

FIRST AID.

First aid is the immediate and temporary care given the victim of an accident or sudden illness until the services of a physician can be obtained. The first objective is to save the life.

PREVENT HEAVY LOSS OF BLOOD!
MAINTAIN BREATHING!
PREVENT FURTHER INJURY!
PREVENT SHOCK'.
SEND FOR A PHYSICIAN!

Common sense and a few simple rules are the keys to effective first aid. The first aider must remember to:

AVOID PANIC!
INSPIRE CONFIDENCE!
DO NO MORE THAN NECESSARY UNTIL
PROFESSIONAL HELP ARRIVES!

When it is learned there is no doctor in the area, you--as the first aider--must give care to the injured in the best way possible.

SIMPLE FIRST AID REMEDIES!

Always send for a doctor if at all possible.

Keep the victim comfortable, a
(cont'd.)



Dont waste time -
apply pressure DIRECTLY
over the wound. use
compress

blanket or coat to keep them warm is important.

If the injured is on the ground or floor, don't encourage them to try and stand up--this may cause further injury. Keep warm, give what care you can.

Don't use warm water to try and stop the flow of blood. This only increases the flow -- use clean cold water or ice, with a clean compress.

Always use clean compresses or bandage next to an open wound.

If there is a fracture, simple or compound, splint and keep well supported while he is being transported. Improper care of a fracture may result in permanent injury.

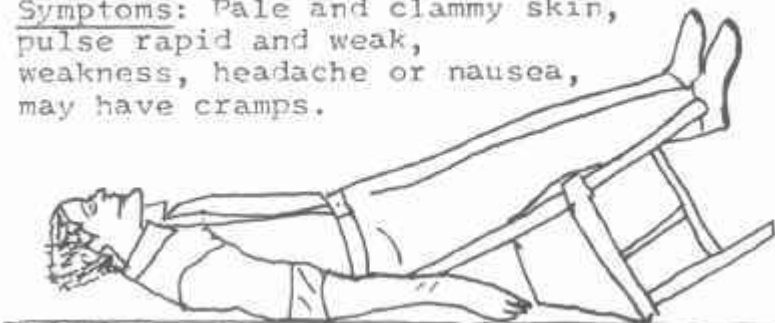
A. sprained wrist or ankle should be bandaged tightly until a doctor can examine and treat same.

Learn how and where to apply pressure to stop flow of blood. (cont'd.)

HEAT EXHAUSTION

Have victim lie down -- head lower than body. Keep in cool place. Give the victim salt water. Call a physician!

Symptoms: Pale and clammy skin, pulse rapid and weak, weakness, headache or nausea, may have cramps.



Remember, haste makes waste in First Aid work; keep cool and think before you act.

Never let the victim know how badly he or she is injured. Make him comfortable, keep warm and act as though it were only a minor injury.

Learn how to properly administer artificial respiration for drowning, electric shock, suffocation, etc.

Always have a small, but complete, FIRST AID KIT with you in your car, on the hike and in the workshop.

Remember, accidents don't just happen, they are caused -- don't you cause an accident, so that you will need that first aid.

BLEEDING ARTERIES

In controlling bleeding from a cut artery, pressure is necessary. This is applied between the cut and the heart at some point where the main artery to the injured part lies close to a bone -- as it is necessary to have some firm object against which pressure may be applied.

The five chief points where these main arteries lie close to a bone are:

(For the artery to the head and neck:)

1. In the neck just to the side of the windpipe, against the backbone;
2. Just in front of the ear against the skull;
3. About one inch forward from the angle of the jaw where a large branch crosses the jawbone;

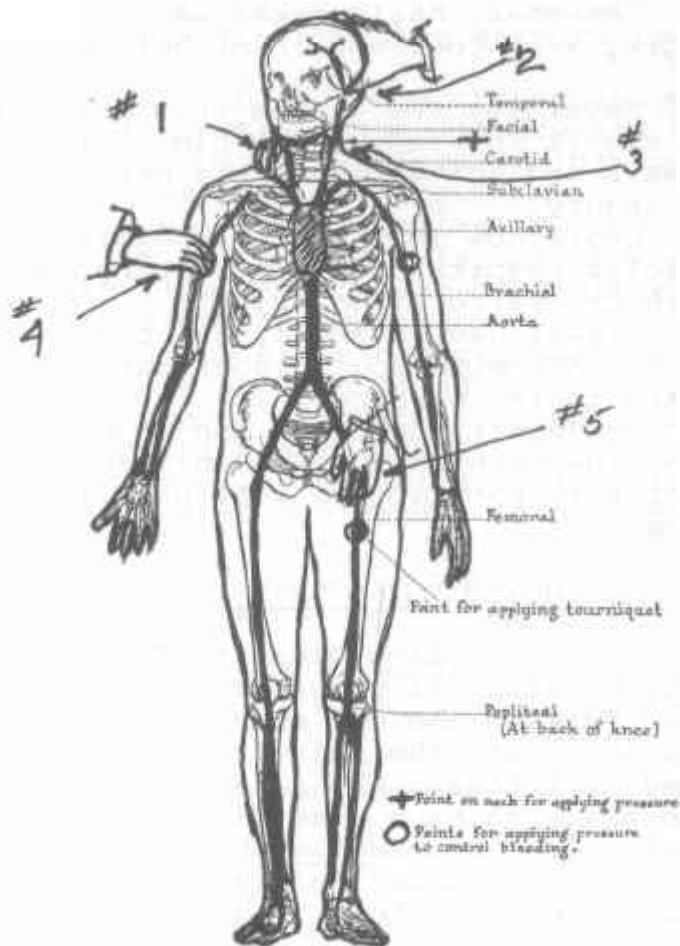


Fig. 6.—Skeleton with main arteries and pressure points.

