 4)
3. c (LE 1 & 4)
4. 8 (LE 2)
5. 2, 4 - 6, 8 (LE 5)
6. acetaminophen overdose. (LE 3)

LESSON 26

TRANSPORT A CASUALTY USING A MILITARY VEHICLE

TASK

Identify procedures for moving casualties by litter and loading and unloading casualties using military vehicles.

CONDITIONS

Given multiple-choice items pertaining to evacuation.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

FM 8-10-6, Medical Evacuation in a Theater of Operations: Tactics, Techniques, and Procedures.

FM 8-35, Evacuation of the Sick and Wounded.

FM 8-230, Medical Specialist.

INTRODUCTION

As a combat lifesaver, you may need to evacuate casualties or assist the combat medic in evacuating casualties. Moving a casualty using one-man and two-man manual carries, making improvised litters, and placing a casualty onto a litter were covered in IS0824. This lesson covers moving a casualty on a litter, loading casualties onto military ground and air vehicles, and unloading casualties. A major objective is to move and load a casualty without causing additional injury to the casualty.

Learning Event 1:

DETERMINE THE ORDER IN WHICH CASUALTIES ARE TO BE EVACUATED

Hopefully, the number of casualties will not exceed your evacuation capabilities. However, you may need to decide which casualties are to be moved first if the number of litter teams is limited or if the vehicle cannot transport all of the casualties at the same time. The priority of the casualty's evacuation depends upon his wounds and his condition. If a combat medic is not present, you may use the following general rules to determine evacuation priority.

First Priority

Casualties with serious respiratory problems; severe blood loss; second and third degree burns of the face, neck, or perineum; closed head injuries with decreasing mental status; and casualties with wounds resulting in poor or no circulation (pulse) in the extremity should be evacuated first.

Second Priority

Casualties with chest and abdominal wounds, extensive serious eye injury, fractures, and serious second and third degree burns not involving the face, neck, or perineum should be evacuated next.

Third Priority

Casualties with minimal injuries (injuries stabilized with self-aid or buddy-aid) and casualties with injuries so severe that only complicated and prolonged treatment could prolong life-expectancy should be evacuated last.

This category is used only when evacuation resources are limited. If you are in doubt as to the severity of the injury, place the casualty of in one of the other categories.

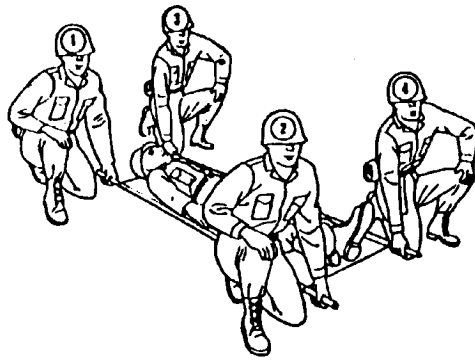
After you have established a general priority of evacuation, determine which casualties are to be evacuated first. For example, suppose you can evacuate only two litter casualties at a time and you have four litter casualties (one in the first category, two in the second category, and one in the third category). You should evacuate the casualty in the first category and the more seriously injured casualty in the second category first. Evacuate the two remaining casualties when the vehicle or litter teams return.

Learning Event 2:

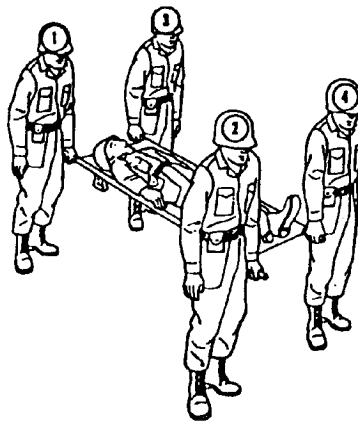
MOVE A CASUALTY USING A FOUR-MAN LITTER SQUAD

When possible, casualties who cannot or should not walk are evacuated using a standard aluminum litter and a four-man litter squad.

Open the litter and lock the spreader bars (one at each end of the litter) into place. Use your foot to lock the bars into place to prevent possible injury to your hands.



"Prepare to lift"



"LIFT"

Figure 26-1
Four-man carry
(file: 825f26-1.bmp)

Place the casualty on the litter and secure him to the litter with straps designed for this purpose.

The leader of the litter squad is normally the person with the most medical training. If a combat medic is not available, the combat lifesaver should act as the squad leader. The squad leader normally positions himself at the casualty's right shoulder, which is the best position for monitoring the casualty's condition.

The leader must ensure that all of the bearers act in unison. This can be done by using preparatory commands (commands that tell the other bearers the actions to be performed) and commands of execution (commands that tell the other bearers to perform the action). For example, the command to lift a litter is "Prepare to lift, LIFT." On the preparatory command "Prepare to lift," each bearer kneels beside his litter handle and grasps the

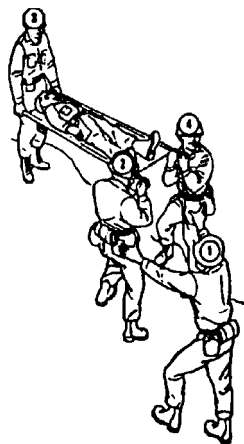
handle. On the command "LIFT," all bearers rise together. The command to move forward is "Four-man carry, MOVE." The command to lower the litter is "Lower, LITTER."

Lift the litter in a smooth and even manner and keep it as level as possible at all times.

If the terrain is level, use the four-man carry.



Uphill Carry



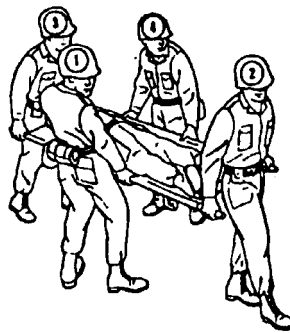
Downhill Carry

Figure 26-2
Uphill and downhill carries
(file: 825f26-2.bmp)

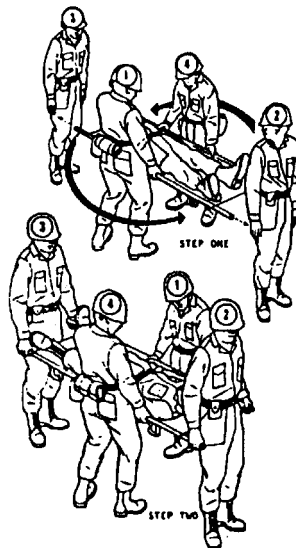
Use the uphill carry to go up a hill or stairs and the downhill carry to go down a hill or stairs.

