Effective Healthcare With No Doctor

Medical Emergency Survival

Table of contents

Health care responsibility

Health is more than not being sick. It is well-being: in body, mind, and community. People live best in healthy surroundings, in a place where they can trust each other, work together to meet daily needs, share in times of difficulty and plenty, and help each other learn and grow and live, each as fully as he or she can.

I've written this book for situations when the doctor is not available, but even if the doctor is around, people can and should take the lead in their own health care. So this book is for everyone who cares.

Ordinary people provided with clear, simple information can prevent and treat most common health problems in their own homes—earlier, cheaper, and often better than can doctors.

Also, people with little formal education can be trusted as much as those with a lot. And they are just as smart. Basic health care should not be delivered, but encouraged.

Basic cleanliness and protection

To prevent the spread of germs, always wash your hands with soap and water before and after giving first aid.

When a person is hurt, the most important thing is to help. But you also must protect yourself from HIV and other blood-borne diseases. When someone is bleeding:

1. If possible, show the injured person how to stop the bleeding themselves, by applying direct pressure on the wound.

2. If they cannot do this, keep the blood off yourself by wearing gloves or a clean plastic bag on your hands, and placing a clean, thick cloth directly over the wound before applying pressure.

Avoid objects soiled with blood. Be careful not to prick yourself with needles or other sharp objects around the person you are helping. Cover cuts or other wounds with dry, clean bandages to protect them.

Be especially careful when you have to provide first aid where there are many people wounded from an accident or fighting.

If you do get blood or other body fluids on you, wash your hands with soap and water as soon as possible. If other parts of your body were touched by body fluids (especially your eyes), wash them thoroughly with lots of water.

FEVER

When a person's body temperature is too hot, he has a fever. Fever is not a sickness, but a sign of many different sicknesses. A high fever (over 39°C or over 102°F) can be dangerous, especially in a small child.

When a person has a fever:

1. Uncover him completely. Small children should be undressed completely and left naked until the fever goes down.

To wrap up a child with fever is dangerous.

2. Also take aspirin to lower fever.

For small children, it is safer to give acetaminophen (paracetamol). Be careful not to give too much.

3. Anyone who has a fever should drink lots of water, juices, or other liquids. For small children, especially babies, drinking water should be boiled first (and then cooled). Make sure the child passes urine regularly. If she does not pass much urine, or the urine is dark, give a lot more water.

4. When possible, find and treat the cause of the fever.

Very High Fevers

A very high fever can be dangerous if it is not brought down soon. It can cause seizures (convulsions) or even permanent brain damage (paralysis, mental slowness, epilepsy, etc.). High fever is most dangerous for small children.

When a fever goes very high (over 40°), it must be lowered at once:

1. Put the person in a cool place.

2. Remove all clothing.

3. Fan him.

4. Pour cool (not cold) water over him, or put cloths soaked in cool water on his chest and forehead. Fan the cloths and change

them often to keep them cool. Continue to do this until the fever goes down (below 38°).

5. Give him plenty of cool (not cold) water to drink.

6. Give a medicine to bring down fever. Aspirin or acetaminophen works well.

Dosage for acetaminophen or aspirin (using 300 mg. adult tablets):

Persons over 12 years: 2 tablets every 4 hours

Children 6 to 12 years: 1 tablet every 4 hours

Children 3 to 6 years: 1/2 tablet every 4 hours

Children under 3 years: 1/4 tablet every 4 hours

Note: Acetaminophen is safer than aspirin for a child under 12 years old who has a cold, flu, or chickenpox.

If a person with fever cannot swallow the tablets, grind them up, mix the powder with some water, and put it up the anus as an enema or with a syringe without the needle.

If a high fever does not go down soon, if the person is unconscious, or if seizures (fits, convulsions) begin, continue cooling with water and seek medical help at once.

SHOCK

Shock is a life threatening condition that can result from a large burn, losing a lot of blood, severe illnesses, dehydration, or severe allergic reaction. Heavy bleeding inside the body—although not seen—can also cause shock.

Signs of SHOCK:

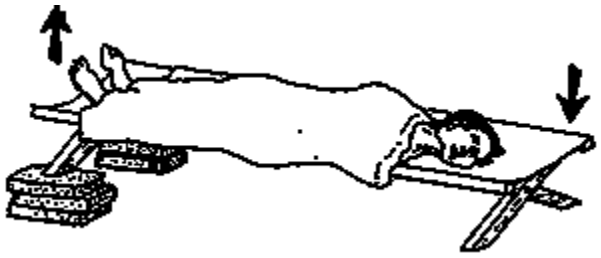
- weak, rapid pulse (more than 100 per minute)
- 'cold sweat'; pale, cold, damp skin
- blood pressure drops dangerously low
- mental confusion, weakness, or loss of consciousness.

What to do to prevent or treat shock:

At the first sign of shock, or if there is risk of shock . . .

♦ Loosen any belts or tight clothing the person may be wearing.

♦ Have the person lie down with his feet a little higher than his head.



However, if he has a severe head injury, put him in a 'half sitting' position.

♦ Stop any bleeding. Use gloves or a plastic bag to keep the blood off your hands.

♦ If the person feels cold, cover him with a blanket.

♦ If he is conscious and able to drink, give him sips of water or other drinks. If he looks dehydrated, give a lot of liquid, and Rehydration Drink. If he does not respond quickly, give intravenous fluids if you know how.

♦ Treat his wounds, if he has any.

♦ If he is in pain, give him aspirin or another pain medicine—but not one with a sedative such as codeine.

♦ Keep calm, reassure the person, and seek medical help. If the person is unconscious:

♦ Lay him on his side with his head low. If he seems to be choking, pull his tongue forward with your finger.

♦ If he has vomited, clear his mouth immediately. Be sure his head is low, tilted back, and to one side (see above) so he does not breathe vomit into his lungs. If he has a neck or spine injury, do not tilt his head or move his back.

♦ Do no give him anything by mouth until he becomes conscious.

♦ If you or someone nearby knows how, give intravenous solution (normal saline) at a fast drip.

LOSS OF CONSCIOUSNESS

Common causes of loss of consciousness are:

- drunkenness
- a hit on the head (getting knocked out)

- fainting (from fright, weakness, low blood sugar, etc.)
- shock
- heat stroke
- seizures
- stroke
- poisoning
- heart attack

If a person is unconscious and you do not know why, immediately check each of the following:

1. Is he breathing well? If not, tilt his head way back and pull the jaw and tongue forward. If something is stuck in his throat, pull it out. If he is not breathing, use mouth-to-mouth breathing at once. I'll show you how in just a minute.

2. Is he losing a lot of blood? If so, control the bleeding.

3. Is he in shock (moist, pale skin; weak, rapid pulse)? If so, lay him with his head lower than his feet and loosen his clothing

4. Could it be heat stroke (no sweat, high fever, hot, red skin)? If so, shade him from the sun, keep his head higher than his feet, and soak him with cold water (ice water if possible) and fan him.

If there is any chance that the unconscious person is badly injured:

It is best not to move him until he becomes conscious. If you have to move him, do so with great care, because if his neck or back is broken, any change of position may cause greater injury.

Look for wounds or broken bones, but move the person as little as possible. Do not bend his back or neck.

Never give anything by mouth to a person who is unconscious.

When something gets stuck in the throat

When food or something else sticks in a person's throat and he cannot breathe, quickly do this:

- Stand behind him and wrap your arms around his waist,
- put your fist against his belly above the navel and below the ribs,
- and press into his belly with a sudden strong upward jerk.

This forces the air from his lungs and should free his throat. Repeat several times if necessary.

If the person is a lot bigger than you, or is already unconscious, quickly do this:

♦ Tilt his head to one side.

♦ Sit over him like this, with the heel of your lower hand on his belly between his navel and ribs. (For fat persons, pregnant women, persons in wheelchairs, or small children, place hands on the chest, not the belly.)

♦ Make a quick, strong upward push.

♦ Repeat several times if necessary.

♦ If he still cannot breathe, try mouth-to-mouth breathing.

Drowning

A person who has stopped breathing has only 4 minutes to live! You must act fast!

Start mouth-to-mouth breathing at once—if possible, even before the drowning person is out of the water, as soon as it is shallow enough to stand.

If you cannot blow air into his lungs, when you reach the shore, quickly put him on his side with his head lower than his feet and push his belly as described above. Then continue mouth-to-mouth breathing at once.

ALWAYS START MOUTH-TO-MOUTH BREATHING AT ONCE before trying to get water out of the drowning person's chest.

Mouth-to-mouth breathing

Common causes for breathing to stop are:

- something stuck in the throat
- the tongue or thick mucus blocking the throat of an unconscious person
- drowning, choking on smoke, or poisoning
- a strong blow to the head or chest
- a heart attack

A person can die within 4 minutes if he does not breathe.

If a person stops breathing, begin mouth-to-mouth breathing IMMEDIATELY.

Do all of the following as quickly as you can:

Step 1: Quickly use a finger to remove anything stuck in the mouth or throat. Pull the tongue forward. If there is mucus in the throat, quickly try to clear it out.

Step 2: Quickly but gently lay the person face up. Gently tilt his head back, and pull his jaw forward.

Step 3: Pinch his nostrils closed with your fingers, open his mouth wide, cover his mouth with yours, and blow strongly into his lungs so that his chest rises. Pause to let the air come back out and blow again. Repeat about once every 5 seconds. With babies and small children, cover the nose and mouth with your mouth and breathe very gently about once every 3 seconds.

Continue mouth-to-mouth breathing until the person can breathe by himself, or until there is no doubt he is dead. Sometimes you must keep trying for an hour or more.

Note: Unless there is an open sore or bleeding in the mouth, it is not possible to give or get HIV from mouth-to-mouth breathing.