(For the artery to the shoulder and arm:)

4. On the inside of the upper arm halfway between the shoulder and elbow;
- 4a. Behind the inner end of the collarbone against the first rib;

(For the artery to the lower limbs:)

5. In the groin as it passes over the pelvis bone. However, the point about a hand's breadth below the groin on the inside of the thigh is used also for a pressure point.

(See Fig. 6)

Wherever an artery lies close to the surface its pulsations can be felt. This is known as the pulse. It is best felt at the wrist well to the thumb side.

In taking a pulse, run the fingers gently around the wrist. Do not use the thumb. Always take care to note not only the rate - but also the strength. The rate will average about 72 for a man and faster for a woman.

Blood vessels that carry blood away from the heart are known as arteries. In First Aid only those from which serious bleeding is likely to occur are considered. Many are buried deep within the body and less apt to become injured. It is the arteries near the surface that cause much trouble when injured.

From the arteries similar vessels branch off and rebranch. These are called capillaries. Bleeding from arteries is noticed by its spurting action from the cut in the skin or flesh; as the heart beats, it acts as the pump to circulate the blood around the body. When it is noted the blood just flows easy or comes to the surface slowly, this indicates minor injury - not as serious - and is usually stopped with pads, bandage, and light pressure.

THE RESPIRATORY SYSTEM

Respiration is the act by which air is drawn into the lungs and expiration is the expelling of air from the lungs. Respiration supplies the blood with oxygen. Respiration occurs about 17 times per minute, but may vary from 13 to 25 times in a healthy person.

DRESSINGS AND BANDAGES

As proper care of wounds to prevent infection is of prime importance, one should have definite knowledge of materials that may safely be used next to the wound, have skill in applying bandages to hold these in place, and have the ability to handle properly the materials used.

Dressings or Compresses--Dressing or compress is the name given to material applied directly over a wound or burn. The material most commonly used is gauze, although cotton, wrapped in gauze, is sometimes used. Gauze is better than other cotton cloth as it is more absorbent and allows more circulation of air. Do not use absorbent cotton directly over a wound or burn, as it sticks and is very hard to remove.

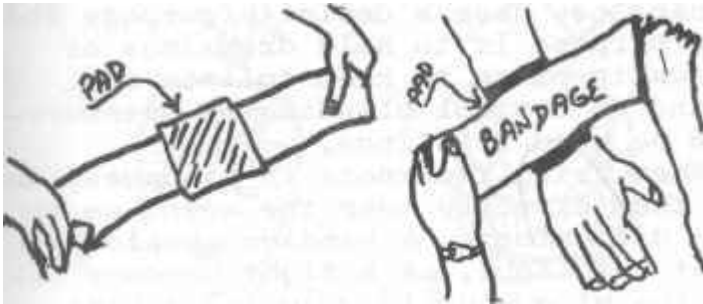
Since a compress is for the use directly over an open wound or burn, it must not only be clean in the ordinary sense, but must also contain no germs, that is, it must be sterile.

Sterile dressings or compresses are manufactured in various sizes in order to be most serviceable for the kind of wounds for which they are intended. During the process of manufacture, the germs are killed

by heat, usually steam under pressure. In most First Aid kits these dressings are sealed in individual waxed paper packages, which, if unbroken, insure their remaining sterile. These especially prepared sterile dressings or compresses are always superior to improvised ones.

The dressing or compress should be large enough to cover the entire area of the wound or burn; and some margin is always desirable. If the tails on certain compresses are too short, they may be spliced with any convenient material as they do not come into direct contact with the wound.

Never use adhesive tape, electrician's tape, court plaster, collodion or similar preparations directly on a wound.



Bandage compresses - A bandage compress is a dressing consisting of a pad made up of several thicknesses of sterile gauze sewed to the middle of a strip of gauze or muslin. There are several sizes--the most common being 2", 3" and 4" square. They are suitable for use on any wound or burn which they will cover. (See Fig. 11 for illustration)

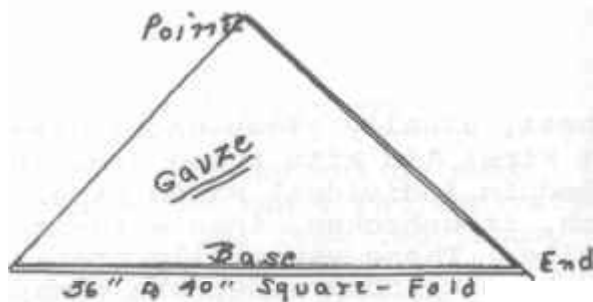


Fig. 15.--Triangular bandage.

GENERAL DIRECTIONS FOR BANDAGING

Bandages are not applied directly over wounds; the wound must always first be covered with a dressing.

The square, or reef knot, is used in tying all bandages, unless otherwise specified. Extreme care should be applied in handling all bandages and the sterile pads which are to be applied over a wound or other type injury.