Under normal conditions, the casualty is moved "feet first" (feet toward the direction of travel) when traveling on level ground or when going down a hill or stairs. When going up a hill or stairs, the casualty is moved "head first" (head toward the direction of travel).

CAUTION: If the casualty has a leg fracture and does not have a head injury, reverse the direction of travel. Move the casualty "head first" when traveling on level ground or going downhill and carry the casualty "feet first" when going uphill. This reversed position helps to keep pressure off the leg fracture.



Litter Post Carry



Litter Rotation

Figure 26-3

Litter post carry and litter rotation
(file: 825f26-3.bmp)

WARNING

Do not reverse the direction of travel if the casualty has a head injury. Doing so would put unnecessary and dangerous pressure on the casualty's head.

If the terrain is very rough, use the litter post carry to keep the litter level.

The litter post carry position is also used to rotate the litter, such as going from a downhill carry to an uphill carry.

**Learning Event 3:
LOAD CASUALTIES INTO GROUND AMBULANCES**

Casualties are usually evacuated by a medical ground vehicle (ground ambulance), by a medical helicopter (air ambulance), or by a non-medical military vehicle (military vehicle which is not designed to carry litter casualties).

Ambulances have a medical specialist as the driver and another medical specialist to take care of the casualties during evacuation. Follow their instructions for loading, securing, and unloading casualties.

General Rules

A litter casualty is usually loaded with his head toward the front of the vehicle unless the medic staying with the casualties wants the casualty loaded feet first so his wound will be more accessible.

When loading casualties into a vehicle, load the most seriously injured casualty last.

Make sure that each litter casualty is secured to his litter. Use litter straps when available.

Make sure that each litter is secured to the vehicle.

Unload casualties in the reverse order in which they are loaded. Unload the most seriously injured casualty first.

Load Casualties into an M170, 1/4-Ton, 4x4, Truck Ambulance

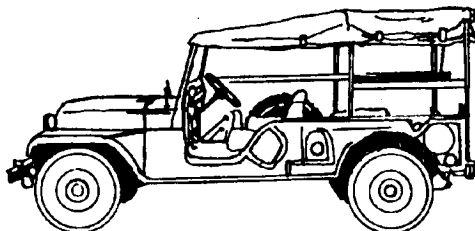


Figure 26-4
M170 front-line ambulance (1/4 ton)
(file: 825f26-4.bmp)

The M170 front-line ambulance is designed to carry three litter casualties or five ambulatory (walking) casualties or a mixed load of two litter casualties and three ambulatory casualties.

The sequence for loading three litter casualties is:

Upper right berth.

Lower right berth.

Left berth.

The sequence for loading a mixed load is:

Upper right berth.

Lower right berth.

Ambulatory casualties.

Load Casualties into an M1010, 1 1/4-Ton, 4x4, Truck Ambulance

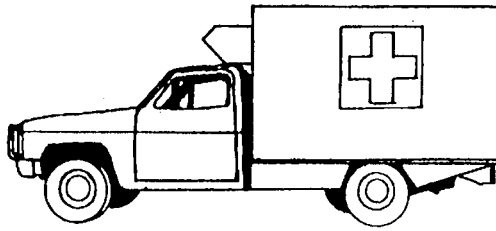


Figure 26-5
M1010 ambulance (1 1/4 ton)
(file: 825f26-5.bmp)

The M1010 truck ambulance is designed to carry four litter casualties or eight ambulatory casualties or a mixed load of two litter casualties and four ambulatory casualties.

When four litter casualties are transported, they are loaded in the following order:

Upper right berth.

Lower right berth.

Upper left berth.

Lower left berth.

When only two litter casualties are loaded, the sequence is:

Upper right berth.

Lower right berth.

Ambulatory casualties (on left side).

If there is only one litter casualty, load him on either the upper or lower right berth.

Load Casualties into an M996, 4x4, Armored Ambulance (HMMWV)

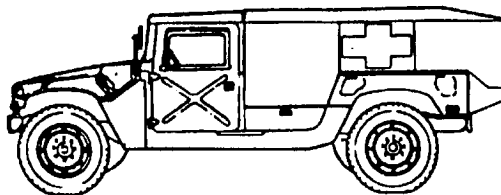


Figure 26-6
M996 armored ambulance

(file: 825f26-6.bmp)

The M996 armored ambulance is designed to carry two litter casualties, or six ambulatory casualties, or a mixed load of one litter casualty and three ambulatory casualties.

When two litter casualties are transported, the first casualty is placed in the right berth and the second casualty in the left berth.

Load Casualties into an M997, 4x4, Armored Ambulance (HMMWV)

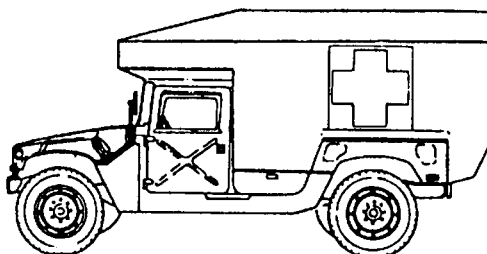


Figure 26-7
M997 armored ambulance
(file: 825f26-7.bmp)

The M997 armored ambulance is designed to carry four litter casualties or eight ambulatory casualties or a mixed load of two litter casualties and four ambulatory casualties.

When four litter casualties are transported, they are loaded in the following order:

Upper right berth.

Lower right berth.

Upper left berth.

Lower left berth.

When only two litter casualties are loaded, the sequence is:

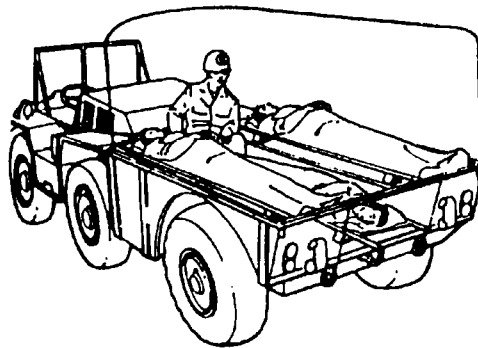
Upper right berth.