EMERGENCIES CAUSED BY HEAT

Heat Cramps

In hot weather people who work hard and sweat a lot sometimes get painful cramps in their legs, arms, or stomach. These occur because the body lacks salt.

Treatment: Put a teaspoon of salt in a liter of boiled water and drink it. Repeat once every hour until the cramps are gone. Have the person sit or lie down in a cool place and gently massage the painful areas.

Heat Exhaustion

Signs: A person who works and sweats a lot in hot weather may become very pale, weak, and nauseous, and perhaps feel faint. The skin is cool and moist. The pulse is rapid and weak. The temperature of the body is usually normal.

Treatment: Have the person lie down in a cool place, raise his feet, and rub his legs. Give salt water to drink: 1 teaspoon of salt in a liter of water. (Give nothing by mouth while the person is unconscious.)

Heat Stroke

Heat stroke is not common, but is very dangerous. It occurs especially in older people, very fat people, and alcoholics during hot weather.

Signs: The skin is red, very hot, and dry. Not even the armpits are moist. The person has a very high fever, sometimes more than 42°C, and a rapid heartbeat. Often he is unconscious.

Treatment: The body temperature must be lowered immediately. Put the person in the shade. Soak him with cold water (ice water if possible) and fan him. Continue until the fever drops. Seek medical help.

Differences between 'heat exhaustion' and 'heat stroke':

Heat exhaustion	Heat stroke
• sweaty, pale, cool skin	• dry, red, hot skin
• large pupils	• high fever
• no fever	• the person is very ill or unconscious
• weakness	

How to control bleeding from a wound

1. Raise the injured part.

2. With a clean thick cloth (or your hand if there is no cloth) press directly on the wound. Keep pressing until the bleeding stops. This may take 20 minutes or sometimes an hour or more. This type of

direct pressure will stop the bleeding of nearly all wounds—sometimes even when a part of the body has been cut off.

Occasionally direct pressure will not control bleeding, especially when the wound is very large or an arm or leg has been cut off. If this happens:

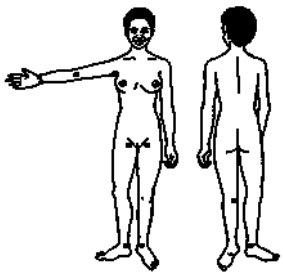
♦ Keep pressing on the wound.

♦ Keep the wounded part as high as possible.

♦ You can maintain pressure by binding the wound tightly with a bandage or a piece of clean clothing.

♦ Squeeze at pressure points on the artery that brings blood to that part of the body. Pressure points are where, using the flat part of your fingers, you can push the artery against a bone to shut off or slow down the flow of blood.

Pressure points



♦ Keep pressing for 20 minutes before looking to see if the bleeding has stopped. Keep pressing with your other hand on the wound itself.

Precautions:

- Do not use a tourniquet, rope, or wire to stop the bleeding. This usually results in total loss of the arm or leg.
- Never use dirt, kerosene, lime, or coffee to stop bleeding.
- When bleeding or injury is severe, raise the feet and lower the head to prevent shock.
- Keep blood from getting into any cuts or sores on your skin.

How to stop nosebleeds

1. Sit quietly and upright.
2. Blow the nose gently to remove mucus and blood.
3. Have the person pinch the nose firmly for 10 minutes or until the bleeding has stopped.

If this does not control the bleeding…

Pack the nostril with a wad of cotton, leaving part of it outside the nose. If possible, first wet the cotton with Vaseline or lidocaine with epinephrine.

Then pinch the nose firmly again. Do not let go for 10 minutes or more. Do not tip the head back.

Leave the cotton in place for a few hours after the bleeding stops; then take it out very carefully.

In older persons especially, bleeding may come from the back part of the nose and cannot be stopped by pinching it. In this case, have the person hold a cork, corn cob, or other similar object between his teeth and, leaning forward, sit quietly and try not to swallow until the bleeding stops. (The cork helps keep him from swallowing, and that gives the blood a chance to clot.)

Prevention:

If a person's nose bleeds often, smear a little Vaseline inside the nostrils twice a day. Or sniff water with a little salt in it.

Eating oranges, tomatoes, and other fruits may help to strengthen the veins so that the nose bleeds less.

Cuts, scrapes, and small wounds

Cleanliness is of first importance in preventing infection and helping wounds to heal.

To treat a wound…

First, wash your hands very well with soap and water.

If the wound is bleeding or oozing, wear gloves or plastic bags on your hands. Wash the skin around the wound with soap and cool, boiled water.

Now wash the wound well with cool, boiled water (and soap, if the wound has a lot of dirt in it. Soap helps clean but can damage the flesh).

When cleaning the wound, be careful to clean out all the dirt. Lift up and clean under any flaps of skin. You can use clean tweezers, or a clean cloth or gauze, to remove bits of dirt, but always boil them first to be sure they are sterile.

If possible, squirt out the wound with cool boiled water in a syringe or suction bulb.

Any bit of dirt that is left in a wound can cause an infection.

After the wound has been cleaned, apply a thin layer of antibiotic cream like Neosporin if you have it. Then place a piece of clean gauze or cloth over the top. It should be light enough so that the air can get to the wound and help it to heal. Change the gauze or cloth every day and look for signs of infection.

If you have a dirty wound or a puncture wound, and have never had a tetanus immunization, get one within 2 days.

NEVER put animal or human feces or mud on a wound. These can cause dangerous infections, such as tetanus.

NEVER put alcohol, tincture of iodine, or Merthiolate directly into a wound; doing so will damage the flesh and make healing slower.

Large cuts: how to close them

A recent cut that is very clean will heal faster if you bring the edges together so the cut stays closed.

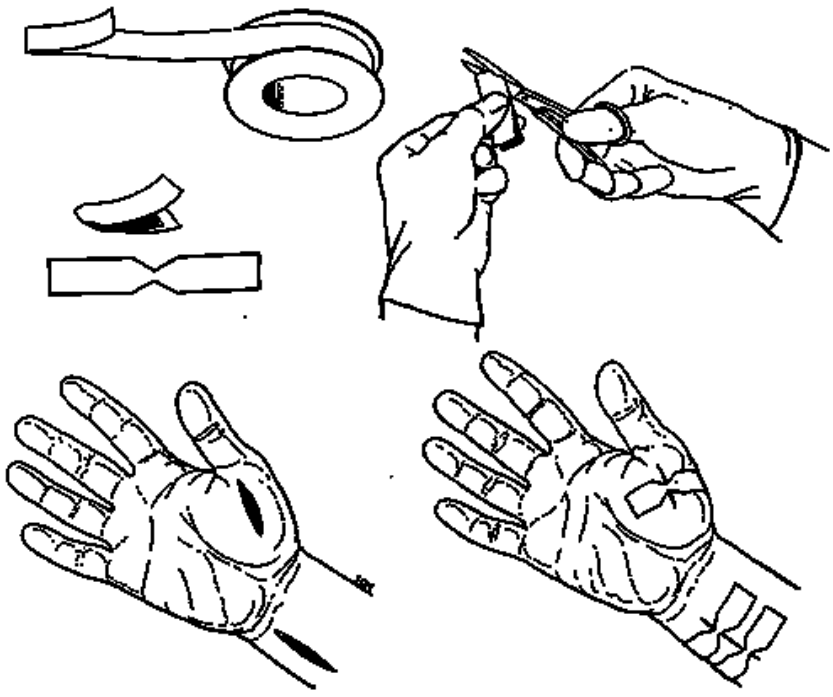
Close a deep cut only if all of the following are true:

- the cut is less than 12 hours old,
- the cut is very clean, and
- it is impossible to get a health worker to close it the same day.

Before closing the cut, wash it very well with cool, boiled water (and soap, if the wound is dirty). If possible, squirt it out with a syringe and water. Be absolutely sure that no dirt or soap is left hidden in the cut.

There are two methods to close a cut:

'Butterfly' bandages of adhesive tape



Stitches or sutures with thread

To find out if a cut needs stitches see if the edges of the skin come together by themselves. If they do, usually no stitches are needed.

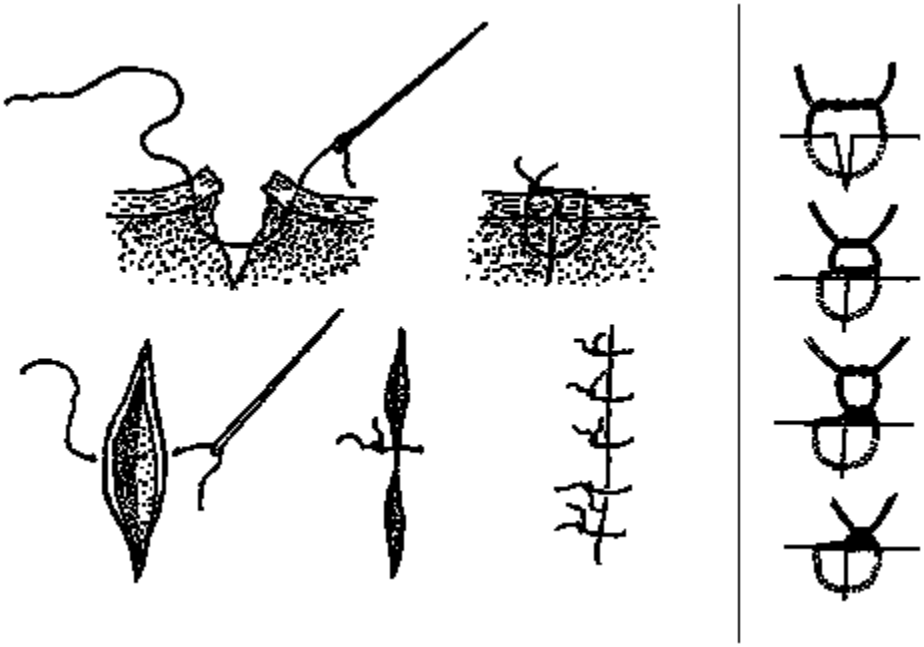
To stitch a wound:

♦ Boil a sewing needle and a thin thread (nylon or silk is best) for 20 minutes.

