

FIELD MANUAL

**THE
AIDMAN'S
MEDICAL
GUIDE**

HEADQUARTERS, DEPARTMENT OF THE ARMY

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FIELD MANUAL

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CHAPTER 1

INTRODUCTION

1-1. Purpose and Scope

This manual is intended primarily for you, the medical aidman in the field. It tells you what to do with the supplies and equipment that you can carry and can use without hot or running water or electrical power. It also tells you how to protect yourself and your patients. The first eight chapters of this manual deal primarily with trauma: injuries and wounds. The last nine chapters of the manual deal essentially with medical diseases. Your comments to improve this manual will be welcomed. Send them direct to Commandant, ATTN: MEDEW-ZNT, US Army Medical Field Service School, Brooke Army Medical Center, Fort Sam Houston, Texas 78234.

1-2. Definitions

Self aid, first aid, and buddy aid are emergency medical procedures carried out by anyone, whether trained or untrained in medicine. *Emergency medical care* is early care given by trained medical personnel. *Definitive medical treatment* is that specialized care of the sick and wounded given by highly trained medical personnel, ordinarily the doctor. The steps taken by individuals in these different treatments may be the same, with only the equipment and application differing.

1-3. Your Resources

In the field, you can give emergency medical treatment but you do so with limited resources. Your physical resources are limited by two things: the tactical situation and how much you can carry. You are trained to improvise in some situations, and to request assistance in others.

1-4. Your Main Job

In addition to lifesaving and first aid measures, disposition of patients is your job. When a soldier is wounded, or when you are faced with a medical problem, ask yourself, "Should I evacuate this man or treat him here?" Often, the tactical situation and

the nature of the man's illness or injuries require *you* to treat him. This manual tells you *how* to treat him.

1-5. Dealing With Your Fellow Troopers

The personal relationship between you and the troops you support is very important. If you command the confidence and respect of the troops, you can do a far better job of treating them. At first, you earn their confidence and respect by how well you conduct yourself in everyday dealings with them, not by treating patients in combat. The aidman who is accepted by his troops is known to them as "Doc." Such a nickname implies you have the respect and trust of the men you serve. To get this you have to be more than a skilled medic. You have to be always willing to help a trooper any way you can.

1-6. What a Good Aidman Does

a. Most of your time is spent, not in combat and treating patients, but in waiting. While waiting, you care for your equipment and replenish your supplies, but equally important you talk with the troops. You are the ever-present advisor on their *minor medical problems* and the *minor medical problems* of their families at home. Often a soldier concerned about the medical problem of someone in his family comes to you for information. You are not expected to have the answer to every question. Yet if you are attentive, sympathetic, and honest with the soldier, you will be remembered kindly.

b. You must do your share of the hard work. You cannot afford to be known as a "goof-off." You are expected to defend yourself and your patients when necessary. You are not supposed to carry a radio or parts of crew-served weapons, but do not hesitate to help a fellow soldier carry a heavy load when you are not in contact with the enemy.

c. Besides doing your share of the work, you will always look out for the welfare of your troops. Before the unit goes on a mission, check out each man. If you find a soldier with a medical problem, go to the platoon sergeant and tell him the man's condition, capabilities, and limitations. During the mission, observe each man. If you get to know the men well, you can tell quicker when one is getting sick. You can anticipate many medical problems. For example, if you know the troops are on short water rations in hot weather, you might anticipate a case of heat exhaustion. Some water from your canteen may prevent it. (You may carry an extra canteen of water to help eliminate this situation.)

d. At the end of the mission, check each soldier again to see if any are sick or hurt. Some will get minor wounds but not com-

plain about them. In checking out the men, explain the danger of infection to them. Take every opportunity to encourage preventive measures, such as foot inspections, especially after a long, hot march.

e. During rest periods and between missions, you should make sure all minor medical problems are settled. You may want to go with a trooper on sick call and learn from the medical officer the best way to continue treating him. If medication is prescribed, you should be certain it is taken correctly. All the time, you should support your troops when medical problems are involved. If you do, they will respect and support you.

1-7. Preoperational Briefings

Commanders usually include medical personnel in briefings before a mission. If you are not included, find out all you can after briefings. The more you know about the mission and its likely medical hazards, the better you can do your work. When altered for a mission, go to the platoon sergeant or the platoon leader and ask about it. Find out how far the men are going, how many are going, how long they will be away, and how much enemy action is expected. Then you can decide what supplies to take.