Lower right berth.

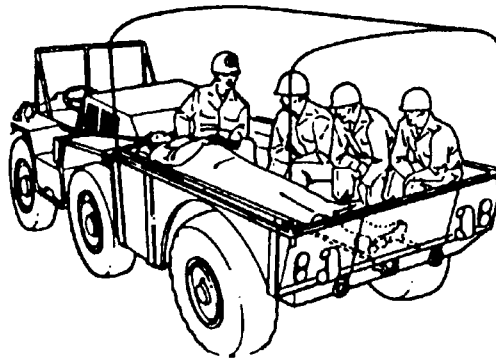
Ambulatory casualties (on left side).

Load Casualties into an M792, 1 1/4-Ton, 6x6, Truck Ambulance

The M792 truck ambulance is designed to carry three litter casualties or six ambulatory casualties or a mixed load of two litter casualties and three ambulatory casualties.



Three Litter Configuration



Mixed Load Configuration

Figure 26-8
M792 ambulance (1 1/4 ton)
(file: 825f26-8.bmp)

When three litter casualties are transported, they are loaded in the following order:

Upper right berth.

Upper left berth.

Lower center berth.

When only two litter casualties are loaded, the sequence is:

Upper berth.

Lower center berth.

Ambulatory casualties (on other side).

Load Casualties into an M113 Full-Trackted Armored Personnel Carrier

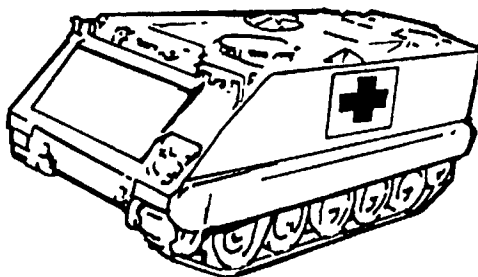


Figure 26-9
M113 armored personnel carrier
(file: 825f26-9.bmp)

An M113 armored personnel carrier can be transformed into an ambulance by removing the spall liner and installing the litter suspension kit. (Litter casualties cannot be safely moved if the litter suspension kit is not installed.) The M113 tracked ambulance can carry four litter casualties or ten ambulatory casualties or a mixed load of two litter casualties and five ambulatory casualties.

When four litter casualties are evacuated, they are loaded into berths in the following order:

Upper right berth.

Lower right berth.

Upper left berth.

to Lower left berth (most seriously injured casualty).

Learning Event 4: LOAD CASUALTIES INTO AIR AMBULANCES

Casualties may be evacuated by helicopter, especially if the distance to be traveled is great and the location hard to reach.

Air ambulances have medical specialists to take care of the casualties during evacuation. Follow their instructions for loading, securing, and unloading casualties.

General Rules

Remain 50 yards from the helicopter until the litter squad is signaled to approach the aircraft.

Approach the aircraft from the front so the litter squad is in full view of the pilot. Keep a low silhouette when approaching the aircraft.

Approach and leave the aircraft quickly, but do not run.

Avoid the area near the rear rotor of the Blackhawk and Iroquois air ambulance helicopters. If you must go from one side of the helicopter to the other, go around the front of the helicopter.

WARNING

Never go around the rear of the helicopter and always go from the downhill side. Take orders from the combat medic or the loadmaster of the aircraft.

Load the most seriously injured casualty last.

Load the casualty which will occupy the upper berth first; then load the next litter casualty immediately under the first casualty. This is done to keep a casualty from accidentally falling on another casualty should his litter drop before it is secured.

When casualties are placed lengthwise, position them with their heads pointing forward toward the direction of travel.

Make sure each litter casualty is secured to his litter.

Make sure each litter is secured to the aircraft.

Unload casualties in the reverse order in which they are loaded. Unload the most seriously injured casualty first.

Load Casualties into a UH-60A Blackhawk Air Ambulance

A Blackhawk is the primary air ambulance used in combat. The normal MEDEVAC (medical evacuation) kit allows the Blackhawk to carry four litter casualties and one ambulatory casualty or seven ambulatory casualties or a mixed load of two litter casualties and four ambulatory casualties.

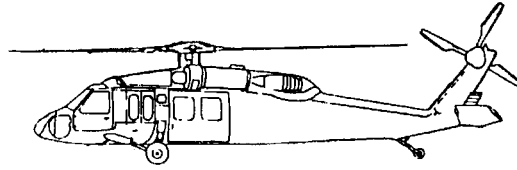


Figure 26-10
Blackhawk air ambulance
(file: 825f2610.bmp)

Another MEDEVAC kit allows for a configuration of six litter casualties and one ambulatory casualty or seven ambulatory casualties or a mixed load of three litter casualties and four ambulatory casualties. Litter casualties can be loaded on both sides of the helicopter simultaneously.

Load Casualties into a UH-1H/V Iroquois Air Ambulance

An Iroquois can evacuate six litter casualties or nine ambulatory casualties or a mixed load of three litter casualties and four ambulatory casualties.

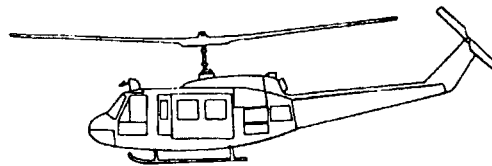


Figure 26-11
Iroquois air ambulance
(file: 825f2611.bmp)

When six litter casualties are evacuated, load the casualties lengthwise with three casualties on each side. The heads of all casualties point forward toward the direction of travel.

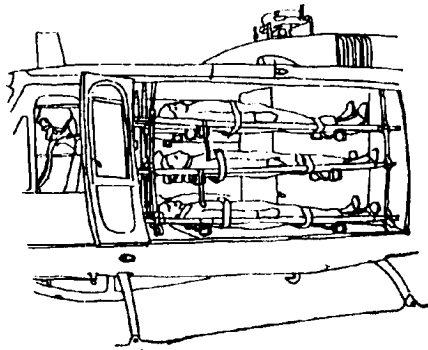


Figure 26-12
Iroquois air ambulance with six litter casualties
(file: 825f2612.bmp)

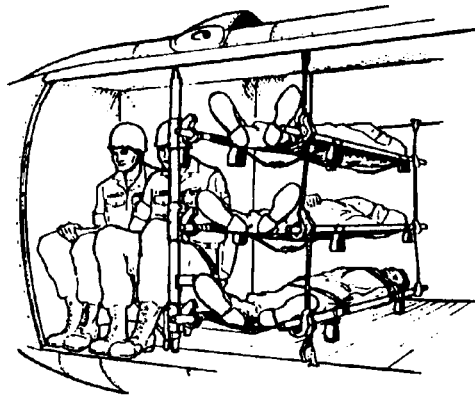


Figure 26-13
Iroquois air ambulance with a mixed load
(file: 825f2613.bmp)

When loading a mixed load, three litters are placed crosswise across the back of the compartment with the ambulatory casualties seated in the aft part of the compartment (two on the right side and two on the left side).