♦ Wash the wound with cool, boiled water, as has been described.

♦ Wash your hands very well with boiled water and soap.

♦ Sew the wound like this:



Make the first stitch in the middle of the cut, and tie it closed (1. and 2.).

If the skin is tough, hold the needle with a pair of pliers (or needle holder) that has been boiled.

Make enough other stitches to close the whole cut (3.).

Leave the stitches in place for 5 to 14 days (on the face 5 days; the body 10 days; the hand or foot 14 days). Then remove the stitches: cut the thread on one side of the knot and pull the knot until the thread comes out.

WARNING: Only close wounds that are very clean and less than 12 hours old. Old, dirty, or infected wounds must be left open. Bites from people, dogs, pigs, or other animals should also be left open. Closing these can cause dangerous infections.

If the wound that has been closed shows any signs of infection, remove the stitches immediately and leave the wound open.

Bandages

Bandages are used to help keep wounds clean. For this reason, bandages or pieces of cloth used to cover wounds must always be clean themselves. Cloth used for bandages should be washed and then dried with an iron or in the sun, in a clean, dust free place.

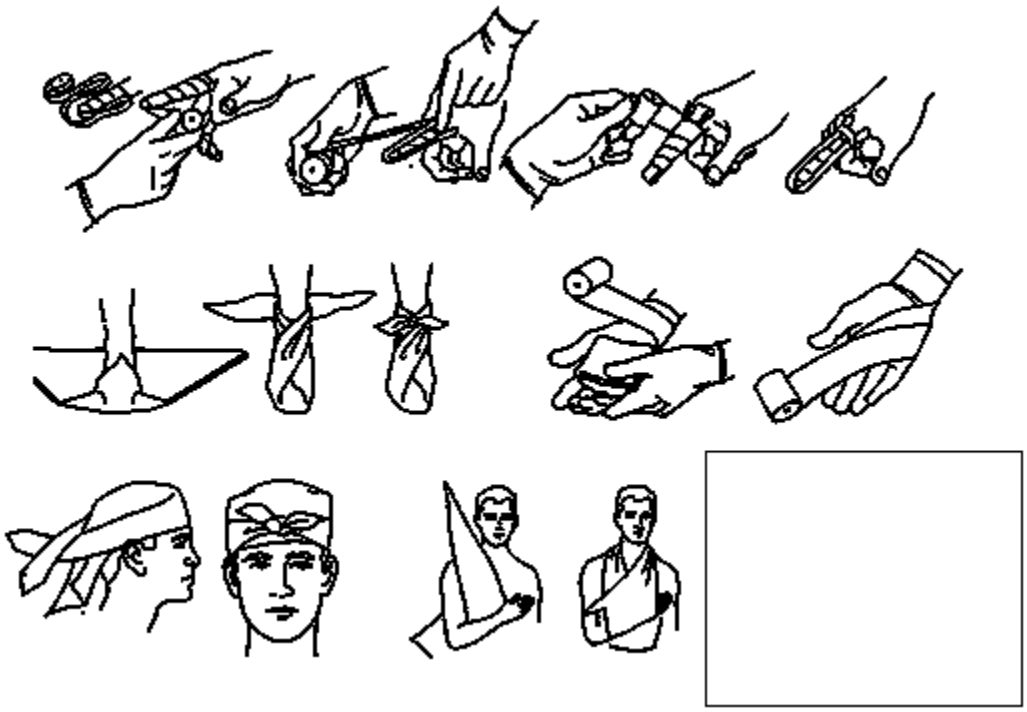
Make sure the wound has first been cleaned, as shown on p. 84. If possible, cover the wound with a sterile gauze pad before bandaging. These pads are often sold in sealed envelopes in pharmacies.

Or prepare your own sterile gauze or cloth. Wrap it in thick paper, seal it with tape, and bake it for 20 minutes in an oven. Putting a pan of water in the oven under the cloth will keep it from charring.

It is better to have no bandage at all than one that is dirty or wet.If a bandage gets wet or dirt gets under it, take the bandage off, wash

the cut again, and put on a clean bandage. Change the bandage every day.

Examples of bandages



CAUTION:

Note: For children it is often better to bandage the whole hand or foot instead of one finger or toe. The bandage will not come off as easily.

Be careful that a bandage that goes around a limb is not so tight it cuts off the flow of blood.

Many small scrapes and cuts do not need bandages. They heal best if washed with soap and water and left open to the air. The most important thing is to keep them clean.

Infected wounds

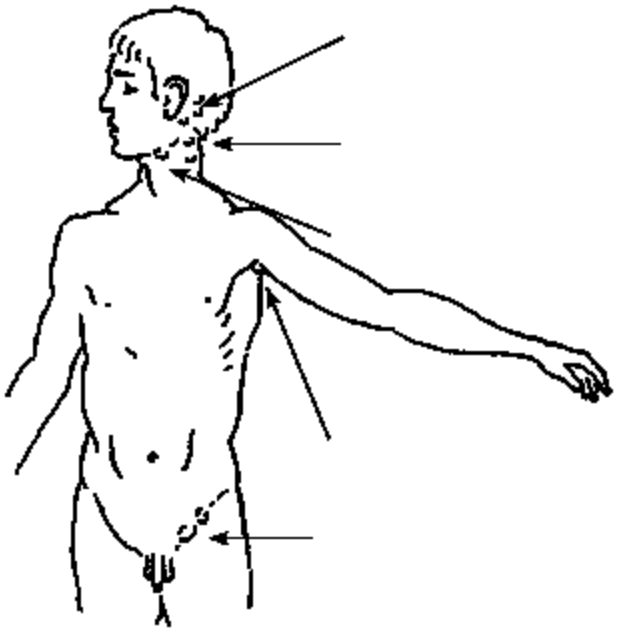
How to recognize and treat them

A wound is infected if:

- it becomes red, swollen, hot, and painful,
- it has pus,
- or if it begins to smell bad.

The infection is spreading to other parts of the body if:

- it causes fever,
- there is a red line above the wound,
- or if the lymph nodes become swollen and tender. Lymph nodes—often called ‘glands’ — are little traps for germs that form small lumps under the skin when they get infected.



Swollen lymph nodes behind the ear are a sign of an infection on the head or scalp, often caused by sores or lice. Or German measles may be the cause.

Swollen nodes below the ear and on the neck indicate infections of the ear, face, or head (or tuberculosis).

Swollen nodes below the jaw indicate infections of the teeth or throat.

Swollen nodes in the armpit indicate an infection of the arm, head, or breast (or sometimes breast cancer).

Swollen nodes in the groin indicate an infection of the leg, foot, genitals, or anus.

Treatment of infected wounds:

♦ Put hot compresses over the wound for 20 minutes 4 times a day. Or hold an infected hand or foot in a bucket of hot water.

♦ Keep the infected part at rest and elevated (raised above the level of the heart).

♦ If the infection is severe or if the person has not been vaccinated against tetanus, use an antibiotic like penicillin and also give metronidazole.

WARNING: If the wound has a bad smell, if brown or gray liquid oozes out, or if the skin around it turns black and forms air bubbles or blisters, this may be gangrene. Seek medical help fast.

Wounds that are likely to become dangerously infected

These wounds are most likely to become dangerously infected:

- dirty wounds, or wounds made with dirty objects
- puncture wounds and other deep wounds that do not bleed much
- wounds made where animals are kept: in corrals, pig pens, etc.
- large wounds with severe mashing or bruising
- bites, especially from pigs, dogs, or people
- bullet wounds

Special care for this type of 'high risk' wound:

1. Wash the wound well with boiled water and soap. Remove all pieces of dirt, blood clots, and dead or badly damaged flesh. Squirt out the dirt using a syringe or suction bulb.

2. If the wound is very deep, if it is a bite, or if there is a chance that it still has dirt in it, give an antibiotic such as ceftriaxone, or another cephalosporin for 3 to 7 days. If you do not have this type of medicine, give erythromycin, sulfamethoxazole with trimethoprim or a sulfa drug.

3. Never close this type of wound with stitches or 'butterfly' bandages.

Leave the wound open. If it is very large, a skilled health worker or a doctor may be able to close it later.

The danger of tetanus is very great in people who have not been vaccinated against this deadly disease. To lower the risk, a person who has not been vaccinated against tetanus should take penicillin

or ampicillin immediately after receiving a wound of this type, even if the injury is small.

If the wound of this type is very severe, a person who has not been vaccinated against tetanus should take large doses of penicillin or ampicillin for a week or more. An antitoxin for tetanus should also be considered.

If the wound is from an animal bite and there is a chance of rabies, get an immunization right away.

Bullet, knife, and other serious wounds

Danger of infection: Any deep bullet or knife wound runs a high risk of dangerous infection. For this reason an antibiotic, preferably penicillin or ampicillin should be used at once.

Persons who have not been vaccinated against tetanus should, if possible, be given an injection of an antitoxin for tetanus and also be vaccinated against tetanus.

If possible, seek medical help.

Bullet Wounds in the Arms or Legs

♦ If the wound is bleeding a lot, try to control the bleeding as shown on.

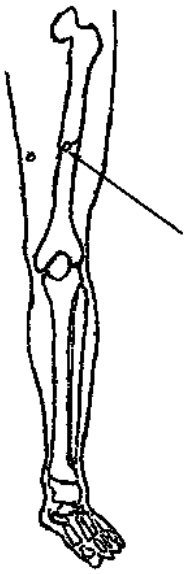
♦ If the bleeding is not serious, let the wound bleed for a short while. This will help clean it out.