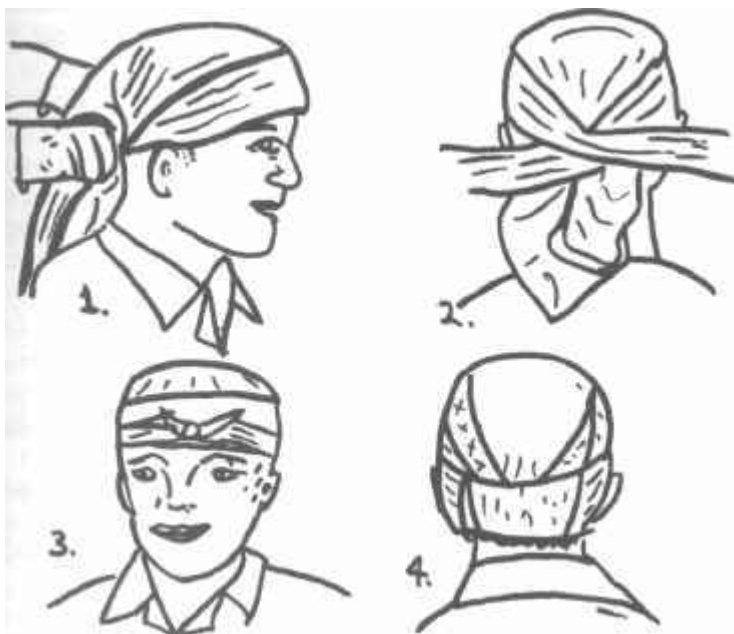
Bandages have a definite purpose and its main purpose is to hold dressings or compresses in place, to keep splints in place, and to control bleeding by pressure--may also be used as slings.

When tying the knots in bandages, do not tie them directly over the wound so as to cause discomfort. A bandage should be firm, but not tight, as a tight bandage may cut off the blood supply, causing severe pain or gangrene. Remember that swelling usually follows an injury and a bandage that was just right when applied may become too tight, cutting off the blood supply as swelling takes place.

Never apply a wet bandage. Cotton cloth or bandage applied wet tends to shrink and becomes too tight as it dries. Do not apply a bandage too loose, as it may slip and expose the wound.

Kinds of Bandages: The bandages used in First Aid are the triangular bandage (See Fig. 15), roller bandage, and four-tail bandage. The triangular is most valuable of the three, as it stays on well--without adhesive tape and is easy to improvise from any kind of cloth.

PUT STERILE COMPRESS OVER WOUND



TRIANGULAR HEAD BANDAGE

TRIANGULAR BANDAGE USED OPEN OR UNFOLDED

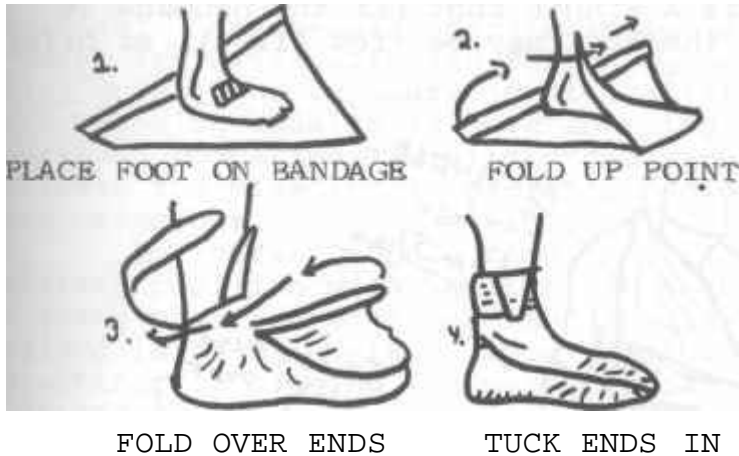
1. Head.--Used for keeping a compress in place on the scalp or forehead, especially where the compress is large or there are several wounds.

Fold a hem $1\frac{1}{2}$ inches wide along the base. With the hem to the outside, place the bandage on the head so that the hem lies on the forehead close down to the eyebrows and the point hangs, down the back. Carry the two ends around the head above the ears and cross (not tie) just below the bump at the back of the head. Draw ends tightly; carry them around the head and tie them in the center of the forehead. Steady the head with one hand and with the other draw the point down firmly to hold compress securely against the head. Turn point up and tuck in, or pin with safety pin, at the back of the head.

2. Hand or Foot.--This bandage is especially useful when the injury is extensive and the dressing of considerable size as with an extensive burn or mangling injury.

With the triangle spread out, place the hand, palm down, so that the middle of the base comes well up on the wrist. Fold the bandage back around the tips of the fingers over the back of the hand so that the point comes well up on the wrist or forearm. Each half of the edge formed at the end of the fingers is then carried back toward the wrist parallel to the hand to take up slack and make a smoother bandage. Cross the ends around the wrist and tie. The number of times around depends on the size of the bandage. The point, if long, is then turned back towards the fingers over the crossed ends and tucked under them.

The bandage is applied to the foot in exactly the same way with the middle of the base on the ankle two or three inches above the heel, the toes turned toward the point, and the point brought around the toes and over the top of the foot. The ends are crossed around the ankle and tied.



3. Arm Sling.--In all cases where the injury is to the hand or lower forearm, the hand should be elevated four or five inches above the level of the elbow. In fracture of the upper arm or dislocated shoulder this is not necessary and there should be no marked upward pull at the elbow. The sling made with the triangle used open or unfolded is the one recommended for first aid work, except fracture of the upper arm.

Place one end of a triangular bandage over shoulder of uninjured side, and let the other end hang down in front of the chest. Carry the point behind elbow of injured arm. Bend the elbow so that the hand is elevated about four inches above level of elbow. Carry the second end of

the bandage up over the shoulder on the injured side and tie the two ends together at the side of the neck. Twist the point of the bandage until it is snug at the elbow and tie a single knot (if the bandage is small the knot may be tied first), or bring



the point forward and pin to the front of the sling. The ends of the fingers should extend just beyond the base. This allows one to observe whether or not the circulation is cut off.