Load Casualties into a CH-47 Chinook Air Ambulance

The CH-47 Chinook air ambulance is a dual rotary-wing aircraft with a capacity of up to 24 litter casualties or 31 ambulatory casualties or several combinations of mixed loads. Litter racks are filled from front to back and from top to bottom. When the configuration is a mixed load, the ambulatory casualties are usually seated in the front of the compartment.

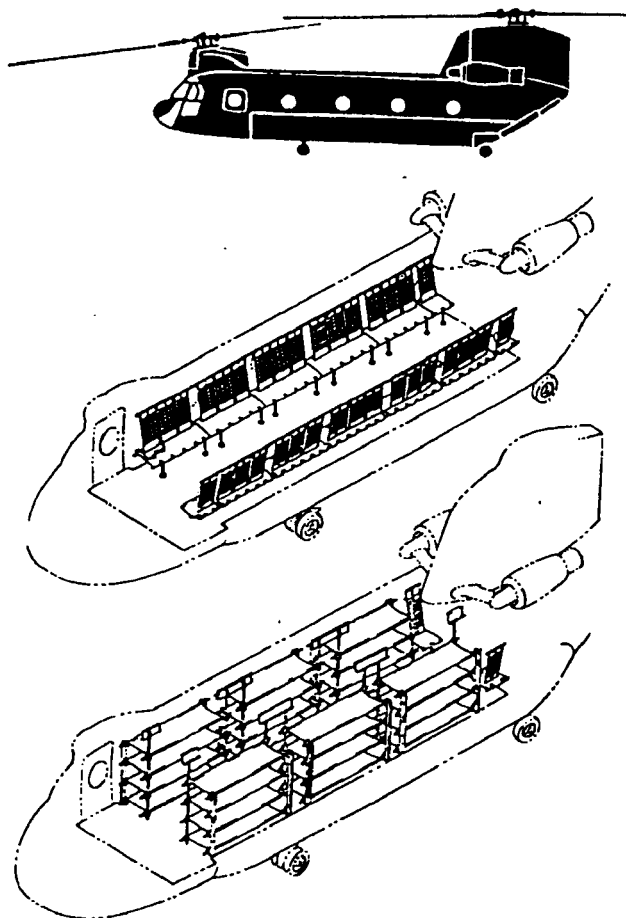


Figure 26-14
Chinook air ambulance with load configurations
(file: 825f2614.bmp)

Learning Event 5:
LOAD CASUALTIES ON GROUND MILITARY VEHICLES

Non-medical military vehicles can be used to evacuate casualties when no medical evacuation vehicles are available.

If medical personnel are present, follow their instructions for loading, securing, and unloading casualties.

General Rules for Using Tactical Ground Vehicle

When loading casualties into a vehicle, load the most seriously injured casualty last.

When casualties are placed lengthwise, position them with their heads pointing toward the direction of travel.

Make sure each litter casualty is secured to his litter (use litter straps, if available).

Make sure all litters are secured the vehicle.

Unload casualties in the reverse order in which they are loaded, with the most seriously injured casualty being unloaded first.

Load Litter Casualties Onto an M151, 4x4, 1/4-Ton Utility Truck with Trailer

An M151 1/4-ton utility truck (jeep) can be used to evacuate two litter casualties.

Place the first litter across the back of the vehicle with the litter handles resting on the sides of the vehicle. (Illustration shows the feet of this casualty.)

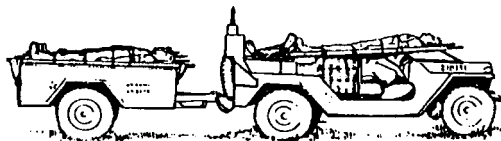


Figure 26-15
M151 jeep (with litters) and trailer (with litters)
(file: 825f2615.bmp)

Place the second litter lengthwise on the right side of the vehicle with the rear handles resting on the side of the first litter and the front stirrups (stands) of the litter fitted into the groove below the windshield. An alternate method is to rest the front handles on the windshield frame and have the rear handles straddle the spare tire.

A two-wheeled trailer with two additional casualties can be attached to the M151 truck. Position the litters lengthwise on the trailer with the casualties' heads toward the travel direction. Secure the handles of the litters to the small hooks on the side of the trailer with bindings.

Load Litter Casualties Onto an M880/890 or M1008, 4x4/4x2, 1 1/4-Ton Cargo Truck

Both cargo trucks are light-weight vehicles used to transport personnel or light cargo. They can be adapted to evacuate up to five litter casualties.

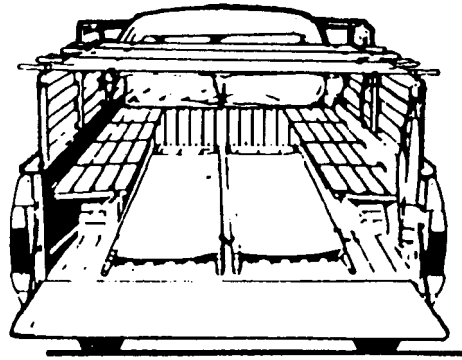


Figure 26-16
M880 1 1/4-ton truck (with litters)
(file: 825f2616.bmp)

Prepare the vehicle for evacuating litter casualties in the following manner.

Fold the fabric cover and metal bows forward (toward the truck cab) as an assembly and secure the assembly to the front bow.

Lower the tailgate.

Lower the seats and lock them in place.

Load litter casualties in the following manner. Secure each litter to the vehicle as it is loaded into place.

Load the first litter crosswise across the sideboards close to the truck cab, usually with the casualty's head behind the driver's seat.