♦ Wash the wound with cool, boiled water. In the case of a gunshot wound, wash the surface (outside) only. It is usually better not to poke anything into the hole. After cleaning, apply a clean bandage.

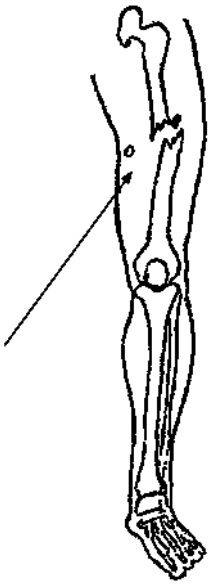
♦ Give antibiotics.

CAUTION:

If there is any possibility that the bullet has hit a bone, the bone may be broken.

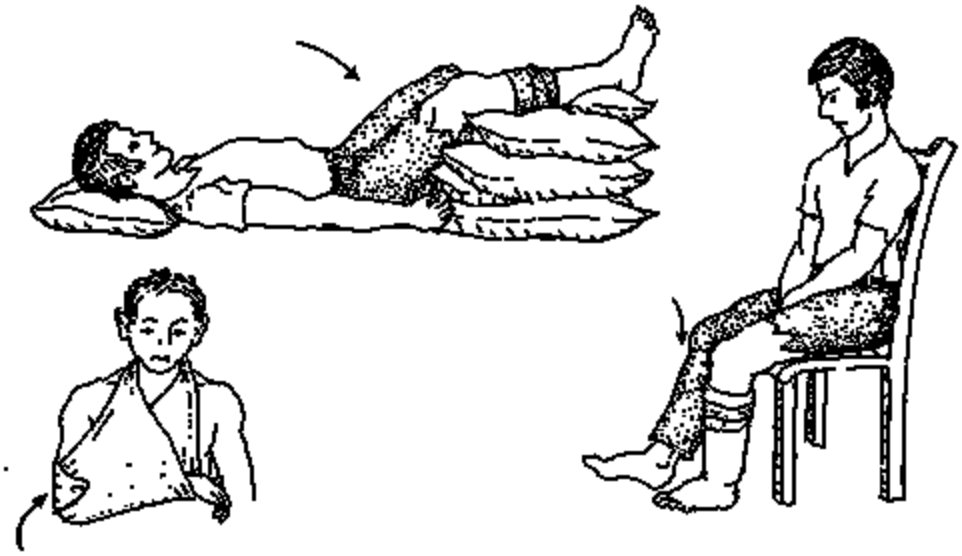


Using or putting weight on the wounded limb (standing, for example) might cause a more serious break, like this:



If a break is suspected, it is best to splint the limb and not to use it for several weeks.

When the wound is serious, raise the wounded part a little higher than the heart and keep the injured person completely still.



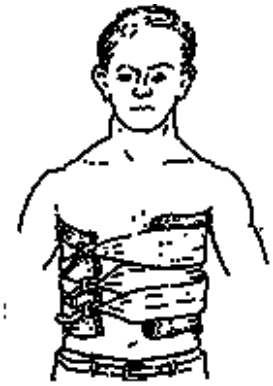
This way the wound will heal faster and is less likely to become infected.

Walking on an injured leg or sitting with the leg hanging down as shown above will slow healing and encourage infection.

Make a sling like shown above to support an arm with a gunshot wound or other serious injury.

Deep Chest Wounds

Chest wounds can be very dangerous.



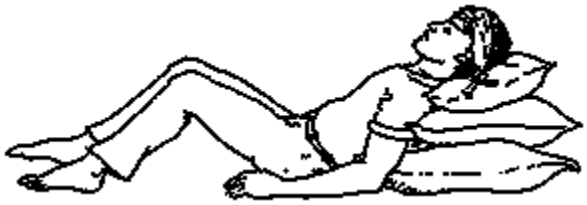
♦ If the wound has reached the lungs and air is being sucked through the hole when the person breathes, cover the wound at once so that no more air enters. Spread Vaseline or vegetable fat on a gauze pad or clean bandage and wrap it tightly over the hole like this: (CAUTION: If this tight bandage makes breathing more difficult, try loosening or removing it.)

♦ Put the injured person in the position in which he feels most comfortable

♦ If there are signs of shock, give proper treatment.

♦ Give antibiotics and painkillers.

Bullet Wounds in the Head



♦ Place the injured person in a 'half sitting' position.

♦ Cover the wound with a clean bandage.

♦ Give antibiotics (penicillin).

♦ Seek medical help.

Deep Wounds in the Abdomen

Any wound that goes into the belly or gut is dangerous. Seek medical help immediately. But in the meantime:

Cover the wound with a clean bandage.

If the guts are partly outside the wound, cover them with a clean cloth soaked in lightly salted, cool, boiled water. Do not try to push the guts back in. Make sure the cloth stays wet.

Give absolutely nothing by mouth: no food, no drink, not even water—unless it will take more than 2 days to get to a health center. Then give water only, in small sips.

If the wounded person is awake and thirsty, let him suck on a piece of cloth soaked in water.

If the wounded person is in shock, raise his feet higher than his head.

Inject antibiotics.

Never give an enema, even if the stomach swells up or the injured person does not move his bowels for days. If the gut is torn, an enema or purge can kill him.

Immediately take the injured person to the closest health center or hospital. He will need an operation.

Medicine for a wound that goes into the gut

(Also for appendicitis or peritonitis)

Until you can get medical help, do the following:

Inject ampicillin, 2 gm. (eight 250 mg. ampules) every 6 hours. Also give 500 mg. metronidazole every 6 hours.

If there is no ampicillin:

Inject penicillin (crystalline, if possible), 5 million Units immediately; after that, 1 million units every 4 hours. Also give metronidazole.

OR give 500 mg. of ciprofloxacin every 12 hours. Also give metronidazole.

If you do not have these antibiotics in injectable form, give ampicillin or penicillin or ciprofloxacin by mouth, together with metronidazole and very little water.

Emergency problems of the gut (acute abdomen)

Acute abdomen is a name given to a number of sudden, severe conditions of the gut for which prompt surgery is often needed to prevent death. Appendicitis, peritonitis, and gut obstruction are examples (see following pages).

In women, pelvic inflammatory disease (often with vaginal discharge), or an out of place pregnancy (in the tubes) can also

cause an acute abdomen. The exact cause of acute abdomen may be uncertain until a surgeon cuts open the belly and looks inside.

If a person has continuous severe gut pain with vomiting, but does not have diarrhea, suspect an acute abdomen.

Acute abdomen

Take to a hospital— surgery may be needed

- continuous severe pain that keeps getting worse
- constipation and vomiting
- belly swollen, hard, person protects it
- severely ill

Less serious illness

Probably can be treated in the home or health center

- pain that comes and goes (cramps)
- moderate or severe diarrhea
- sometimes signs of an infection, perhaps a cold or sore throat
- he has had pains like this before
- only moderately ill

If a person shows signs of acute abdomen, get him to a hospital as fast as you can.

Obstructed Gut

An acute abdomen may be caused by something that blocks or 'obstructs' a part of the gut, so that food and stools cannot pass. More common causes are:

- a ball or knot of roundworms
- a loop of gut that is pinched in a hernia
- a part of the gut that slips inside the part below it (intussusception)

Almost any kind of acute abdomen may show some signs of obstruction. Because it hurts the damaged gut to move, it stops moving.

Signs of an obstructed gut:

Steady, severe pain in the belly.

This child's belly is swollen, hard, and very tender. It hurts more when you touch it. He tries to protect his belly and keeps his legs doubled up. His belly is often 'silent'. (When you put your ear to it, you hear no sound of normal gurgles.)

He is usually constipated (little or no bowel movements). If there is diarrhea, it is only a little bit. Sometimes all that comes out is some bloody mucus.

Get this person to a hospital as fast as possible. His life is in danger and surgery may be needed.

Appendicitis, Peritonitis

These dangerous conditions often require surgery. Seek medical help fast.

Appendicitis is an infection of the appendix, a finger shaped sac attached to the large intestine in the lower right hand part of the belly. An infected appendix sometimes bursts open, causing peritonitis.

Peritonitis is an acute, serious infection of the lining of the cavity or bag that holds the gut. It results when the appendix or another part of the gut bursts or is torn.

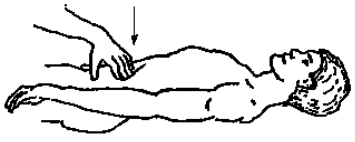
Signs of appendicitis:

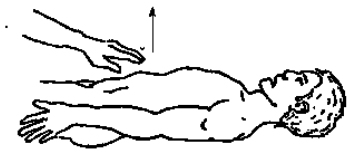
- The main sign is a steady pain in the belly that gets worse and worse.
- The pain often begins around the navel ('bellybutton') but it soon moves to the lower right side.
- There may be loss of appetite, vomiting, constipation, or a mild fever.

Tests for appendicitis or peritonitis

Have the person cough and see if this causes sharp pain in the belly.

Or, slowly but forcefully, press on the abdomen a little above the left groin until it hurts a little.





Then quickly remove the hand.

If a very sharp pain (rebound pain) occurs when the hand is removed, appendicitis or peritonitis is likely.

If no rebound pain occurs above the left groin, try the same test above the right groin.

If it seems that a person has appendicitis or peritonitis:

♦ Seek medical help immediately.

If possible, take the person where he can have surgery.

♦ Do not give anything by mouth and do not give an enema. Only if the person begins to show signs of dehydration, give sips of water or Rehydration Drink made with sugar and salt—but nothing more.

♦ The person should rest very quietly in a half-sitting position.