An arm sling may be improvised by pinning the sleeve to the clothing, or turning up the lower edge of a coat or shirt and pinning in place.

NOSEBLEED

Nosebleeds may occur spontaneously or as a result of injury. There may be an underlying disease, such as high blood pressure, but in many cases there is no disease. Some people, particularly in youth, are often affected following activity, colds, and exposure to high altitude. The bleeding usually is more annoying than serious. Occasionally with underlying disease the bleeding is profuse, prolonged, and dangerous.

The person should remain quiet. A sitting position with head thrown back, or a lying position with head and shoulders raised is best. Walking about, talking, laughing, or blowing the nose may cause increased bleeding or resumption of bleeding.

Usually the bleeding area is near the tip of the nose. Pinching the nostrils together puts pressure upon this area. It may be necessary to pack the bleeding nostril lightly and then pinch. It may be necessary to maintain pressure with a small amount of gauze for several minutes, occasionally considerably longer. Sometimes cold wet towels, applied to the face, stop the bleeding.

WOUNDS

OBJECTIVE: To protect the wound from contamination and control bleeding.

DEFINITION: A wound is a break in the skin or mucuous membrane. It is caused by force and usually extends into the underlying tissue. Wounds may be classified into four types.

1. Abrasions, made by rubbing or scraping. Floor burns or scuff burns, although called burns, are true wounds.
2. Incised wounds, sharp cuts that tend to bleed freely.
3. Lacerated wounds, jagged or irregular wounds, often associated with much tissue damage.
4. Puncture wounds. A tack, run through the skin, makes a typical, small puncture wound.

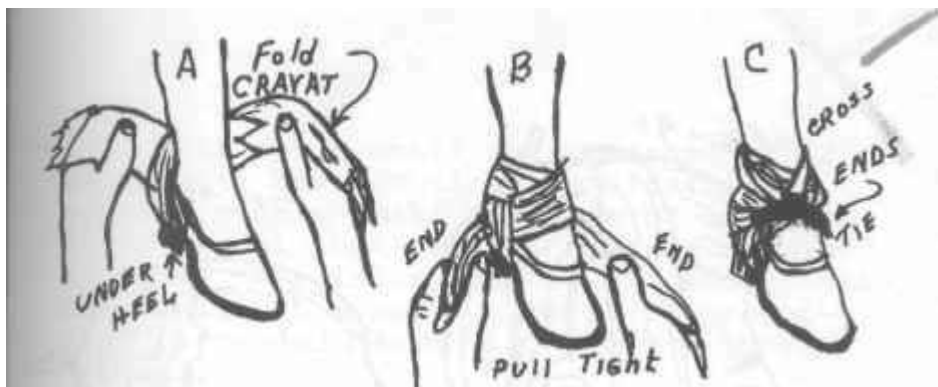
Wounds are subject to infection and bleeding. Deep wounds may be complicated by injury to internal organs and by fractures.

INFECTION

The growth of harmful germs in a wound constitutes a wound infection. First aid treatment for the lacerated wound would be to determine how severe the blood is flowing from the wound. First obligation is to stop the bleeding and then apply first aid to prevent infection by germs. Cover with a pad and gauze bandage. (If it be a minor cut, usually a Band-Aid will suffice.)

TEMPORARY BANDAGE TO SUPPORT A SPRAINED ANKLE

Leave the shoe on. If the shoe is high-topped, loosen the laces to allow for swelling. Place the middle of a narrow cravat under the shoe just in front of the heel. Carry the ends up and back, crossing them at the back of the heel (A); continue around the ankle crossing the ends over the instep, then downward toward the arch to make a hitch under the cravat on



each side, in front of the heel. Pull the ends in opposite directions (B) to achieve the desired tension. Cross the ends over the instep and tie them (C).

FOUR-TAILED BANDAGE



This bandage derives its name from its appearance. A piece of cloth about 3 feet long and from 3 to 8 inches wide, is split down the middle from each end, as shown in Figure 39. A strip about four inches wide makes a good jaw bandage--the 4-inch bandage-compress can well be used for this. Gauze can be used, but heavier cloth is more satisfactory.

This is the best bandage for wounds of the chin and lower jaw (Fig. 40) but it should not be used for fracture of the jaw. It may be used for wounds of the nose (Fig. 41), likewise for the head and crotch.



FOREIGN BODY IN THE EYE

If there is a foreign body in the eye, do not rub the eye. The most common place for foreign bodies to lodge is on the inner surface of the upper lid. Tell the patient to look down. Grasp the edge of the upper lid moderately firmly, make slight pressure on the skin surface of the lid with the side of a blunt pencil or the side of a match stick, and try to turn the inner surface of the lid outward. If the foreign body is seen on the inner surface of the lid, it can easily be removed by touching it with the corner of a clean handkerchief. If the foreign body is seen on the surface of the cornea (the clear front part of the eye), have the patient wink several times and see if it can be dislodged. If the foreign body is embedded and cannot be dislodged, do not attempt to remove it. Have the patient close the eye, place a pad or a piece of moist cotton over the closed lid, bandage, and obtain medical attention.

If the eyeball is scratched or if an object, however tiny, penetrates the eyeball even a small fraction of an inch, it is urgent that medical care be obtained at once. The injury may be extremely serious though it appears minor. If protection is needed meanwhile, apply a loose bandage.