1-8. Tools and Equipment

On a combat mission you carry only the supplies you *need* and know how to use, not what is *nice* to have. You are responsible for your aid bag, water, weapon, and ammunition. The weapon may be one of a type that is organic to the unit you support or it may be the one the tactical commander thinks best for you.

1-9. Your Aid Bag

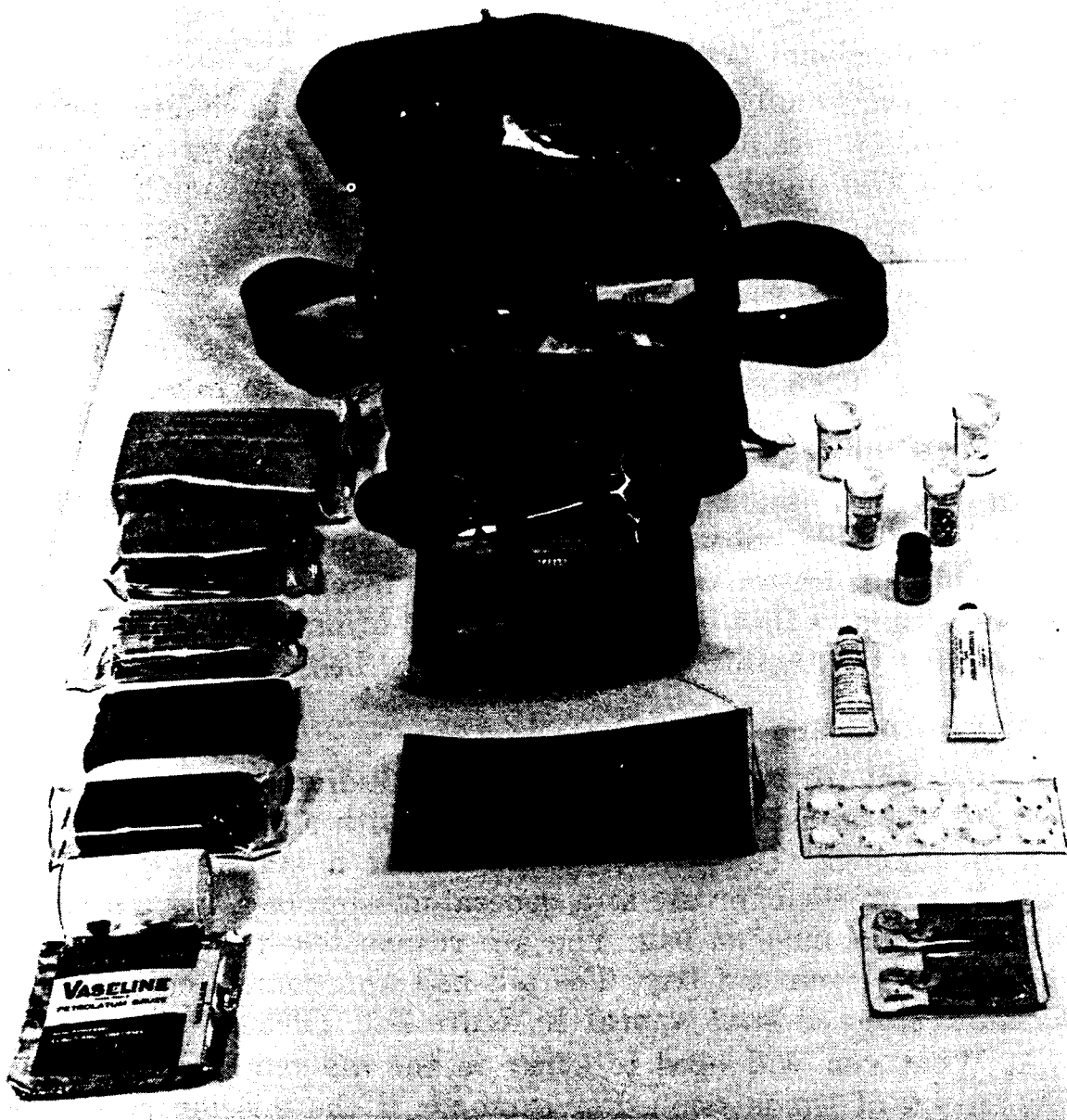
The surgical instrument and supply set, individual, is a general use aid bag issued by the medical depot with a standard packing list of supplies. This standard aid bag is a starting point for you. It is intended for use as a general-mission bag, not a special-mission or all-mission bag. You are responsible for packing and maintaining your aid bag. The aid bag and some items carried by an average aidman appear in figure 1-1. (See also chap. 18.)

a. What you will need to carry in the aid bag depends upon the nature of the mission. For example, if the mission is to be a walk to and a look around a village, lasting about 2 hours and taking 15 men, with no enemy action expected, you would take a light bag of supplies. If the mission is to go several miles away, taking 40 men and setting up a night ambush, with enemy action expected, you would take a different bag of supplies. If the company is going on an extended mission, you would take still another aid bag.

b. As your knowledge and experience increase, you will change items in your aid bag. Some items, like field dressings, bandages, and aspirins, should always be included while others, like antibiotics, should not be taken to the field without permission of the medical commander. Contents of aid bags also vary with the area of operations, local policy, and supplies available.