Load the second and third litters in a similar manner. Usually, the second casualty loaded with his head behind the passenger's seat and the third casualty loaded with his head behind the driver's seat (loaded alternately head to foot).

Load the fourth litter head first (toward the cab) on the right side the bed of the truck. The stirrups will keep the litter off the floor.

Load the fifth litter head first on the left side of the bed of the truck. The stirrups will keep the litter off the floor.

Raise and fasten the tailgate to secure the lower litters.

Load Litter Casualties Onto a 2 1/2-Ton or 5-Ton, 6x6, Wide Bed Cargo Truck

The 2 1/2-ton truck and the 5-ton cargo truck can be used to transport up to 12 litter casualties each.

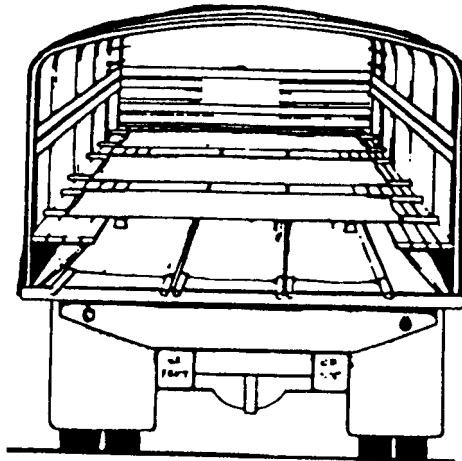


Figure 26-17
2 1/2-Ton cargo truck (with litters)
(file: 825f2617.bmp)

NOTE: The illustration shows only nine litters being transported: three litters on the floor in the front of the truck (hidden in illustration), three litters on the floor in the rear, and three on the seats. ANY VEHICLE CAN BE USED IF THESE ARE NOT AVAILABLE.

Prepare the truck for evacuating litter casualties in the following manner.

Roll the canvas top forward toward the truck cab and secure it to the front bow.

Lower the tailgate.

Lower the seats and lock them in place.

Load litter casualties in the following manner. Secure each litter to the vehicle as it is loaded into place.

Load the first group of three litters crosswise across the seats in the front half (near the cab) of the truck with the litter handles resting on the seats. The casualties are usually placed alternately head to foot (head of first casualty behind driver, head of second casualty behind passenger's side, and head of third casualty behind driver).

Load the second group of three litters lengthwise on the floor in the front half (near the cab) of the truck beneath the first group of litters. Load the casualties head first (head toward the cab). The stirrups will keep the litters off the floor.

Load the third group of three litters crosswise across the seats in the rear half of the truck with the litter handles resting on the seats. Continue to alternate casualties (head of seventh casualty next to feet of third casualty, etc.).

Load the fourth group of three litters lengthwise on the floor in the rear half of the truck beneath the third group of litters. Load the casualties with their heads toward the cab. The stirrups will keep the litters off the floor.

Raise and secure the tailgate as high as possible to help secure the litters in place.

PRACTICE EXERCISES: LESSON 26

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the required term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. Which litter carry is used to move a litter casualty over rough terrain when the bearers have trouble keeping the litter level?

2. A casualty has a chest wound. You must carry the casualty over level ground to reach a company aid post. You should carry the litter so his _____ is/are forward (in the direction of travel).

- a. Feet.
- b. Head.

3. A casualty has a fractured leg (no head injury). You must carry the casualty uphill to reach a company aid post. You should carry the litter _____ first (in the direction of travel).

- a. Feet.
- b. Head.

4. You are the leader of a four-man litter squad. Where should you position yourself when the four-man carry is being performed?

- a. At the casualty's left foot.
- b. At the casualty's left shoulder.
- c. At the casualty's right foot.
- d. At the casualty's right shoulder.

5. When loading a litter into a Blackhawk air ambulance, you should approach:

- a. From the front of the helicopter.
- b. From the rear of the helicopter.

6. You are loading litter casualties into an evacuation vehicle. The most seriously injured casualty should be loaded:

- a. First.
- b. Last.

7. You are unloading litter casualties from an evacuation vehicle. The most seriously injured casualty should be unloaded:

- a. First.
- b. Last.

8. You are loading four litter casualties into an M113 evacuation vehicle. In what order should the berths be filled?

First:
Second:
Third:
Fourth:

9. You are unloading four litter casualties from an M113 evacuation vehicle. In what order should the berths be unloaded?

First:
Second:
Third:
Fourth:

10. When using a non-medical vehicle to evacuate a litter casualty, make sure:

- a. The casualty is secured to the litter.

b. The litter is secured to the vehicle.

c. The casualty is secured to the litter and the litter is secured to the vehicle.

11. How many litter casualties can a Blackhawk air ambulance carry with the normal MEDEVAC kit?

12. What is the maximum number of litter casualties that a Blackhawk air ambulance can carry with the expanded MEDEVAC kit configuration?

13. An Iroquois air ambulance can carry _____ ambulatory casualties or _____ litter casualties or a mixed load of _____ litter casualties and _____ ambulatory casualties.

14. An M151, 4x4, 1/4-ton utility truck (jeep) can carry _____ litter casualty(ies). The trailer can carry _____ more litter casualty(ies).

15. When a litter casualty is loaded lengthwise, his is/are normally pointing in the direction of travel.

a. Feet.

b. Head.

16. You must carry the casualty uphill to reach a company aid post. The casualty does not have a fractured leg or a head injury. You should carry the litter _____ first (in the direction of travel).

a. Feet.

b. Head.

ANSWERS TO PRACTICE EXERCISES: LESSON 26

1. Litter post carry. (LE 2)
2. a (LE 2)
3. a (LE 2)
4. d (LE 2)
5. a (LE 4)
6. b (LE 3, 4, & 5)
7. a (LE 3, 4, & 5)
8. Upper right berth.
Lower right berth.
Upper left berth.
Lower left berth. (LE 3)
9. Lower left berth.
Upper left berth.
Lower right berth.
Upper right berth. (LE 3)
10. c (LE 5)
11. Four (LE 4)
12. Six (LE 4)
13. nine; six; three, four. (LE 4)
14. two; two. (LE 5)
15. b (LE 3, 4, & 5)
16. b (LE 2)

LESSON 27

EVALUATE THE CASUALTY

TASK

Identify appropriate evaluation and treatment procedures, including sequence, performed on the battlefield.