ELECTRIC SHOCK

Causes.--An electric current passing through the body is the most frequent cause of electric shock. The ordinary house current is sufficiently strong, under certain conditions, to cause the trouble. Lightning also causes electrocution.

Prevention.--Never touch a swinging wire; it may be crossed with a "live" wire somewhere along the line.

Do not use electrical equipment of any kind that has the insulation broken or that is "shorted". Have it repaired or replaced.

Only a good grade of electrical equipment should be purchased.

Symptoms.--In electric shock, the current may pass through the breathing center at the base of the brain and cause this center to stop sending out the nervous impulses which act upon the muscles responsible for breathing. In consequence, breathing stops abruptly. If the shock has not been too severe, the breathing center recovers after a time and resumes the vitally necessary duty of sending impulses to the muscles of breathing, providing that a sufficient supply of air has been furnished the body meanwhile by

artificial respiration. Cases are recorded where eight hours' work was necessary before the breathing center recovered from the paralyzing effect of the current and the patient began to breathe of his own accord.

The patient is usually blue, although occasionally he may be very white. The pulse is weak or entirely absent. Unconsciousness is complete. Burns may be present. Occasionally the body becomes rigid or stiff in a very few minutes. This is due to the action of the electricity and is not to be considered "rigor mortis". This stiffness is not a sign to stop artificial respiration, as a few of such cases are reported to have been revived.

Rescue.--An attempt to rescue a victim from contact with a live wire by one who is not well trained in electrical matters is always dangerous. Very great care must be used lest the rescuer may himself be another victim of the accident.

The victim must be freed from contact with the live conductor as promptly as possible. But the rescuer must not get in contact with the live wire or other conductor, such as the victim's body.

If a switch is near, turn off the current, but lose no time in looking for one. Have someone telephone the power company to shut off the current.

Use a long dry stick, dry board, dry rope, dry clothing, or other non-conductor to remove the wire from the man or the man from the wire. Be sure the material is dry. One should stand on a dry board, or other dry material.

The use of one's hands without protection is dangerous.

Treatment.--Start artificial respiration immediately, or as soon as the body is removed from contact where this is necessary.

Do not regard early rigidity or stiffening as a sign for ceasing artificial respiration. Resuscitation should be continued three or four hours even though there is no sign of revival.

GAS POISONING

Causes.--Carbon monoxide causes most of the trouble in gas asphyxiation cases. It is a colorless, odorless gas, slightly lighter than air and is found in automobile exhaust gas, manufactured gas used for illuminating and heating, smoke from fires and coal stoves and furnaces, coke oven gas, blast furnace gas, and other manufactured gases. Gas in sewers and manholes frequently contains carbon monoxide due to leaks from adjacent gas lines.

As little as 0.02 per cent (one part in 5,000) of carbon monoxide in air will produce symptoms of poisoning in several hours and 0.2 per cent may cause unconsciousness in thirty minutes. One per cent will kill in a few minutes. A small automobile may produce enough carbon monoxide to render an average-sized closed garage deadly in five minutes.

Prevention.--Do not breathe gas yourself, even for a short time. If it does not overcome you, it will cut down your strength. If you have to go into gas to rescue a man, remember that nobody is

immune. Protect yourself. A mask equipped with an air hose or an oxygen breathing apparatus should be worn.

A handkerchief tied about the nose and mouth is not a gas mask; many have died in the belief that it is. It does not stop carbon monoxide. It simply filters off the irritating fumes in smoke.

Do not run an automobile engine in a closed garage. Neither should one sit in a closed parked car with the engine running. The hot exhaust gas tends to rise and may leak through openings in the floor.

Know the location of the gas meter in the home and how to turn it off in case of emergency. Do not use the gas meter as a shelf or rack upon which to place articles, and never obstruct the passageway to it.

Do not at any time ignore the apparent odor of illuminating gas. Ventilate the premises and request competent advice from your gas company.

Use care when boiling liquids on a gas stove so that they do not boil over and extinguish or partially extinguish the gas flame.

Do not attempt to find a gas leak with a lighted match or candle. Use a flash light.

Avoid the use of tubing to connect gas heaters, especially in sleeping rooms. This type of connection is not dependable, and is subject to deterioration with resultant leakage of gas. If it must be used, only the highest grade of flexible tubing should be purchased and then frequently inspected.

Do not leave a gas flame burning low in a room where one is sleeping.

Only equipment purchased from a reliable dealer, and properly installed, should be used.

Process of Poisoning.--The red blood cells carry oxygen from the lungs to the various parts of the body. Carbon monoxide when breathed in, combines with these red blood cells more than 250 times as readily as oxygen. The more carbon monoxide there is in the blood, the less oxygen it can carry. Although there may be only a small percentage of carbon monoxide present in the air breathed, this gradually accumulates and displaces the oxygen in the blood, causing the body to suffer from oxygen starvation just as if the patient were being choked to death. The first decided symptoms, during rest, make their appearance only when the blood is saturated with about 30 per cent of the gas. Death occurs when the saturation attains about 80 per cent.

The brain is the part of the body most seriously affected, and unconsciousness, stopping of breathing, and finally death, result chiefly from the brain's lack of oxygen.

Symptoms.--These vary considerably with the concentration of gas in the air breathed, and all cases may not begin in the same way. In mild cases the symptoms are usually yawning, headache, dizziness, nausea, weariness, ringing in the ears, and later a fluttering or throbbing of the heart. However, the symptoms may come on so gradually or suddenly that the victim is unaware of any trouble until the knees give way and the man, even though still conscious, cannot walk or crawl.