1-10. Steps in Solving Medical Problems

a. Get a history and do a rapid physical examination of a patient. For example, without asking needless questions, find out



DRESSINGS, BANDAGES, VASELINE GAUZE, INSTRUMENT SET, FIELD MEDICAL CARDS, SALT TABLETS, ASPIRIN, ANTI-MALARIAL TABLETS, ANTIHISTAMINE, WATER PURIFICATION TABLETS, BACITRACIN OINTMENT, TETRACAINE OINTMENT, GELUSIL, COUGH LOZENGES.

Figure 1-1. Surgical instrument and supply set, individual (aid bag), with typical contents.

whether the wound was caused by a bullet, a mortar round, a booby trap, or a fall from a vehicle. If it is a perforating wound, see if it has caused more than two holes. Determine the number of wounds. Find out if there is severe hemorrhage, internal bleeding, or a broken bone(s). Quickly assess the vital signs (pulse, blood pressure, respiration) to determine whether the patient's life is in danger.

b. Make a judgment or a tentative diagnosis. For example, if the wound is serious, will the patient die soon without definitive medical treatment? If the wound is not serious, can he continue his mission with some treatment? What is the tactical situation? How much time do you have? How much help can you get?

c. Take some positive action.

(1) Get yourself and the patient in the safest position consistent with his injuries and the tactical situation.

(2) Clear the airway and give artificial respiration if necessary. Control hemorrhage as quickly as possible. Treat for shock if necessary.

(3) Ask for assistance. Move the patient to a safer place and request evacuation if indicated.

(4) Reassure the patient. Positive action will reassure him more than anything you can say to him.

d. For guidance in handling a medical problem beyond your capability, you may be able to go through communications. Most of the time the operator can connect you with a medical officer or other medical personnel who can tell you how to handle the problem. They can also dispatch personnel and equipment to help you.

CHAPTER 2

TACTICS FOR THE AIDMAN

2-1. Staying Alive and Well

When you go into combat, staying alive and well is mostly a matter of training, not luck. If you become so engrossed in any activity that you forget the lessons of basic combat training, it could be fatal. Other valuable points on tactics are found in FM 8-22, The Combat Medic.

2-2. Who is Your Boss?

You may wonder who your boss is, or whose orders you follow. The commander of the element you are supporting has operational control over you. He will tell you what you are to do to medically support his element and when and how he wants it done. The medical platoon/section/leader handles your administrative matters as well as technical supervision of your work. If you are concerned about your pay, leave, promotion orders or assignment orders, you should go through your command channels for assistance or information.

2-3. Where You Work

Where you are located in the platoon will depend upon the desires of the element commander. He must know where you are at all times. The most likely location for you is at or near the command post. That is normally where the communications are placed. You should be close to the communications but not so close that you become a target for snipers. If you have to leave this position, you must inform the commander. You should be where you are readily accessible to expected patients and where your men know they can find you. The commander may direct you to other positions depending on the situation. During night operations, especially during total darkness or stake outs, remain at a fixed location and move only on orders. You can easily be mistaken for infiltrating enemy if you wander around during darkness.

2-4. Working Under Fire

There are several things you should do if your element comes under attack. Hit the ground quickly. Look for a signal from the

tactical commander. Move to a safer position as soon as there is a break in the firing from the enemy. Look again for a signal from the tactical commander. If there is no signal from the commander, remain low and in as safe a position as possible. Get your aid bag in position. If someone is hit and calls for a medic, do not run out to him immediately. Ask the commander for a signal to move. If you cannot see the commander, be sure to tell someone to cover you while you move out. The "stay alive" rule is: be sure you are covered before you move out to render aid to a patient. Also remember that a single round going off usually indicates a sniper is doing the shooting. Do not run to the assistance of a man hit by sniper fire. You cannot always see the sniper. Usually he can see you and will shoot you as soon as you move into his line of sight. So, wait until the sniper is located and disposed of, or wait for a signal from the commander before moving out. Do not run immediately to assist a booby trap casualty. Allow the booby trap experts to escort you to him. Booby traps are often placed in clusters. Without expert help you too can get hurt by one. There are many rules of combat. You should learn as much as you can from the experts. If not, you may learn these rules the hard way.