Note: When peritonitis is advanced, the belly becomes hard like a board, and the person feels great pain when his belly is touched even lightly. His life is in danger. Take him to a medical center immediately.

Burns

Prevention:

Most burns can be prevented. Take special care with children:

Do not let small babies go near a fire. Keep lamps and matches out of reach.

Turn handles of pans on the stove so children cannot reach them.

Minor Burns that Do Not Form Blisters (1st degree)

To help ease the pain and lessen the damage caused by a minor burn, put the burned part in cold water at once. No other treatment is needed. Take aspirin or acetaminophen for pain. Avoid giving aspirin to children.

Burns that Cause Blisters (2nd degree)

Do not break blisters. Do not put ice on the burn.

If the blisters are broken, wash gently with soap and boiled water that has been cooled. Sterilize a little Vaseline by heating it until it boils. Let it cool and spread it on a piece of sterile gauze. Then put the gauze on the burn loosely so it does not put pressure on the wound.

If there is no Vaseline, leave the burn uncovered. Never smear on grease or butter.

It is very important to keep the burn as clean as possible.

Protect it from dirt, dust, and flies.

If signs of infection appear—pus, bad smell, fever, or swollen lymph nodes—apply compresses of warm salt water (1 teaspoon salt to 1 liter water) 3 times a day. (If possible, add 2 tablespoons of bleach to the salt water.)

Boil both the water and cloth before use. With great care, remove the dead skin and flesh. You can spread on a little antibiotic ointment such as Neosporin. In severe cases, consider taking an antibiotic such as penicillin or ampicillin.

Deep Burns (3rd degree) that destroy the skin and expose raw or charred flesh are always serious, as are any burns that cover large areas of the body. Take the person to a health center at once. In the meantime wrap the burned part with a very clean cloth or towel moistened with clean water.

If it is impossible to get medical help, treat the burn as described above. If you do not have Vaseline, leave the burn in the open air, covering it only with a loose cotton cloth or sheet to protect it from dust and flies. Keep the cloth very clean and change it each time it gets dirty with liquid or blood from the burn. Give penicillin.

Never put grease, fat, hides, coffee, herbs, or feces on a burn.

Covering the burn with honey helps prevent and control infection and speed healing. Gently wash off the old honey and put on new at least twice a day.

Special Precautions for Very Serious Burns

Any person who has been badly burned can easily go into shock because of combined pain, fear, and the loss of body fluids from the oozing burn.

Comfort and reassure the burned person. Give him aspirin or acetaminophen for the pain and codeine if you can get it. Bathing open wounds in slightly salty water also helps calm pain. Put 1 teaspoon of salt for each liter of cool, boiled water.

Give the burned person plenty of liquid. If the burned area is large (more than twice the size of his hand), make up the following drink:

To a liter of water add: half a teaspoon of salt and half a teaspoon of bicarbonate of soda.

Also put in 2 or 3 tablespoons of sugar or honey and some orange or lemon juice if possible.

The burned person should drink this as often as possible, especially until he urinates frequently. He should try to drink 4 liters a day for a large burn, and 12 liters a day for a very large burn.

It is important for persons who are badly burned to eat foods rich in protein. No type of food needs to be avoided.

Burns around the Joints

When someone is badly burned between the fingers, in the armpit, or at other joints, gauze pads with Vaseline on them should be put between the burned surfaces to prevent them from growing together as they heal.

Also, fingers, arms, and legs should be straightened completely several times a day while healing. This is painful but helps prevent stiff scars that limit movement. While the burned hand is healing, the fingers should be kept in a slightly bent position.

Broken bones (fractures)

When a bone is broken, the most important thing to do is keep the bone in a fixed position. This prevents further damage and lets it mend.

Before trying to move or carry a person with a broken bone, keep the bones from moving with splints, strips of bark, or a sleeve of

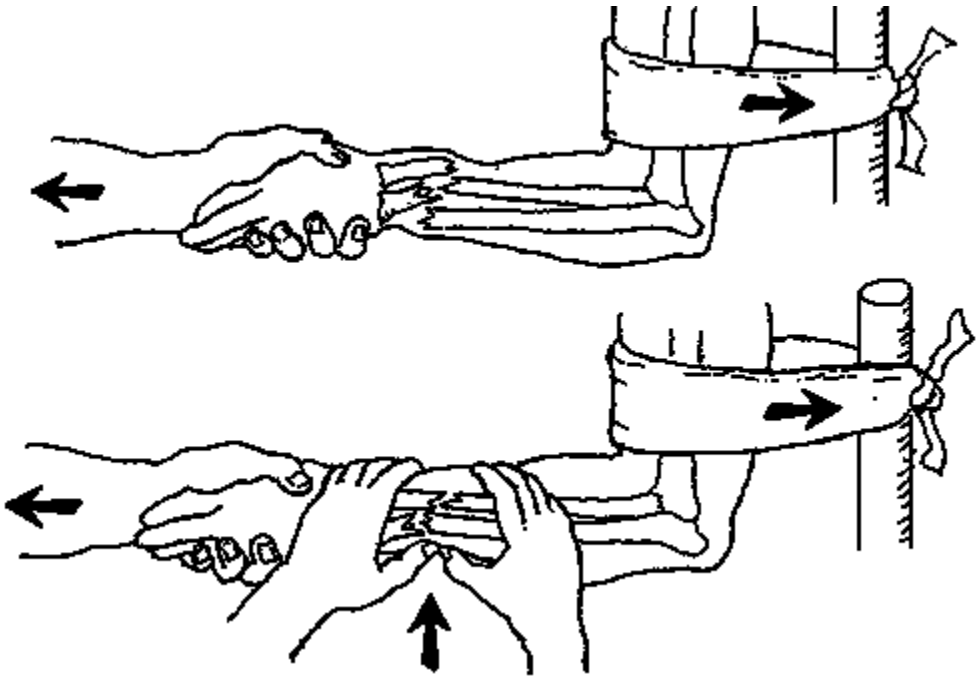
cardboard. Later a plaster cast can be put on the limb at a health center, or perhaps you can make a 'cast' according to local tradition.

Setting broken bones: If the bones seem more or less in the right position, it is better not to move them—this could do more harm than good.

If the bones are far out of position and the break is recent, you can try to 'set' or straighten them before putting on cast. The sooner the bones are set, the easier it will be. Before setting, if possible inject or give diazepam to relax the muscles and calm pain. Or give codeine.

How to set a broken wrist

Pull the hand with a slow, steady force for 5 to 10 minutes, increasing the force, to separate the bones.



With one person still pulling the hand, have another gently line up and straighten the bones.

WARNING: It is possible to do a lot of damage while trying to set a bone. Ideally, it should be done with the help of someone with experience. Do not jerk or force.

How long does it take for broken bones to heal?

The worse the break or the older the person, the longer healing takes. Children's bones mend rapidly. Those of old people sometimes never join. A broken arm should be kept in a cast for about a month, and no force put on it for another month. A broken leg should remain in a cast for about 2 months.

Broken thigh or hip bone

A broken upper leg or hip often needs special attention. It is best to splint the whole body like this: and to take the injured person to a health center at once.

Broken necks and backs

If there is any chance a person's back or neck has been broken, be very careful when moving him. Try not to change his position. If possible, bring a health worker before moving him. If you must move him, do so without bending his back or neck. For instructions on how to move the injured person, see the next page.

Broken ribs

These are very painful, but almost always heal on their own. It is better not to splint or bind the chest. The best treatment is to take aspirin or acetaminophen (avoid giving aspirin to children)—and rest. To keep the lungs healthy, take 4 to 5 deep breaths in a row, every 2 hours. Do this daily until you can breathe normally. At first, this will be very painful. It may take months before the pain is gone completely.

A broken rib does not often puncture a lung. But if a rib breaks through the skin, or if the person coughs blood or develops breathing difficulties (other than pain), use antibiotics (penicillin or ampicillin) and seek medical help.

Broken bones that break through the skin (open fractures)

Since the danger of infection is very great in these cases, it is always better to get help from a health worker or doctor in caring for the injury. Wear gloves or plastic bags on your hands and clean the wound and the exposed bone very gently but thoroughly with cool, boiled water. Cover with a clean cloth. Never put the bone back into the wound until the wound and the bone are absolutely clean.

Splint the limb to prevent more injury.