Unconsciousness and death follow. The skin often is a peculiar cherry red color in gas cases although it may be the blue of other asphyxiation cases.

Treatment.--The first thing to do is to get the patient into fresh air quickly. Fresh air need not mean the out-of-doors in cold weather. Many men have walked from a warm room containing gas to collapse in the cold air outside. Take the patient to a room free from gas and comfortably warm. Be quick, but not unnecessarily rough.

If breathing has stopped, or is present only in occasional gasps, start artificial respiration at once and continue until normal breathing is resumed, or until rigor mortis has set in. For additional measures use those previously given under Standard Technique.

If the patient does not die in the gas, but is removed to fresh air and, if needed, given artificial respiration, the carbon monoxide gradually leaves the blood. Some patients who are still breathing normally often cannot get the gas out of their blood fast enough to prevent their being very sick, or even dying, afterward. Oxygen given to these patients helps greatly to drive the carbon monoxide from the blood. Pure oxygen does not stimulate breathing. For this reason, a mixture of about 93 per cent oxygen and 7 per cent carbon dioxide is most frequently used. The carbon dioxide content stimulates the breathing center in the brain and causes the patient to breathe more deeply, thus allowing the oxygen to drive the carbon monoxide rapidly out of the blood. The carbon dioxide also aids in keeping breathing from stopping. It may help to start

breathing more quickly in those on whom it may be necessary to do artificial respiration. Pure oxygen may be used if the oxygen-carbon dioxide mixture is not available.

The oxygen-carbon dioxide mixture, or oxygen, can be administered properly only with an approved inhalator.

SOME DON'TS IN FIRST AID!

DON'T get excited.

DON'T step over an injured person while treating him.

DON'T wash out a laceration with unclean water.

DON'T apply a bandage or dressing to bleeding injury without first placing a gauze pad.

DON'T encourage injured person to get up and walk.

DON'T apply a tourniquet without placing a tag showing time applied and where.

DON'T leave on over three minutes.

DON'T apply tourniquet if hand pressure can be used.

DON'T move a victim with a fracture unless splints have been applied.

DON'T let victim know his injuries.

DON'T forget -- treat for shock -- keep patient warm.

INJURIES TO BONES AND JOINTS

Fractures

Simple or closed fracture



Compound or open fracture



Fig. 42

Objective: To keep the broken bone ends and the adjacent joints quiet

A fracture is a break in a bone. There are two principal kinds, simple and compound. A simple fracture is a closed fracture not associated with an open wound extending from the skin to the fracture area. (See Fig. A) When such wound is associated, (See Fig. 3) the fracture is

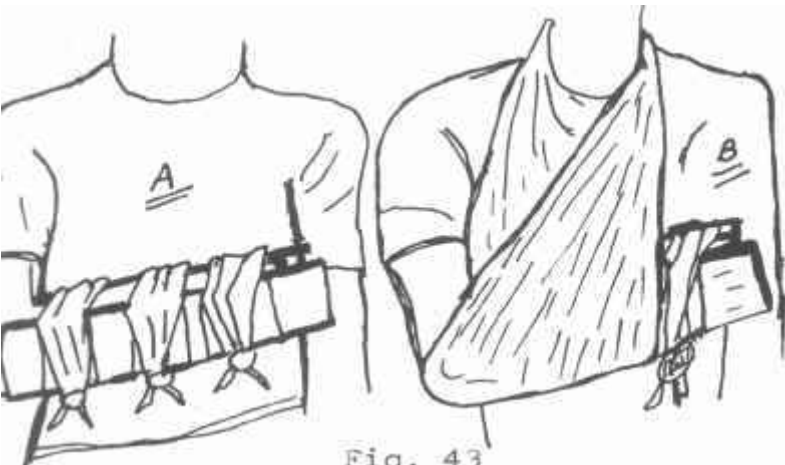


Fig. 43

Immobilization of fractured forearm.

Arm sling added for further support.

an open or compound fracture. In an open fracture the wound usually is inflicted by a broken bone end that tears through the skin and, in most cases, slips back again. Sometimes it is caused by a missile, such as a bullet, that penetrates the skin and breaks a bone. Open fractures are much more serious than closed ones because the fracture area is always contaminated and infection is virtually certain unless prevented by effective treatment.

Causes and Prevention--Falls and traffic accidents are the commonest causes of fractures. Machinery and missiles also cause many.

Traffic accidents are a leading cause of accidental death and injury. Safety on the highway depends upon many factors--but primarily upon the attitudes of drivers and walkers.

About three fourths of the deaths from falls in the home occur in those over age 65. Younger people, however, account for some deaths and many nonfatal injuries. Safe construction, good housekeeping, appropriate education and care in day-by-day living are the facets of a sound preventive program here, as with other accidents. Tension, haste, and fatigue help pave the road to the hospital.

Signs and Symptoms--Since a fracture is an injury beneath the skin surface, it cannot be seen except in occasional cases. The question to answer, therefore, is "Shall I suspect a fracture?" If the answer is "Yes", the proper first aid is to handle as though a fracture were proved.

Evidence is based upon the story of what happened to the victim, the victim's

reevaluation of his injuries, his reactions after the accident, and the examination. Obtain the story accurately and in detail. Exactly what happened to the person? Was the force sufficient to break a bone? Regard the evidence so obtained as being only a bit of help. A strong force may not cause a break. On the other hand, surprisingly little force may cause fracture if the leverage is right, or if the victim is elderly or in a weakened condition.