2-5. Resupply on Missions

While you are out on a mission you can get medical resupply through medical evacuation channels. If you need specific items of equipment, they can be delivered by any available means. As a rule, it is best to request medical resupply at the same time that you request medical evacuation. The medical evacuation vehicles are manned by medical personnel who are knowledgeable and have quicker access to medical supplies and equipment than other personnel.

2-6. Evacuation Plan

a. You should become familiar with the evacuation plan before starting on a mission. The evacuation plan is dictated by the tactical situation. Normally, a general evacuation plan is announced by the tactical command after consultation with the surgeon. In his planning and briefing for each mission, the tactical commander will describe the plan for the particular mission. Only the tactical commander or element commander is fully aware of the tactical situation. Therefore, only he can state what the evacuation plan is at any given time. If the element commander denies your request for evacuation, accept his decision. Besides knowing the tactical situation, he is responsible for everybody, not just the patients.

b. You never order an evacuation. Instead, you request it through the tactical commander. When you decide an evacuation is

needed, contact the command post and describe the patient's condition. After discussion of the situation, the commander will usually make the final decision about evacuation. Safe arrival and departure of the evacuation vehicle is his responsibility. He decides if it would be tactically sound to allow a vehicle into his area of operations then. If he denies your request, you have to do the best you can for the patient commensurate with the tactical situation.

2-7. Requesting Evacuation

a. You must prepare for the disposition (evacuation) of the patient after you have initiated lifesaving emergency treatment. You should concentrate on stabilizing his condition, as time and the tactical situation allow, before the evacuation vehicle arrives.

b. Determine evacuation categories of precedence and make your request. Categories of precedence for evacuation may change with the tactical situation. They dictate who is treated, when he is treated and by whom, and how, when, and where he is to be evacuated. In addition to the tactical situation, you must consider (in requesting evacuation) the nature of the wound or illness, the type of transportation available, and the medical treatment facility available. A critically injured patient should be evacuated as rapidly as possible to a clearing station or hospital for example. On the other hand, a patient with a foreign object in his ear is not urgent and probably can be treated at an aid station.

2-8. Categories of Precedence for Evacuation

Although your primary concern is with the patient's welfare, you have a responsibility to other troopers in the company. You should not endanger them by requesting needless evacuation. Yet, you must not let the patient die because of your failure to request proper evacuation. You should be guided by the nature of the wound or illness in determining which category to assign in the request for evacuation. The established evacuation categories of precedence are urgent, priority, and routine.

a. The urgent category is reserved for those patients who must be evacuated within 2 hours to save life or limb. This means that patient will be evacuated immediately with a maximum time limitation of 2 hours.

b. Priority patients are those who must be evacuated within 4 hours. Priority also includes any patients whose condition is expected to deteriorate to urgent. This does not mean that it will be 4 hours before the patient is picked up. Rather, he will be evacuated as soon as possible within the limitation of available aircraft resources.

c. The routine category is reserved for patients whose con-

dition is not expected to deteriorate for several hours, normally more than 4 hours. Patients at field locations who require a medical consultation or have any minor injury or illness requiring treatment beyond the capability of the field medical personnel patients will be picked up as soon as all urgent and priority patients are safely evacuated.

d. It is sometimes necessary to clear patients from an area of operation because of the tactical situation. For example, a soldier on a small patrol sprains his ankle. Although the injury itself may not require evacuation, continuing presence of the injured individual may reduce the effectiveness of the patrol. In such a circumstance, evacuation may be requested using the categories above. This will be followed by a statement that the tactical situation dictates evacuation. This determination must be made by the tactical commander.

2-9. Evacuation Vehicles

a. Air ambulance or "medevac" helicopters are generally the most desirable type of evacuation, but they are not always available. Patients may outnumber the helicopters available. The enemy may have air superiority or enemy fire may prevent helicopters from landing or taking off. The weather may be too severe for helicopter operations. The flight may be too far, or incoming helicopters may reveal troop locations to the enemy.

b. When medevac helicopters are not immediately available, you may consider other types of evacuation. A helicopter gunship or troop carrier may be able to get in to the patient when other aircraft cannot. Troop carrier or gunship pilots often volunteer to carry out urgent patients. You should realize that a troop carrier is not equipped to carry patients and has no medically trained personnel aboard. In the gunship or troop carrier the patient must share floor space with ammunition boxes and weapons and the ride may be rough. You must decide whether it is wise to hold the patient until better transportation is available or to subject him to quick but rough evacuation by gunship or troop carrier.

c. Ground ambulances and other wheeled vehicles may be available. However, the patient's condition may be worsened by transporting him on such a vehicle. You must decide whether it is better to hold and treat the patient or evacuate him by the transportation available.