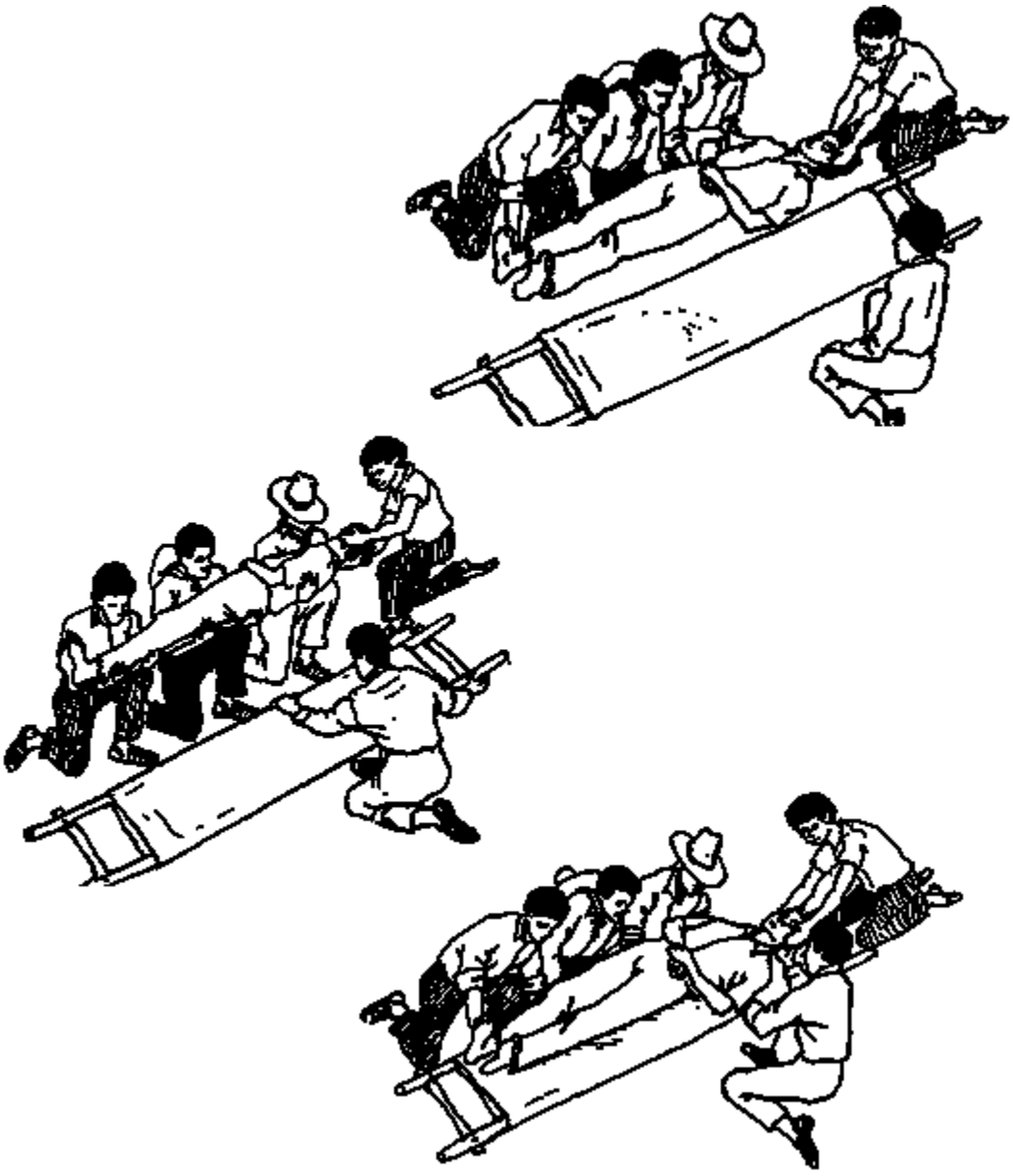
If the bone has broken the skin, use an antibiotic immediately to help prevent infection: penicillin, ampicillin, or tetracycline.

CAUTION: Never rub or massage a broken limb or a limb that may possibly be broken.

How to move a badly injured person

With great care, lift the injured person without bending him anywhere. Take special care that the head and neck do not bend.

Have another person put the stretcher in place.



With the help of everyone, place the injured person carefully on the stretcher.

If the neck is injured or broken, put tightly folded clothing or sandbags on each side of the head to keep it from moving.

When carrying, try to keep the feet up, even on hills.

Dislocations

(Bones that have come out of place at a joint)

Three important points of treatment:

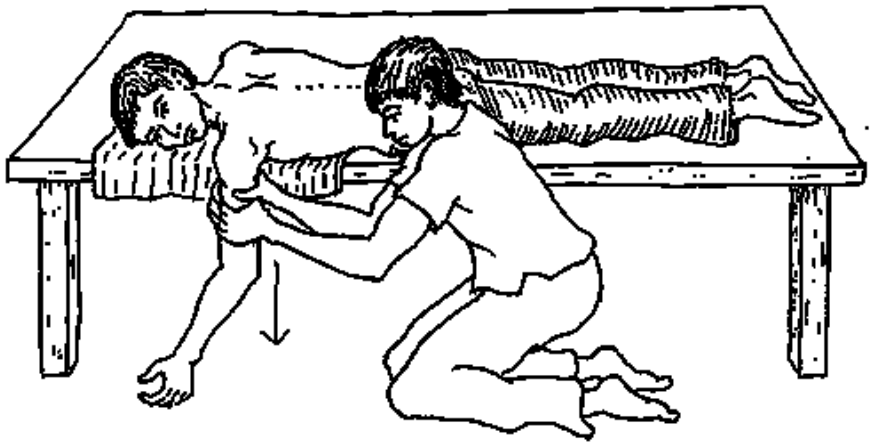
♦ Try to put the bone back into place. The sooner the better!

♦ Keep it bandaged firmly in place so it does not slip out again (about a month).

♦ Avoid forceful use of the limb long enough for the joint to heal completely (2 or 3 months).

How to set a dislocated shoulder:

Have the injured person lie face down on a table or other firm surface with his arm hanging over the side. Pull down on the arm toward the floor, using a strong, steady force, for 15 to 20 minutes. Then gently let go. The shoulder should 'pop' back into place.



Or attach something to the arm that weighs 10 to 20 lbs. (start with 10 lbs., but do not go higher than 20 lbs.) and leave it there for 15 to 20 minutes.

After the shoulder is in place, bandage the arm firmly against the body. Keep it bandaged for a week to a month. To prevent the shoulder from becoming completely stiff, unbandage the arm for a few minutes 3 times a day and, with the arm hanging at the side, move it gently in narrow circles. Do not lift any weight with the arm for a month so the shoulder does not pop out of place again.

If you cannot put the dislocated limb back in place, look for medical help at once. The longer you wait, the harder it will be to correct.

Strains and sprains

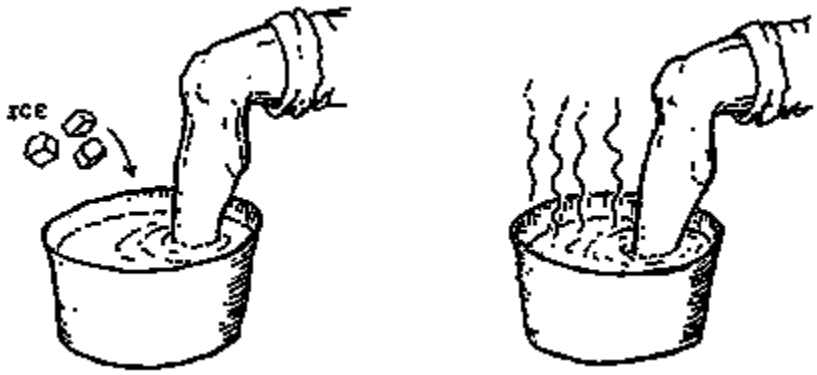
(Bruising or tearing in a twisted joint)

Many times it is impossible to know whether a hand or foot is bruised, sprained, or broken. It helps to have an x-ray taken.

But usually, breaks and sprains are treated more or less the same. Keep the joint motionless. Wrap it with something that gives firm support. Use crutches to give a sprained foot as much rest as

possible. Serious sprains need at least 3 or 4 weeks to heal. Broken bones take longer.

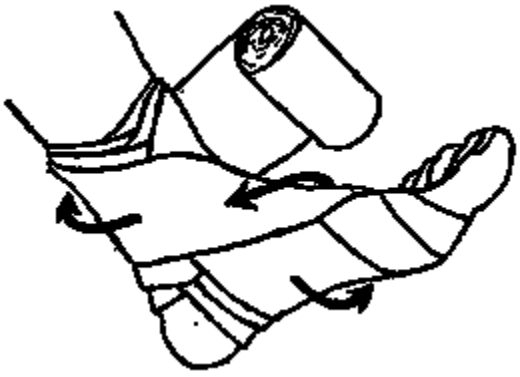
To relieve pain and swelling, keep the sprained part raised high. During the first day or two, put ice wrapped in cloth or plastic, or cold, wet cloths over the swollen joint for 20 to 30 minutes once every hour. This helps reduce swelling and pain. After 24 to 48 hours (when the swelling is no longer getting worse), soak the sprain in hot water several times a day.



For the first day soak the sprained joint in cold water.

After 1 or 2 days use hot soaks.

You can keep the twisted joint in the correct position for healing by using a homemade cast or an elastic bandage.



Wrapping the foot and ankle with an elastic bandage will also prevent or reduce swelling. Start from the toes and wrap upward, as shown here. Be careful not to make the bandage too tight, and remove it briefly every hour or two. Also take aspirin or acetaminophen.

If the pain and swelling do not start to go down after 48 hours, seek medical help.

CAUTION: Never rub or massage a sprain or broken bone. It does no good and can do more harm.

If the foot seems very loose or 'floppy' or if the person has trouble moving his toes, look for medical help. Surgery may be needed.

Poisoning

Many children die from swallowing things that are poisonous. To protect your children, take the following precautions:

Keep all poisons out of reach of children.

Never keep kerosene, gasoline, or other poisons in cola or soft drink children hem.

Some common poisons to watch out for:

- rat poison
- DDT, lindane, sheep dip, and other insecticides or plant poisons
- medicine (any kind when much is swallowed; take special care with iron pills)

- tincture of iodine
- bleach
- cigarettes
- rubbing or wood alcohol
- poisonous leaves, seeds, berries, or mushrooms
- castor beans
- matches
- kerosene, paint thinner, gasoline, petrol, lighter fluid
- lye or caustic soda
- salt—if too much is given to babies and small children
- spoiled food

Treatment:

If you suspect poisoning, do the following immediately:

♦ If the child is awake and alert, make him vomit. Put your finger in his throat or make him drink water with mild soap or salt in it (6 teaspoons salt to 1 cup water).

♦ If you have it, give him a cup of activated charcoal (p. 388), or a tablespoon of powdered charcoal mixed into a glass of water. (For an adult, give 2 glasses of this mixture.)