Consider the victim's evaluation. He may have felt the bone break or believes that a break is present. Consider also what he did after the accident and how it affected him. If the victim believes that a fracture is present, always weigh this evaluation strongly. He is frequently correct; but if not, no harm is done by splinting. However, do not rely on the victim's evaluation alone. You must conclude from the overall evidence.

The direct evidences are swelling, tenderness to touch, deformity, and pain on motion. Swelling requires some time to develop. Often the general area overlying the fracture is only slightly tender, but perhaps one small spot will give considerable pain when pressed upon. The fracture probably is directly below. The body part may be out of normal shape. You can detect deformity and swelling in doubtful cases by comparing the part with the other side of the body or with your own body. If the victim tries to move the body or body part so that there is motion, pressure, or tension at the fracture site, he generally has pain. When completely at rest, a fracture usually

gives no pain, but a feeling of fullness or swelling. Note, however, that a person can move a fractured bone; often he can move the parts below the break with little or no real distress. For example, if the wrist has a fracture, the fingers ordinarily can be flexed, often with no noticeable pain.

In summary, obtain the story of what happened, learn the victim's evaluation and his reactions, and then check the body carefully for physical evidence. If there is enough overall evidence to base suspicion that a break is present, play the safe side. Be particularly cautious with deep-lying bones: possible breaks of the upper part of the thigh, the upper part of the arm and the shoulder, the backbone, and the pelvis. With them, swelling, tenderness, and deformity may be absent; as clues, you may have only the story of the accident, the victim's evaluation, and his reluctance to move the part. Never test for fracture by having the victim move the part or by attempting to walk upon a possibly broken limb.

If the fracture is compound, there is a wound adjacent to the fracture site. It may be tiny or large. The bone may protrude, but usually it has slipped back if it caused the wound. As with simple fractures, there may be discoloration of the nearby skin because of rupture of blood vessels.

Essentials of first aid.--Keep the broken ends quiet. Keep the adjacent joints quiet. If they bend, the muscles act against the fractured bone, causing motion.

Give first aid for shock.

If the fracture is compound, apply a sterile dressing to the wound. Control hemorrhage by direct pressure. If splints are to be applied in cases where bleeding has been severe, leave a tourniquet loosely in place above the wound so that if bleeding resumes it can be quickly controlled. Do not push a protruding bone back. If splinting and transportation are necessary, the end will slip back when the limb is straightened for splinting.

Fractures, dislocations, and sprains should be treated with an ice bag over the painful area. This limits and reduces swelling and pain.

Preventing motion of fragments.

Many methods can be used to prevent movement of the fractured bone. Choice depends, in part, upon the specific bone. Fractures of the extremity bones are usually splinted, but partial immobilization of them is attained if they are placed upon pillows. Transportation of back and pelvis fracture cases by stretcher, door, or cot suffices alone. With fractures in the upper extremity, splints may be used; in some cases an arm sling helps immobilize. Breaks of the ribs, face and skull bone need no immobilization device; they are usually "splinted" by adjacent bone and tissue.

Improvised splints should be carefully fashioned or selected. Heavy, irregular, unwieldy items probably do more harm than good. It is wise to keep splints in the home, the automobile, and the workshop.

Specific immobilization methods.

Good ways to immobilize specific injuries are described in Fig. 43. They can serve

in case of fracture, internal injury, or severe wounds, all of which benefit from immobilization during the first aid period. Occasionally, other devices and methods, suggested by particular circumstances and the availability of materials, may serve as effectively if they keep the injured area of the broken bones and adjacent joints quiet.

Sometimes a limb must be straightened a bit before a splint can be applied. If so, have someone grasp the end of the limb and exert a strong, steady pull, while you place one hand just above the injury and one just below it, thus supporting the site during the straightening process. If the body must be rolled over, it may be best to apply the splint first. If not, support the injury as above described while the patient is being turned. In case of possible back injury, use extreme caution if turning is necessary, being sure to turn the entire body as a unit so that no part twists or turns faster than the other parts. As far as possible, the patient should be kept lying face down.

THREE-MAN LIFT

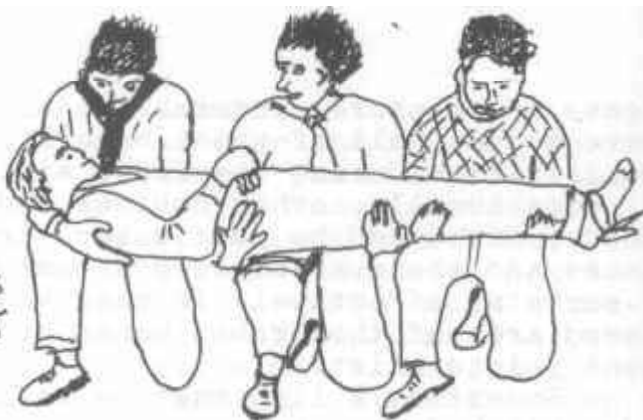
For Loading Stretcher or Carry



FIG. 44.

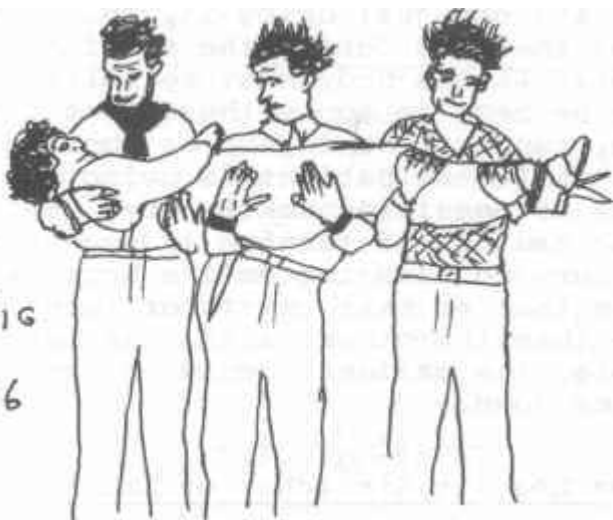
Loading a Stretcher--Three bearers are

FIG
45



required and a fourth is desirable. Normally, they should be physically strong and able to understand orders.