CHAPTER 3

LIFESAVING MEASURES

3-1. Danger of Acute Hemorrhage

Acute hemorrhage is a rapid loss of blood from the blood vessels. In the event of an acute severe hemorrhage (loss of at least two pints of blood), an emergency is present. If the bleeding is not stopped, the patient will die.

3-2. Blood

Blood is a mixture of water, salts, protein, red and white blood cells, platelets, food, waste, hormones, enzymes, antibodies, and other substances. The three most important elements of blood lost in acute hemorrhage are water, salt, and red blood cells. Water is the fluid that fills the blood vessels so the heart can function properly. Water also keeps other elements in suspension so they can be carried throughout the body. Salt maintains the proper chemical balance of body fluids; it must be contained in fluids used to replace lost blood. Red cells carry oxygen to the whole body including brain, heart, and other vital organs.

3-3. Vascular System

Blood is contained in a system of tubes or vessels called arteries, capillaries, and veins which together form the vascular system. The heart pumps the blood through the system. If a blood vessel is opened, bleeding results.

a. Arterial Bleeding. Blood leaves the heart through the arteries under pressure. If an artery is opened, blood will come out forcefully in spurts. With each beat of the heart there will be a corresponding spurt of blood. The larger the artery, the more rapid the blood loss.

b. Venous Bleeding. Blood flowing through veins is under less pressure than in arteries. However, a break in a vein will allow blood to flow out of it. The rate of blood loss depends upon the size of the opened vein.

3-4. Control of Hemorrhage

Control of hemorrhage is primarily mechanical. The mechanics of control consist mainly of closing off the open blood vessels. This

may be done in several ways. The method most feasible in one instance may not be best in another instance.

a. Direct Pressure. This is the best and usually the most practical, method for the company aidman to use. In this method, blood vessels are compressed against bone and flesh, usually by a pressure dressing applied directly over the wound. Almost any bleeding can be controlled this way. A special type of direct pressure is to apply a clamp directly to the bleeding vessel to close it off. Caution must be exercised that only the bleeding vessel is clamped.

b. Pressure Points. In this method, the artery is compressed at a point proximal to the wound, stopping the flow of blood. This method is not recommended if pressure must be maintained for a long period of time, but may be useful temporarily until a pressure dressing can be applied.

c. Tourniquet. A tourniquet will totally stop the flow of blood in the arm or leg beyond the tourniquet. Consequently, although it will stop the bleeding by compressing all the vessels, it is potentially dangerous because it deprives the uninjured tissues of blood. As a general rule, if a tourniquet is necessary, place it as close as possible to the wound between the heart and the wound to stop the bleeding. Some arteries, however, pass between two bones (as in the forearm) and cannot be compressed by a tourniquet. This would necessitate placing the tourniquet on the upper arm to stop the bleeding. Patients who have tourniquets applied should be clearly identified with a "T" on their forehead. Once applied, a tourniquet should never be loosened or removed, except under the supervision of a medical officer.

d. Elevation. If bleeding from a wound is only venous or capillary, elevation of the wound above the heart may slow the flow of blood. However, elevation is of no value in control of arterial bleeding, and may aggravate fractures.

e. Combination of Methods. A combination of measures is usually most effective. One combination is to use pressure points until a pressure dressing can be applied.

3-5. Clotting

Blood clots are formed by a chemical reaction that occurs when blood platelets escape from blood vessels. Slowing the flow of blood from a wound improves conditions for formation of a clot. A gauze dressing placed over a wound slows the escape of blood and gives it something on which to form a clot. This is another reason why a combination of gauze dressing and pressure is the best method of controlling external bleeding in combat wounds.

3-6. Internal Bleeding

Internal bleeding often results from penetrating or perforating wounds of the body, especially the abdomen and chest. Shock in patients with such wounds is good evidence of internal bleeding. In the field you can do little to control internal bleeding. The patient must be kept still to allow maximum blood flow to vital organs and prevent further internal damage. He should be evacuated as soon as possible. Do not give anything by mouth.