CONDITIONS

Given multiple-choice examination items pertaining to evaluating and treating a casualty.

STANDARD

Score 70 or more points on the 100-point written examination.

REFERENCES

FM 8-230, Medical Specialist.

FM 8-285, Treatment of Chemical Agent Casualties and Conventional Military Chemical Injuries.

FM 21-11, First Aid for Soldiers.

STP 8-91-SM, Soldier's Manual : CMF 91 General Medical Tasks.

STP 21-1-SMCT, Soldier's Manual of Common Tasks: Skill Level 1.

INTRODUCTION

On the battlefield, you must be able to identify and treat certain injuries and life-threatening conditions. The sequence in which injuries and conditions are treated can mean the difference between life and death for the casualty.

When treating a casualty, you must identify and treat the most serious condition first. In general, you must make sure the casualty has an open airway and is breathing; then control any major bleeding; and then take measures to control shock. This is referred to as the primary survey of the casualty.

Once life-threatening conditions and/or injuries have been identified and treated, look for other injuries or problems and treat them. This is usually referred to as the secondary survey of the casualty.

If you have more than one casualty, perform a quick primary survey of each casualty. If you find a life-threatening condition during your primary survey, treat that condition immediately. After you have performed primary surveys on all casualties and have treated all immediate life-threatening

conditions, perform a secondary survey on each casualty. Treat the more serious casualty first.

Some of the standard evaluation steps may be performed so fast that they appear to be skipped. A casualty who is yelling in pain, for example, is obviously conscious (responsive) and breathing.

This lesson brings together certain buddy-aid tasks presented in IS0824 and certain medical tasks presented in IS0825. The following learning events give the steps normally used in performing a primary and secondary survey in the sequence they are normally performed. The lesson assumes you are in a combat situation, your combat mission allows you to stop and render aid, and no combat medic is immediately available to assist the casualty.

**Learning Event 1:
PERFORM A GENERAL SURVEY OF THE SCENE**

Quickly evaluate your immediate surroundings to gather vital information.

Look for obvious, immediate, life-threatening hazards (fires, explosions, enemy fire, electrical hazards, etc.). You cannot safely evaluate and treat a casualty in a hazardous environment. You must first tactically move the casualty (and yourself) to safety, thus preventing yourself from being injured.

Note the terrain and climate (temperature and weather conditions). This information may alert you to other potential injuries (heat injury in hot climates, immersion foot in marshy terrain, frostbite in cold climate, etc.).

Note the type of battle or incident that occurred. This may help you determine the type of injuries you can expect to treat (bullet wounds after a fire fight, shrapnel injuries after a mortar attack, fractured limbs and spinal injuries after an airborne accident, etc.).

Note whether chemical agents may be present.

**Learning Event 2:
PROTECT CASUALTY FROM HAZARDS**

If a life-threatening hazard (such as a burning building) is present, remove the casualty to a place of safety using the cradle drop drag or other appropriate carry (IS0824, Lesson 15).

If the casualty is being burned (flames, chemicals, electrical current, etc.), eliminate the source of the burn (IS0824, Lesson 11). Take care to

prevent being injured yourself, especially if separating the casualty from an electrical wire.

If a spinal injury is suspected (IS0824, Lesson 10), take care to prevent additional damage to the spinal column. Immobilize the casualty's neck and back after completing your primary survey.

Learning Event 3: PERFORM A PRIMARY SURVEY OF THE CASUALTY

Mask and Treat a Chemical Agent Casualty

If you are in a chemical environment or suspect that chemical agents have been used, make sure the casualty is properly masked. If severe nerve agent poisoning is present, administer three Mark I kits and one CANA. (IS0824, Lesson 13).

If liquid blister agent is present in the casualty's eyes, flush his eyes with water (IS0825, Lesson 22) even if you are still in a chemical environment.

Check the Casualty for Responsiveness

Calmly ask in a loud voice, "Are you okay?" or some similar question that demands a response from the casualty. If he does not respond, gently shake him or tap him on the shoulder and repeat the question.

If the casualty responds, ask the casualty for information ("Where do you hurt?" "Were you hit?" "Were you exposed to chemical agents?" etc.) This information will be useful in your evaluation, but continue to evaluate the casualty in a systematic method since the injury that hurts the most may not be the injury that needs to be treated first.

If the casualty is not responsive, send a soldier to get a combat medic and continue your evaluation.

Check the Casualty's Airway

If the casualty is responsive, evaluate him for airway obstruction (universal choking sign, difficulty in breathing, etc.). If the casualty has poor or no air exchange, expel the obstruction (IS0824, Lesson 2).

If the casualty is not responsive (unconscious), open his airway using the head-tilt/chin-lift or jaw thrust method (IS0824, Lesson 3).

Check the Casualty's Breathing

If a responsive casualty is talking or yelling in pain, his breathing is adequate.

If the casualty is not responsive (unconscious), evaluate his breathing by feeling for breath on your face, looking for the rising and falling of his chest, and listening for sounds of breathing.

If the casualty is not breathing or is having difficulty in breathing, open his airway, expel any airway obstruction, and perform mouth-to-mouth resuscitation (IS0824, Lesson 3).

CAUTION: Do not perform mouth-to-mouth (or -nose) resuscitation in a chemical environment.

Check the Casualty's Circulation

If the casualty is responsive and breathing adequately, he has a pulse.

If the casualty is unresponsive or not breathing, check his pulse (IS0825, Lesson 18). If the casualty has no pulse, seek medical help immediately.

Check the Casualty for Bleeding

Look for blood-soaked clothing, spurts of blood, pooling of blood under the body and other signs of external bleeding.

If a major amputation of a limb (amputation of the upper arm, forearm, thigh, lower leg, complete hand, or complete foot) is found, apply a tourniquet to the upper arm or thigh and dress the stump (IS0824, Lesson 4). (Amputation of a part of the hand or foot is controlled by pressure dressings.)

If serious bleeding from a wound of the arm or leg is found, apply a field dressing or improvised dressing and bandage to the wound (IS0824, Lesson 4). If the injury has been caused by a missile (bullet, shrapnel), look for both entry and exit wounds. Apply manual pressure and, if the limb is not fractured, elevate the wound.

If serious bleeding from a limb is not controlled by the field dressing, apply a pressure dressing (IS0824, Lesson 4).