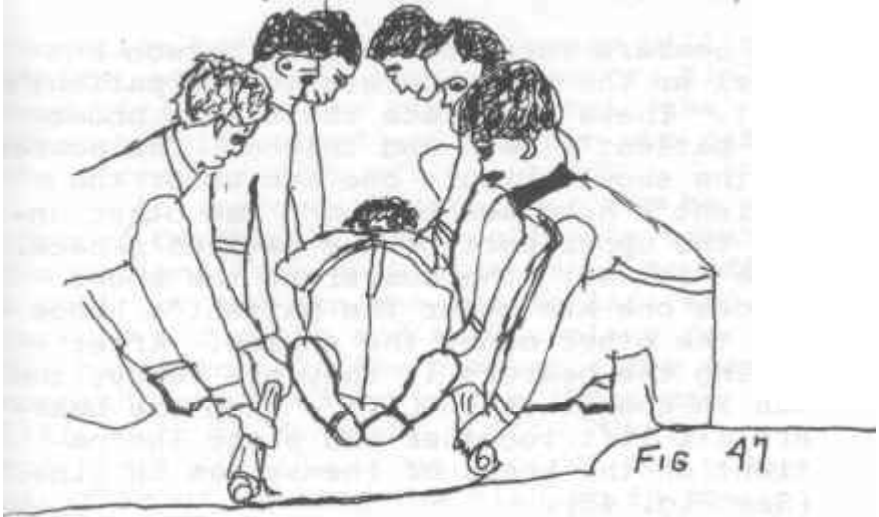
FIG
46



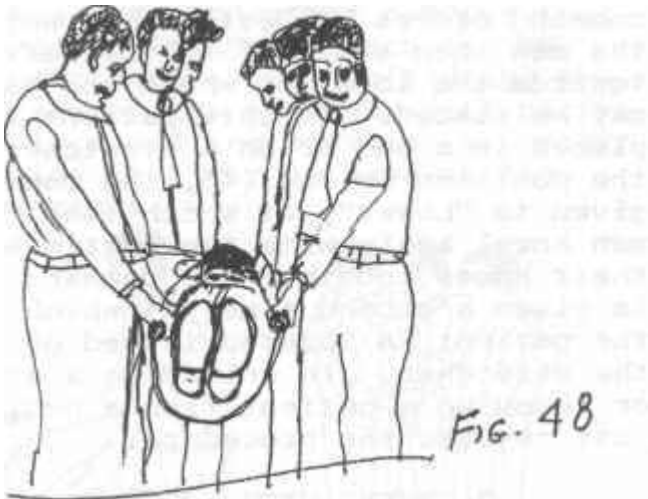
Follow this procedure. If you have a stretcher, have one of the bearers place the stretcher close to the injured man in a straight line with the patient. Place the patient on his back and, preferably, tie his feet with a cravat.

Have three bearers take position on one side of the patient and one bearer on the opposite side. If the injury is

on one side, the three bearers should then



be located on the uninjured side. The first man takes his position at the



shoulders - one at the hips and the third at the knees. The fourth should take a position at the hips on the opposite side, unless given a special injured part to care for. (See Fig. 44 for position of the three men who will lift the patient.)

All bearers face the injured person and kneel on the knee nearest to the patient's feet. These men place their arms under the patient's back and thighs. The bearer at the shoulder puts one arm under the patient's head and neck and the other under the upper part of the patient's back. (See Fig. 45) The bearer at the knees places one arm under the patient's knees and the other under the ankles. After asking the bearers if they are ready, the man in charge says "Lift", then the bearers all lift together and place the patient on the knees of themselves in line. (See Fig. 45).

To be in a position to be able to carry the patient without a stretcher see Fig. 46, at which time the man in command orders "Sidestep", at which time the men then step off to the left or towards the location where the patient may be placed. If this patient is to be placed in a bed or on a stretcher from the position in Fig. 46, the command is given to "Lower", at which time the three men kneel again with the victim across their knees and then the command "Lower" is given a second time, at which time the patient is lowered in bed or on to the stretcher. In unloading a stretcher, or removing a patient from a bed, you just reverse the procedure.

CARRYING WITH A STRETCHER

After the patient has been lowered to the stretcher, it is possible to carry this patient with only two men, one at each end of the stretcher. The patient may be carried feet first, the

exception being to go up a steep hill or stairs, when it is better to carry him head first. At the given signal, the stretcher is raised and the men who carry the stretcher step off in step.

An improvised stretcher can be a strong, durable blanket, rolled in toward the patient from each side so as to offer a roll for the men who are to lift and carry -- a durable and secure place for the hands to hold the blanket. The same commands are used as in the three-man lift, such as "Ready", "Lift", "Carry", and "Feet First". (See Fig. 47 for preparation of rolling the blanket in toward the victim and see Fig. 48, which shows the men ready to step off with the patient.)

There are many other carries that can be used in first aid, such as the two-man chair carry, fireman's drag, a cradle formed by men, who will carry a patient in a sitting position and many other carries that may be used as the case so warrants.