3-7. Anoxia

Anoxia, or lack of oxygen, is the most critical medical emergency. Vital organs, particularly the brain, cannot withstand anoxia—that is, cannot be deprived of oxygen—for more than 5 minutes without being damaged permanently. Oxygen deprivation can occur in one or more of the following conditions.

a. The atmosphere can be deficient in oxygen or contain poisons that prevent the body from using oxygen it takes in. Examples of these poisons are toxic chemical agents (toxic gases), carbon monoxide, smoke, and hot gases.

b. The respiratory system may fail or be prevented from taking in enough oxygen. Respiratory failure can be caused by—

(1) Blockage of the air passages by foreign matter such as water (drowning), mud, blood, vomitus, or wound tissue or by swelling caused by burns or other wounds.

(2) Injury to the part of the brain that controls respiration.

(3) Collapse of the lungs because of chest wounds or filling of the chest cavity with blood.

(4) Depression of the respiratory center of the brain by morphine or other drugs.

(5) Severe, extensive lung disease such as pneumonia.

c. The cardiovascular system may fail to circulate red blood cells. This can be caused by failure of the heart or large blood vessels due to trauma or disease and by insufficient volume in the vascular system due to loss of blood, water, or salt.

3-8. Artificial Respiration in the Acutely Injured Patient

If a patient stops breathing you must assist him immediately. The situation will dictate the method to be used. Regardless of the situation, however, immediate steps must be taken to clear the airway. If spontaneous breathing does not result, positive pressure artificial respiration must be begun (para 3-9). This is the only acceptable method of artificial respiration. It can be given mouth to mouth, mouth to nose, mouth to oral airway tubing, mouth to emergency surgical airway, or protective mask to protective mask by a connecting tube. Mechanical devices for supplying posi-

tive pressure are available at aid stations. Methods using negative pressure, such as the modified Sylvester method, are of no value.

a. Wound of the Face or Neck.

- (1) Clear the airway of blood clots and wound tissue.
- (2) Place the patient in the best position for drainage.
- (3) If the patient is not breathing, and if mouth-to-mouth or mouth-to-nose respiration is not possible, perform an emergency surgical airway and begin positive pressure respiration through this airway.

(4) Get assistance in controlling hemorrhage. Such a casualty may have two life-threatening problems: bleeding and breathing. Alone, you may be unable to save his life.

b. Wounding With Drowning. A soldier wounded while crossing a stream, a swamp, or a paddy often will sink under the water or mud. If you do not have time to recover him and move him to dry ground, you should do the following things—

- (1) Raise his head above the water.
- (2) Clear the airway of mud or debris with your fingers.
- (3) Using mouth-to-mouth respiration, give him one or two quick puffs of air.
- (4) Quickly remove some of his gear if it is too heavy to support.
- (5) Give him a few more quick puffs of air mouth-to-mouth.
- (6) Call for assistance.
- (7) Give him a few more puffs of air mouth-to-mouth while moving him from the line of fire and toward dry land.
- (8) If he is bleeding, request assistance in controlling the bleeding while continuing mouth-to-mouth respiration until his breathing is restored.

c. Blockage of Air Passage by Vomitus. This is a frequent cause of death. Vomiting can be expected in a patient semiconscious from heat exhaustion, or in a painfully wounded patient who has been given morphine, or in a man who has received a blow on the head or abdomen. Vomiting is common in a man who is unconscious, semiconscious, or stuporous while under the influence of alcohol or drugs. Aspiration (breathing in) of vomitus will block the airway. A person's airway can be blocked when he chokes on large pieces of food. Blockage of the airway requires the following immediate actions.

- (1) Clear the airway of the blocking material.
- (2) Give the man a few quick puffs of air mouth-to-mouth. If the blocking material cannot be removed and continues to block the airway, an artificial opening must be made in the trachea (para 3-10).

(3) After the opening has been made, the patient should

begin to breathe. If he does not breathe, you should perform mouth-to-artificial airway respiration. Continue artificial respiration until he is breathing. If there is no carotid pulse, external cardiac massage plus artificial respiration should be performed as described in paragraph 3-11.

d. Failure of Respiration Due to Injury to Nervous System or Overdose of Drugs. At once begin mouth-to-mouth artificial respiration and continue it until the patient can breathe or mechanical respiration is begun.