If serious bleeding from a limb is not controlled by the pressure dressing, apply a tourniquet (IS0824, Lesson 4).

If an open chest wound is found, seal the wound with the plastic dressing wrapper or other airtight material, tape the sealing material on three sides to form a flutter valve, and apply a field dressing to the wound (IS0824, Lesson 5).

If an open abdominal wound is found, position the casualty in a flexed-knee position, position any protruding organs on the casualty's abdomen, apply a

field or improvised dressing over the wound and organs, and secure the dressing (IS0824, Lesson 6).

If an open head wound is found, dress the wound (IS0824, Lesson 7). If the casualty has a severe head injury, immobilize the casualty's head and neck (IS0824, Lesson 10).

CAUTION: If the casualty has more than one severe wound, treat the wound losing the most blood first.

CAUTION: Do not further expose the wound(s) if you are in a chemical environment.

Treat for Chemical Agent Poisoning, If Appropriate

If the casualty has signs and symptoms of chemical agent poisoning (IS0825, Lesson 22), he is breathing, and all life-threatening wounds have been treated, administer treatment for chemical agent poisoning. (NOTE: The casualty has already been masked. If severe nerve agent poisoning was present, three Mark I antidote kits and one CANA were administered.)

Have the casualty begin self-aid decontamination procedures if he is able (IS0824, Lesson 13). If he cannot, have another soldier decontaminate the casualty. Do not stop your evaluation and treatment at this time to decontaminate the casualty.

If the casualty is suffering from severe nerve agent poisoning and 5 minutes have passed since you administered the last Mark I kit and the CANA, take the casualty's pulse. If the pulse rate is below 90 beats per minute, administer an atropine injector.

If the casualty still twitches, showing signs of seizure, you may administer up to two additional CANA injections at about 5 to 10 minute intervals. Actually, time is less important here than the symptoms. Three CANAs are the limit--normally one from the soldier and two from your combat lifesaver aid bag.

Check the Casualty for Shock

Check the casualty for signs and symptoms of shock (clammy and pale skin, severe loss of blood, severe burns, increased breathing rate, mental confusion, etc.).

If hypovolemic shock is present, position the casualty, protect him from the environment, and administer fluids intravenously (IS0824, Lesson 8, and IS0825, Lesson 17).

If the casualty has a fractured leg, do not elevate the leg until it is splinted.

Initiate an I.V. if the casualty has suffered severe blood loss or has second or third degree burns on 20 percent or more of his body.

**Learning Event 4:
PERFORM A SECONDARY SURVEY OF THE CASUALTY**

Check the Casualty for Fractures

Check legs and arms for protruding bone, abnormal limb position, major wounds, bruises, and painful or tender spots.

If a fracture or a massive wound is present, dress any open wounds (including burns) and immobilize the limb with a padded splint (IS0824, Lesson 9, and IS0825, Lesson 20). Secure the splint above and below the fracture site.

CAUTION: Do not try to straighten (align) the broken bone before applying the splint.

CAUTION: Check the casualty's circulation below the fracture before and after applying the cravats. Loosen the cravats and reapply if needed.

Apply a sling and swathe to further immobilize a fractured upper arm, forearm, or wrist (IS0824, Lesson 9).

If a spinal injury is suspected, immobilize the casualty's neck and back (IS0824, Lesson 10).

Check the Casualty for Burns

Look for reddened, blistered, or charred skin, for burned or singed clothing, and for other evidence of burns. Pay special attention to burns about the head and neck for possible inhalation burns. Some burns, such as chemical burns, may not be readily seen unless the casualty's clothing is removed.

Do not further expose wounds if you are in a chemical environment.

Apply a dry dressing to burned areas on the trunk and limbs (IS0824, Lesson 11).

Remove jewelry from a burned limb.

Do not apply a bandage to burns of the face or genitalia.

If an electrical current passed through the casualty, locate and dress both the entry and exit wounds.

If the casualty has a chemical burn, remove as much of the chemical as possible before applying a dressing. NOTE: Keep white phosphorus burns wet to keep the particles away from oxygen and thus igniting, but do not try to remove the particles.

If second and third degree burns cover 20 percent or more of the skin surface, initiate an intravenous infusion (IS0825, Lesson 17).

Check the Casualty for Closed Head Injury (Concussion)

Look for unequal pupils, fluid leaking from the ear or nose, slurred speech, mental confusion, drowsiness, headache, dizziness, loss of memory, loss of consciousness, twitching or convulsions, difficulty in walking (staggering), and nausea or vomiting (IS0824, Lesson 7).

If a closed head injury is suspected, evacuate the casualty to a medical treatment facility.

If the casualty is having convulsions, support his head and neck and maintain an open airway.

Monitor the casualty's respiration and be prepared to administer mouth-to-mouth resuscitation should it be needed.

Check the Casualty for Environmental Injuries

If the casualty has been working in a hot environment, check for signs and symptoms of heat stroke, heat exhaustion, and heat cramps (IS0824, Lesson 12).

If the casualty has heat stroke, expose his skin, pour or spray water on him, fan him, and evacuate him as quickly as possible. Continue cooling efforts, such as pouring or spraying water over the casualty and fanning him, during evacuation. Have him drink cool water if he can tolerate it without vomiting.

If the casualty is suffering from heat cramps or heat exhaustion, move him to a shaded place and cool him off. Have the casualty drink at least one quart of cool water.

All casualties with heat exhaustion or heat stroke should get an intravenous infusion (IS0825, Lesson 17).

If the casualty has been exposed to cold or freezing weather, check for signs and symptoms of general hypothermia, frostbite, immersion syndrome, and chilblain (IS0825, Lesson 23).

If general hypothermia is present, move the casualty to a protected location and use a heat source (such as another soldier's body) to rewarm the casualty. Evacuate the casualty as soon as practical.

If deep frostbite is found, move the casualty to a warm place, thaw the area, and evacuate the casualty as soon as practical. NOTE: Do not thaw frozen feet if the casualty will be required to walk.)

If superficial frostbite or chilblain is found, rewarm and protect the affected area.

If immersion syndrome is found, dry and rewarm the affected area.

Check the casualty for visual problems resulting from lasers weapons or snow blindness (IS0824, Lesson 11, and IS0825, Lesson 23).

Protect the casualty from additional injury. Cover the eyes with a dark cloth if the casualty is in pain or if vision loss is severe.