CAUTION: Do not make a person vomit if he has swallowed kerosene, gasoline (petrol), or strong acids or corrosive substances

(lye), or if he is unconscious. If he is awake and alert, give him plenty of water or milk to dilute the poison. (For a child, give 1 glass of water every 15 minutes.)

Cover the person if he feels cold, but avoid too much heat. If poisoning is severe, look for medical help.

Snakebite

Rattlesnake

North America. Mexico, and Central America

Note: Try to get information on the kinds of snakes in your area and put it on this page.

When someone has been bitten by a snake, try to find out if the snake was poisonous or harmless. Their bite marks are different.

The bite of most poisonous snakes leaves marks of the 2 fangs (and sometimes, little marks made by the other teeth).

The bite of a snake that is not poisonous leaves only 2 rows of teeth marks, but no fang marks.

People often believe that certain harmless snakes are poisonous. Try to find out which of the snakes in your area are truly poisonous

and which are not. Contrary to popular opinion, boa constrictors and pythons are not poisonous. Please do not kill non-poisonous snakes, because they do no harm. On the contrary, they kill mice and other pests that do lots of damage. Some even kill poisonous snakes.

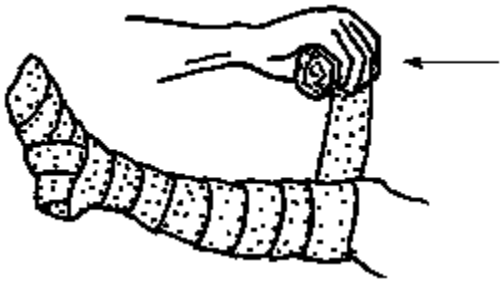
Treatment for poisonous snakebite:

1. Stay quiet; do not move the bitten part. The more it is moved, the faster the poison will spread through the body. If the bite is on the foot, the person should not walk at all. Send for medical help.

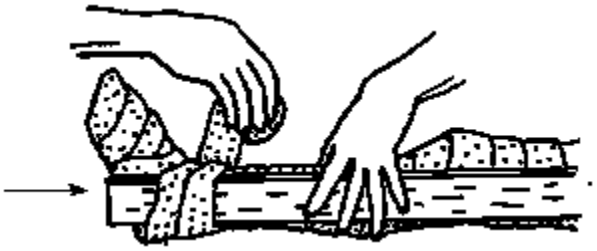
2. Remove jewelry because swelling can spread rapidly.

3. Wrap the bitten area with a wide elastic bandage or clean cloth to slow the spread of poison. Keeping the arm or leg very still, wrap it tightly, but not so tight it stops the pulse at the wrist or on top of the foot. If you cannot feel the pulse, loosen the bandage a little.

4. Wind the bandage over the hand or foot, and up the whole arm or leg. Make sure you can still feel the pulse.



5. Then, put on a splint to prevent the limp from moving.



6. Carry the person, on a stretcher if possible, to the nearest health center.

If you can, also take the snake, because different snakes may require different antivenoms. If an antivenom is needed, leave the bandage on until the injection is ready, and take all precautions for ALLERGIC SHOCK

Also give tetanus antitoxin. If there is no antivenom, remove the bandage.

Have antivenoms for snakes in your area ready and know how to use them—before someone is bitten!

Poisonous snakebite is dangerous. Send for medical help—but always do the things explained above at once.

Most folk remedies for snakebite do little if any good.

Some treatments can cause infection or make the effects of the venom worse.

Do not:

- cut the skin or the flesh around the bite
- tie anything tight around the bite or the person's body

- put ice on or around the bite
- shock the person with electricity
- try to suck the blood or the venom out of the bite

Never drink alcohol after a snakebite. It makes things worse!

Bite of the beaded lizard (gila monster)

The bite of the beaded lizard is treated just like a poisonous snakebite, except that there are no good antivenoms for it. The bite can be very dangerous. Wash the bite area well. Avoid movement and keep the bite below the level of the heart.

Scorpion sting

Some scorpions are far more poisonous than others. To adults, scorpion stings are rarely dangerous. Take aspirin or acetaminophen and if possible put ice on the sting to help calm the pain. For the numbness and pain that sometimes last weeks or months, hot compresses may be helpful.

To children under 5 years old, scorpion stings can be dangerous, especially if the sting is on the head or body. In some countries scorpion antitoxin is available. To do much good it must be injected within 2 hours after the child has been stung.

Give acetaminophen for the pain. If the child stops breathing, use mouth to mouth breathing. Also give tetanus antitoxin. If the child who was stung is very young or has been stung on the main part of the body, or if you know the scorpion was of a deadly type seek medical help fast.

Black widow and other spider bites

The majority of spider bites, including that of the tarantula, are painful but not dangerous. The bite of a few kinds of spiders—such as the 'black widow' and related species—can make an adult quite ill. They can be dangerous for a small child.

A black widow bite often causes painful muscle cramps all over the body, and extreme pain in the stomach muscles which become rigid. (Sometimes this is confused with appendicitis!)

Give acetaminophen or aspirin and look for medical help. The most useful medicines are not found in village stores. (Injection of 10% calcium gluconate, 10 ml., injected intravenously very slowly over a 10 minute period, helps to reduce the muscular spasms.

Also diazepam may be helpful. If signs of shock develop, treat for allergic shock. Injections of cortisone may be needed in children.)

Also give tetanus antitoxin. A good antivenom exists but is hard to get.

Medicine Kit

Every family and every village should have certain medical supplies ready in case of emergency.

How to care for your medicine kit

1. CAUTION: Keep all medicines out of the reach of children. Any medicine taken in large doses can be poisonous.

2. Be sure that all medicine is well labeled and that directions for use are kept with each medicine. Keep a copy of this book with the medicine kit.

3. Keep all medicines and medical supplies together in a clean, dry, cool place free from cockroaches and rats. Protect instruments, gauze, and cotton by wrapping them in sealed plastic bags.

4. Keep an emergency supply of important medicines on hand at all times. Each time one is used, replace it as soon as possible.

5. Notice the DATE OF EXPIRATION on each medicine. If the date has passed or the medicine looks spoiled, destroy it and get new medicine.

Note: Some medicines, especially tetracyclines, may be very dangerous if they have passed their expiration date. However, penicillins in dry form (tablets or powder for syrup or injection) can be used for as long as a year after the expiration date if they have been stored in a clean, dry, and fairly cool place.

Old penicillin may lose some of its strength so you may want to increase the dose. (CAUTION: While this is safe with penicillin, with other medicines it is often too dangerous to give more than the recommended dose.)

The home medicine kit

Each family should have the following things in their medicine kit. These supplies should be enough to treat many common problems in rural areas.

Also include useful home remedies in your medicine kit.

For wounds and skin problems:

- plastic or rubber glove or plastic bags for your hands
- sterile gauze pads in individual sealed envelopes
- 1-, 2-, and 3-inch gauze bandage rolls
- clean cotton
- adhesive tape (adhesive plaster)
- soap—if possible a disinfectant soap like Betadine
- 70% alcohol
- hydrogen peroxide in a dark bottle
- petroleum jelly (Vaseline) in a jar or tube
- white vinegar
- sulfur
- scissors (clean, not rusty)
- tweezers with pointed ends

For measuring temperature:

- thermometers: for mouth and for rectum

For keeping supplies clean:

- plastic bags

Medicines

For bacterial infections:

1. Penicillin, 250 mg. tablets

2. Cotrimoxazole (sulfamethoxazole, 400 mg., with trimethoprim, 80 mg.)

3. Ampicillin, 250 mg. capsules

For worms:

4. Mebendazole tablets 40 tablets of 100 mg. or 2 bottles

For fever and pain:

5. Aspirin, 300 mg. (5 grain) tablets

6. Acetaminophen, 500 mg. tablets

For anemia:

7. Iron (ferrous sulfate), 200 mg, pills (best if pills also contain vitamin C and folic acid)

For scabies and lice:

8. Permethrin 1 bottle of shampoo and 1 tube of cream

For itching and vomiting:

9. Promethazine, 25 mg. tablets

For mild skin infections:

10. Gentian violet, small bottle; or an antibiotic ointment

For eye infections:

11. Antibiotic eye ointment - 1 tube

Additional supplies

For injecting:

- syringes, 5 ml.
- needles # 22, 3 cm long, # 25, 1 1/2 cm long

For trouble urinating:

- catheter (rubber or plastic # 16 French)

For sprains and swollen veins:

- elastic bandages, 2 and 3 inches wide

For looking in ears, etc:

- penlight (small flashlight)

Additional medicines

For severe infections:

1. Penicillin, injectable; if only one, procaine penicillin 600,000 U. per ml.

2. Ampicillin, injectable, 250 mg. ampules and/or streptomycin

1 gm. vials for combined use with penicillin (if ampicillinis too expensive)

3. Tetracycline, capsules or tablets 250 mg.

For ameba and giardia infections:

4. Metronidazole, 250 mg. tablets

For seizures:

5. Phenobarbital, 15 mg. tablets

For severe allergic reactions and severe asthma:

6. Epinephrine (Adrenalin), injections, ampules with 1 mg.

For asthma:

7. Salbutamol, rescue inhaler

For severe bleeding after childbirth:

8. Ergonovine, injections or tablets of 0.2 mg.

Other medicines needed in many but not all areas

Where dry eyes (xerophthalmia) is a problem:

Vitamin A, 200,000 U. capsules

Where tetanus is a problem:

Tetanus antitoxin, 50,000 units (Lyophilized if possible)

Where snakebite or scorpion sting is a problem:

Specific antivenom

Where malaria is a problem:

Chloroquine, Quinine, Artemisinin, or whatever medicines work best in your area

To prevent or treat bleeding in underweight newborns:

Vitamin K, injections of 1 mg.