3-9. Mouth-to-Mouth and Mouth-to-Nose Artificial Respiration

The only acceptable methods of artificial respiration, short of mechanical devices or surgical airway, are mouth-to-mouth and mouth-to-nose. Both are methods of inflating the patient's lungs with the aidman's breath. The mouth-to-mouth method is preferred, but when the patient's jaw is tightly closed by spasm or when he has a mouth wound, the mouth-to-nose method may be used. Both methods are illustrated in figure 3-1. Steps in the expired air technique are as follows.

a. Position the patient on his back.

b. Clear the upper airway by running your fingers behind his lower teeth and over the back of his tongue. Remove any dentures or foreign material.

c. Turn his head face up. Tilt the head back so that the neck is stretched and the chin is up (fig 3-1①).

d. Adjust the lower jaw so that it juts out (fig 3-1② and ③). This positioning moves the base of the tongue away from the back of the throat, thus clearing or enlarging the air passage to the lungs.

e. Seal the airway opening (either the nose or the mouth) which is not being used. The seal must be secure to keep air from leaking during inflation. Pinch the nostril shut with your free fingers or seal the mouth by placing two fingers lengthwise over the patient's lips (fig 3-1④ and ⑤).

f. Take a deep breath. Open your mouth wide and make an airtight seal around the patient's mouth or nose.

g. With your eyes focused on the patient's chest, blow forcefully into his airway. Rising of the patient's chest indicates air is reaching his lungs. If the chest does not rise, you must take these corrective actions.

(1) Hold up his jaw more forcefully and hyperextend his neck.

(2) Blow harder into his mouth or nose, making sure air is not leaking from the other airway opening.

(3) Recheck his mouth for foreign matter. If there is a defi-



Figure 3-1. Steps in mouth-to-mouth and mouth-to-nose artificial respiration.
Manual Provided by eMilitary Manuals - <http://www.emilitarymanuals.com>

nite obstruction of the airway, an emergency surgical opening must be made.

(4) Remove your mouth, listen for the return of air from the patient's lungs. If the exhalation is noisy, elevate his jaw further.

(5) This procedure should be repeated 12 times a minute.

h. If these steps fail to permit inflation of the lungs, an emergency surgical airway must be made.

3-10. Emergency Surgical Airway

Again, most airway obstructions are relieved by nonsurgical measures. Clearing the upper air passages with the fingers, positioning the head, neck, and body, adjusting the lower jaw, or a sharp blow on the patient's back may be all that is needed to dislodge an obstruction. Persistent obstruction of the airway, however, requires an immediate surgical airway for relief. Diagnosis is established when the patient's lungs cannot be inflated by mouth-to-mouth (or mouth-to-nose) respiration.

a. A patient with persistent airway obstruction will be hard to restrain, if conscious, so you will need someone to help you hold him.

b. Quickly get the sharpest cutting instrument you can find.

c. Have your assistant immobilize the patient while you locate the area over the cricothyroid membrane to make an incision.

d. The cricothyroid membrane is the best place to make an emergency surgical airway. It is just beneath the skin in the middle of the front of the neck. It is between the thyroid cartilage ("Adam's apple") just above it and the less prominent (in males) cricoid cartilage below it. See figure 3-2 for location of incision site.

e. While immobilizing the skin and trachea with one hand, make an incision horizontally over the cricothyroid membrane through the skin. Then make a second incision into the larynx through the membrane until a finger-sized opening is obtained.

f. At this point, the patient should make a gasping inhalation through the opening which you have made. Enlarge the opening enough with your fingers to allow complete filling of the lungs. Let the patient breathe through the opening until he is partly stabilized while you assist by stretching the opening.

g. Insert a cannula or a tubelike item into the opening. Secure the cannula in the trachea, as in figure 3-3, to prevent it from being aspirated or dislodged. Any tubelike item may be used, including the barrel of a ball-point pen.

h. Place the patient in a position most comfortable to him.

i. If the patient does not breathe on his own, apply positive pressure respiration to the airway.