Evacuate the casualty if practical.

Check the Casualty for Other Wounds/Fractures

Look for minor wounds and fractures. Dress and bandage the wounds as time permits. Bleeding from severed fingers and toes can be controlled without the use of a tourniquet. Splint fractured fingers using the same basic splinting procedures given in IS0824, Lesson 9.

Check the Casualty for Combat Stress Reaction

If the casualty appears to be injured but you cannot find any physical injury, look for symptoms of combat stress reaction (IS0825, Lesson 24). If combat stress reaction is suspected, take appropriate measures.

Learning Event 5: MONITOR THE CASUALTY

Monitor the casualty throughout the evaluation process for the presence of life-threatening conditions. For example, a casualty who is breathing when you begin your evaluation may suddenly stop breathing. Anytime a life-threatening condition is detected, stop your evaluation and treat the life-threatening condition.

Some conditions may require time to properly evaluate. If you put a field dressing on a bleeding wound on the casualty's leg, for example, continue to monitor the injury in case additional measures (pressure dressing or tourniquet) are needed to control bleeding. You can proceed with your

evaluation of the casualty while continuing to monitor the wound for bleeding.

If you have administered nerve agent antidote to a severe nerve agent casualty, continue to check the casualty's pulse every five minutes. If the casualty's pulse rate is below 90 beats per minute, administer an atropine autoinjector. Give CANA (up to a total of three doses) for control of seizures (IS0825, Lesson 22).

If the casualty has not been treated for shock, take measures to prevent shock. The measures used to control shock given in Lesson 8 of IS0824 (such as loosening clothing, positioning the casualty, and protecting the casualty from the cold) are also used to prevent shock from occurring.

Monitor a heat cramp or heat exhaustion casualty to ensure that he continues to drink water without vomiting and that his condition does not become more serious. Be prepared to administer mouth-to-mouth resuscitation, increase cooling efforts, initiate an I.V., and evacuate the casualty if his condition worsens.

Be ready to open his airway and administer mouth-to-mouth resuscitation should the need arise. If medical personnel arrive, report your findings.

Insert an oropharyngeal airway in an unconscious casualty to keep his airway open, if needed (IS0825, Lesson 21).

Continue to perform any needed procedures, such as keeping white phosphorus burns wet.

If you are treating more than one casualty, continue to monitor the other casualties for life-threatening conditions while administering treatment to a casualty.

Whenever possible, have the casualty evaluated by a combat medic or other medical personnel.

Continue to monitor the casualty until you return the casualty to duty, until a medical person (usually a combat medic or member of a medical evacuation team) takes over, or until you must resume your combat duties.

If the casualty requires evacuation, transport him using the most effective means available (IS0825, Lesson 26, and IS0824, Lessons 14 and 15).

If you are the leader of a litter team evacuating the casualty, continue to monitor the casualty during the evacuation. Stop and render your aid if a life-threatening condition arises.

If a medic is not available and a soldier has a minor headache, cold, or hay fever, administer acetaminophen or pseudoephedrine hydrochloride tablets as needed if no contraindications are present (IS0825, Lesson 25).

**Learning Event 6:
ASSIST THE MEDIC**

If the medic requests assistance and your combat duties allow, assist the combat medic in providing care to casualties and in evacuating casualties. The medic will provide instructions as needed.

PRACTICE EXERCISES: LESSON 27

INSTRUCTIONS: Answer the following exercises by circling the letter of the response that best answers the question or best completes the sentence or by writing the required term in the blank provided. After you have answered all of the exercises, check your answers against the "Answers to Practice Exercises" following the exercises. For each exercise answered incorrectly, reread the lesson material referenced.

1. Your area has been attacked with nerve agents. You see a fellow soldier in full MOPP (chemical agent protection) gear lying on his back. What should be your first action when evaluating the soldier?
 - a. Check for bleeding.
 - b. Administer nerve agent antidote.
 - c. Ask the soldier if he is injured.
 - d. Remove his mask and check his pulse.

2. Which of the following would be treated first?
 - a. A closed head injury.
 - b. A fractured leg.
 - c. An open head wound with brain tissue visible.
 - d. An amputation of the forearm.

3. In general, primary survey procedures involve stopping severe bleeding, restoring breathing, and controlling shock. In which order should these actions be performed?

First:
Second:
Third:

4. List three situations in which you would start an I.V.

5. A soldier tells you that he was knocked out by an explosion, but says he is fine now. However, the soldier staggers when he walks and has slurred speech. When you ask him to tell you what month it is, he simply has a blank stare. The soldier is probably suffering from:

- a. A concussion.
- b. Heat exhaustion.
- c. A bruised spinal cord.
- d. An open chest wound.

6. You have found an unconscious soldier and have determined that he is breathing. Which of the following is true?

- a. You do not need to check his breathing again.
- b. You should monitor his breathing as long as he is unconscious in case he should require mouth-to-mouth resuscitation.

7. A wounded soldier is lying in an open area and is in danger of being hit by enemy rifle fire. You should remove the casualty to a place of safety:

- a. Before performing the primary survey.
- b. After performing the primary survey, but before performing the secondary survey.
- c. After performing the secondary survey.

8. Which of the following statements is true?

- a. In a chemical environment, you should perform mouth-to-nose resuscitation rather than mouth-to-mouth resuscitation.
- b. If serious bleeding from a limb is not controlled by a field dressing, apply a tourniquet immediately.
- c. If a casualty has been exposed to nerve agent and cannot decontaminate himself, do not begin decontamination procedures until you have completed your secondary survey.

- d. If the casualty is in shock, elevate his legs even if one leg is fractured and has not been splinted.
- e. All of the above procedures are correct.
- f. None of the above procedures is correct.

ANSWERS TO PRACTICE EXERCISES: LESSON 27

1. c (LE 3)
2. d (LE 3 & 4)
3. First: Restore breathing.
Second: Stop severe bleeding,
Third: Control shock.
(Introduction & LE 3)
4. Casualty has lost a good deal of blood.
Casualty has second and third degree burns on 20 percent or more of his
body surface.
Casualty has severe heat injury and cannot drink water. (LE 3 & 4)
5. a (LE 4)
6. b (LE 5)
7. a (LE 1, 2, & 3)
8. c (LE 3)