Final priceless advice

Experience taught me that one man with a fair amount of basic medical knowledge can make a difference in the lives of many. Without qualified medical personnel available, it is you who must know what to do to stay alive. Here are some of the basic, but very important requirements for maintenance of health.

Water

Your body loses water through normal body processes (sweating, urinating, and defecating). During average daily exertion when the atmospheric temperature is 20 degrees Celsius (C) (68 degrees Fahrenheit), the average adult loses and therefore requires 2 to 3 liters of water daily. Other factors, such as heat exposure, cold exposure, intense activity, high altitude, burns, or illness, can cause your body to lose more water.

You must replace this water.

Dehydration results from inadequate replacement of lost body fluids. It decreases your efficiency and, if injured, increases your susceptibility to severe shock. Consider the following results of body fluid loss:

· A 5 percent loss of body fluids results in thirst, irritability, nausea, and weakness.

· A 10 percent loss results in dizziness, headache, inability to walk, and a tingling sensation in the limbs.

· A 15 percent loss results in dim vision, painful urination, swollen tongue, deafness, and a numb feeling in the skin.

· A loss greater than 15 percent of body fluids may result in death.

The most common signs and symptoms of dehydration are--

· Dark urine with a very strong odor.

· Low urine output.

· Dark, sunken eyes.

· Fatigue.

· Emotional instability.

· Loss of skin elasticity.

· Delayed capillary refill in fingernail beds.

· Trench line down center of tongue.

· Thirst . Last on the list because you are already 2 percent dehydrated by the time you crave fluids.

You replace the water as you lose it. Trying to make up a deficit is difficult in a survival situation, and thirst is not a sign of how much water you need.

Most people cannot comfortably drink more than 1 liter of water at a time. So, even when not thirsty, drink small amounts of water at regular intervals each hour to prevent dehydration.

If you are under physical and mental stress or subject to severe conditions, increase your water intake. Drink enough liquids to maintain a urine output of at least 0.5 liter every 24 hours.

In any situation where food intake is low, drink 6 to 8 liters of water per day. In an extreme climate, especially an arid one, the average person can lose 2.5 to 3.5 liters of water per hour. In this type of climate, you should drink 14 to 30 liters of water per day.

With the loss of water there is also a loss of electrolytes (body salts). The average diet can usually keep up with these losses but in an extreme situation or illness, additional sources need to be provided. A mixture of 0.25 teaspoon of salt to 1 liter of water will provide a concentration that the body tissues can readily absorb.

Of all the physical problems encountered in a survival situation, the loss of water is the most preventable. The following are basic guidelines for the prevention of dehydration:

· Always drink water when eating. Water is used and consumed as a part of the digestion process and can lead to dehydration.

· Acclimatize. The body performs more efficiently in extreme conditions when acclimatized.

· Conserve sweat not water. Limit sweat-producing activities but drink water.

· Ration water. Until you find a suitable source, ration your water sensibly. A daily intake of 500 cubic centimeter (0.5 liter) of a sugar-water mixture (2 teaspoons per liter) will suffice to prevent severe dehydration for at least a week, provided you keep water losses to a minimum by limiting activity and heat gain or loss.

You can estimate fluid loss by several means. A standard field dressing holds about 0.25 liter (one-fourth canteen) of blood. A soaked T-shirt holds 0.5 to 0.75 liter.

You can also use the pulse and breathing rate to estimate fluid loss. Use the following as a guide:

· With a 0.75 liter loss the wrist pulse rate will be under 100 beats per minute and the breathing rate 12 to 20 breaths per minute.

· With a 0.75 to 1.5 liter loss the pulse rate will be 100 to 120 beats per minute and 20 to 30 breaths per minute.

· With a 1.5 to 2 liter loss the pulse rate will be 120 to 140 beats per minute and 30 to 40 breaths per minute. Vital signs above these rates require more advanced care.

Food

Although you can live several weeks without food, you need an adequate amount to stay healthy. Without food your mental and physical capabilities will deteriorate rapidly, and you will become weak. Food replenishes the substances that your body burns and provides energy. It provides vitamins, minerals, salts, and other elements essential to good health. Possibly more important, it helps morale.

The two basic sources of food are plants and animals (including fish). In varying degrees both provide the calories, carbohydrates, fats, and proteins needed for normal daily body functions.

Calories are a measure of heat and potential energy. The average person needs 2,000 calories per day to function at a minimum level. An adequate amount of carbohydrates, fats, and proteins without an adequate caloric intake will lead to starvation and cannibalism of the body's own tissue for energy.

Plant Foods

These foods provide carbohydrates--the main source of energy. Many plants provide enough protein to keep the body at normal efficiency. Although plants may not provide a balanced diet, they will sustain you even in the arctic, where meat's heat-producing qualities are normally essential.

Many plant foods such as nuts and seeds will give you enough protein and oils for normal efficiency. Roots, green vegetables, and plant food containing natural sugar will provide calories and carbohydrates that give the body natural energy.

The food value of plants becomes more and more important if you are eluding the enemy or if you are in an area where wildlife is scarce. For instance--

· You can dry plants by wind, air, sun, or fire. This retards spoilage so that you can store or carry the plant food with you to use when needed.

· You can obtain plants more easily and more quietly than meat. This is extremely important when the enemy is near.

Animal Foods

Meat is more nourishing than plant food. In fact, it may even be more readily available in some places. However, to get meat, you need to know the habits of, and how to capture, the various wildlife.

To satisfy your immediate food needs, first seek the more abundant and more easily obtained wildlife, such as insects, crustaceans, mollusks, fish, and reptiles. These can satisfy your immediate hunger while you are preparing traps and snares for larger game.

Personal Hygiene

In any situation, cleanliness is an important factor in preventing infection and disease. It becomes even more important in a survival situation. Poor hygiene can reduce your chances of survival.

A daily shower with hot water and soap is ideal, but you can stay clean without this luxury. Use a cloth and soapy water to wash yourself. Pay special attention to the feet, armpits, crotch, hands, and hair as these are prime areas for infestation and infection. If water is scarce, take an "air" bath. Remove as much of your clothing as practical and expose your body to the sun and air for at least 1 hour. Be careful not to sunburn.

If you don't have soap, use ashes or sand, or make soap from animal fat and wood ashes, if your situation allows. To make soap--

· Extract grease from animal fat by cutting the fat into small pieces and cooking them in a pot.

· Add enough water to the pot to keep the fat from sticking as it cooks.

· Cook the fat slowly, stirring frequently.

· After the fat is rendered, pour the grease into a container to harden.

· Place ashes in a container with a spout near the bottom.

· Pour water over the ashes and collect the liquid that drips out of the spout in a separate container. This liquid is the potash or lye. Another way to get the lye is to pour the slurry (the mixture of ashes and water) through a straining cloth.

· In a cooking pot, mix two parts grease to one part potash.

· Place this mixture over a fire and boil it until it thickens.

After the mixture--the soap--cools, you can use it in the semiliquid state directly from the pot. You can also pour it into a pan, allow it to harden, and cut it into bars for later use.

Keep Your Hands Clean

Germs on your hands can infect food and wounds. Wash your hands after handling any material that is likely to carry germs, after visiting the latrine, after caring for the sick, and before handling any food, food utensils, or drinking water. Keep your fingernails closely trimmed and clean, and keep your fingers out of your mouth.

Keep Your Hair Clean

Your hair can become a haven for bacteria or fleas, lice, and other parasites. Keeping your hair clean, combed, and trimmed helps you avoid this danger.

Keep Your Clothing Clean

Keep your clothing and bedding as clean as possible to reduce the chance of skin infection as well as to decrease the danger of parasitic infestation. Clean your outer clothing whenever it becomes soiled. Wear clean underclothing and socks each day. If water is scarce, "air" clean your clothing by shaking, airing, and sunning it for 2 hours. If you are using a sleeping bag, turn it inside out after each use, fluff it, and air it.

Keep Your Teeth Clean

Thoroughly clean your mouth and teeth with a toothbrush at least once each day. If you don't have a toothbrush, make a chewing stick. Find a twig about 20 centimeters long and 1 centimeter wide. Chew one end of the stick to separate the fibers. Now brush your teeth thoroughly.

Another way is to wrap a clean strip of cloth around your fingers and rub your teeth with it to wipe away food particles. You can also brush your teeth with small amounts of sand, baking soda, salt, or soap. Then rinse your mouth with water, salt water, or willow bark tea. Also, flossing your teeth with string or fiber helps oral hygiene.

If you have cavities, you can make temporary fillings by placing candle wax, tobacco, aspirin, hot pepper, tooth paste or powder, or portions of a ginger root into the cavity.

Make sure you clean the cavity by rinsing or picking the particles out of the cavity before placing a filling in the cavity.

Take Care of Your Feet

To prevent serious foot problems, break in your shoes before wearing them on any mission. Wash and massage your feet daily.

Trim your toenails straight across. Wear an insole and the proper size of dry socks. Powder and check your feet daily for blisters.

If you get a small blister, do not open it. An intact blister is safe from infection. Apply a padding material around the blister to relieve pressure and reduce friction. If the blister bursts, treat it as an open wound. Clean and dress it daily and pad around it. Leave large blisters intact. To avoid having the blister burst or tear under pressure and cause a painful and open sore, do the following:

· Obtain a sewing-type needle and a clean or sterilized thread.

· Run the needle and thread through the blister after cleaning the blister.

· Detach the needle and leave both ends of the thread hanging out of the blister. The thread will absorb the liquid inside. This reduces the size of the hole and ensures that the hole does not close up.

· Pad around the blister.

Get Sufficient Rest

You need a certain amount of rest to keep going. Plan for regular rest periods of at least 10 minutes per hour during your daily activities. Learn to make yourself comfortable under less than ideal conditions. A change from mental to physical activity or vice versa can be refreshing when time or situation does not permit total relaxation.