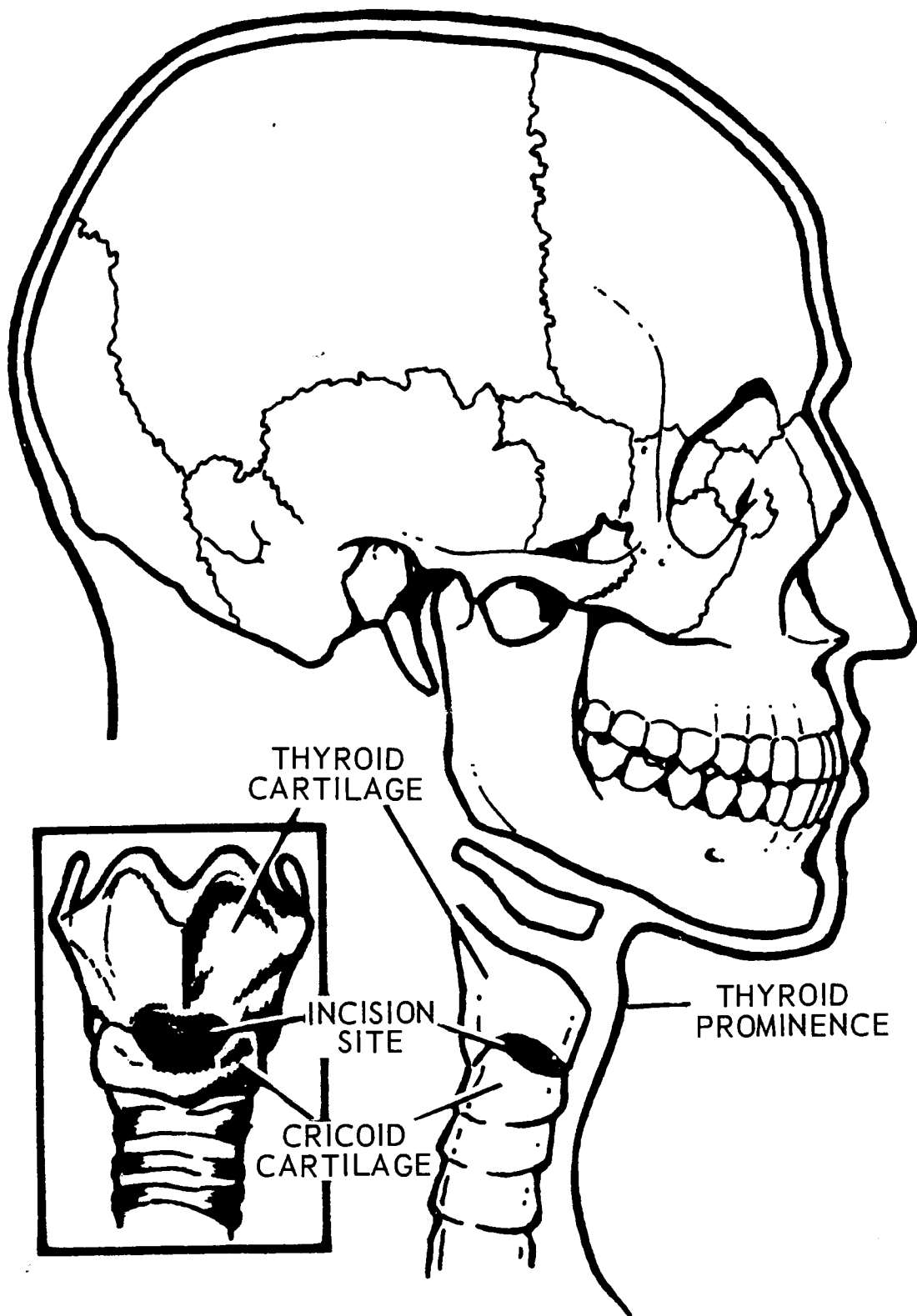


Figure 3-2. Site of incision for cricothyroidotomy.

3-11. Cardiac Arrest (Heart Stoppage)

Cardiac arrest, or heart stoppage, may be caused by insufficient oxygen supply to the heart or the brain, blockage of blood vessels of the heart, heart disease, foreign particles in the bloodstream (embolism), or overdosage of some drugs. Respiratory arrest is the most common cause of cardiac arrest. The heart will stop within minutes after breathing ceases.



Figure 3-3. Cannula inserted and secured in trachea.

a. Signs and Symptoms.

- (1) Absence of a carotid pulse.
- (2) Cessation of breathing.
- (3) Dilated pupils of the eyes.
- (4) Unconsciousness.
- (5) Limp body and flaccid skin.
- (6) Cyanosis.

b. Actions to Take Immediately.

- (1) Roll the victim onto his back.
- (2) Check his airway and remove any obstruction.
- (3) Hyperextend the neck and lift the lower jaw for mouth-to-mouth artificial respiration.
- (4) Give him five quick puffs of air by mouth-to-mouth.
- (5) Place the heel of your hand on the lower half of the sternum and press down until the sternum is depressed about 2 inches, as in figure 3-4①. Repeat this compression about 15 times, about 1 per second.
- (6) Return to mouth-to-mouth artificial respiration and give the victim two respirations.
- (7) Repeat this 15-2 cycle until help arrives or you are certain the patient is dead.
- (8) If help is available, one person should give the cardiac compressions and the other should give mouth-to-mouth artificial