

Introduction To First Aid

We all take certain measures to prevent accidents but despite our best efforts emergencies arise. You trip and fall... unintentionally come in contact with exposed wiring... step on a rusty nail... or literally bite off more than you can chew... And when an accident happens, time is not on your side. Besides a well-stocked and functional First Aid Kit, preparation and skills are the most important tools you can have at your disposal.

A good First Aid Kit should be checked and restocked periodically and should always contain the following items:

- Sterile adhesive bandages in assorted sizes
- Sterile gauze pads in assorted sizes
- Hypoallergenic adhesive tape
- Scissors
- Tweezers
- Needle
- Ace bandage
- Moistened towelettes
- Antiseptic
- Thermometer
- Tongue blades
- Splints in assorted sizes
- Petroleum jelly
- Assorted sizes of safety pins
- Anti-bacterial soap
- Antibiotic ointment
- Latex gloves and face mask
- Sunscreen
- Aspirin and/or ibuprofen
- Ice Pack



Bite

If the victim was bitten by an unprovoked undomesticated animal such as a raccoon or a squirrel, an immediate shot may be necessary to prevent the possibility of a rabies infection. Contrary to common belief, a human bite can sometimes be more dangerous than that of an animal because human saliva contains many more types of bacteria which may cause infection.

A bite from a domestic pet can be painful but rarely requires a visit to the emergency room and unless obvious bodily harm was sustained, a simple precautionary treatment will suffice.

- Use anti-bacterial soap and water to thoroughly clean the bite wound.
- Apply antibiotic ointment such as Neosporin to prevent infection.
- If the injury resulted in broken skin, dress it with a sterile bandage and replace the dressing frequently.
- If the bite is deep, the victim may need to be treated for a puncture wound.

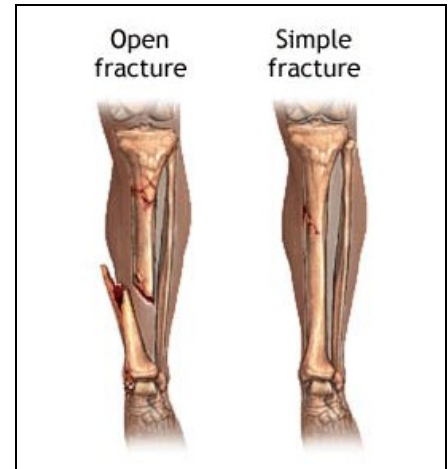


Broken Bone

A fracture is a broken or cracked bone. For first aid purposes fractures can be divided into two classifications:

- Open (compound) fracture. The bone is broken and an open wound is present. Often the end of the broken bone may protrude from the wound.
- Closed (simple) fracture. No open wound is present, but there is a broken or cracked bone.

Broken bones, especially the long bones of the upper and lower extremities, often have sharp, sawtooth edges; even slight movement may cause the sharp edges to cut into blood vessels, nerves, or muscles, and perhaps through the skin. Careless or improper handling can convert a closed fracture into an open fracture, causing damage to surrounding blood vessels or nerves which can make the injury much more serious. A person handling a fracture should always keep this in mind. Damage due to careless handling of a closed fracture may greatly increase pain and shock, cause complications that will prolong the period of disability, and endanger life through hemorrhage of surrounding blood vessels.



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If the broken ends of the bone extend through an open wound, there is little doubt that the victim has suffered a fracture. However, the bone does not always extend through the skin, so the person administering first aid must be able to recognize other signs that a fracture exists.

The general signs and symptoms of a fracture are as follows:

- Pain or tenderness in the region of the fracture
- Deformity or irregularity of the affected area
- Loss of function (disability) of the affected area
- Moderate or severe swelling
- Discoloration
- Victim's information, if conscious (the victim may have felt the bone snap or break)

Be careful when examining injured persons, particularly those apparently suffering from fractures. For all fractures the first aider must remember to maintain an open airway, control bleeding and treat for shock. Do not attempt to change the position of an injured person until he/she has been examined and it has been determined that movement will not complicate the injuries. If the victim is lying down, it is far better to attend to the injuries with the victim in that position and with as little movement as possible. If fractures are present, make any necessary movement in such a manner as to protect the injured part against further injury.

Splints

Use splints to support, immobilize, and protect parts with injuries such as known or suspected fractures, dislocations or severe sprains. When in doubt, treat the injury as a fracture and splint it. Splints prevent movement at the area of the injury and at the nearest joints. Splints should immobilize and support the joint or bones above and below the break.

Many types of splints are available commercially. Easily applied and quickly inflated plastic splints give support to injured limbs. Improvised splints may be made from pieces of wood, broom handles, newspapers, heavy cardboard, boards, magazines, or similar firm materials.

Certain guidelines should be followed when splinting:

- Gently remove all clothing from any suspected fracture or dislocation.
- Do not attempt to push bones back through an open wound.
- Do not attempt to straighten any fracture.
- Cover open wounds with a sterile dressing before splinting.
- Pad splints with soft material to prevent excessive pressure on the affected area and to aid in supporting the injured part.
- Pad under all natural arches of the body such as the knee and wrist.
- Support the injured part while splint is being applied.
- Splint firmly, but not so tightly as to interfere with circulation or cause undue pain.
- Support fracture or dislocation before transporting victim.
- Elevate the injured part and apply ice when possible.

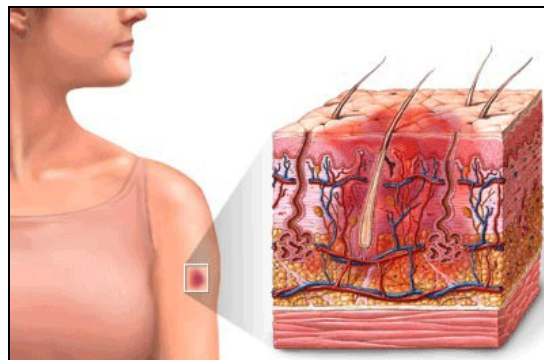
A break in the lower part of the leg requires two splints, one on each side of the leg (or at least the shin). If suitable material is not available, you can use the victim's healthy leg as a makeshift splint. As much as possible, keep the victim from moving and until an ambulance arrives, remember **ICE**:

- **"I"** is for ice - if possible apply an ice pack or ice cubes to the injured area. This will keep down the swelling and reduce pain.
- **"C"** is for compression - if the wound is bleeding, apply direct pressure with a clean cloth to reduce blood flow.
- **"E"** is for elevation - try to keep the injured area as high above heart level as possible. This will reduce blood flow to the injury and minimize swelling.

Bruise

A typical bruise is a contusion caused by traces of blood escaping from small vessels that lie close to the skin's surface. Since our blood vessels become more fragile with age, the elderly tend to bruise easier than healthy adults and children. Conversely, if a child sustains excessive bruising it may be an indication of a more serious injury and should be treated accordingly.

If the bruise is on the victim's head and noticeable swelling occurs, he should be checked for head trauma. To reduce the bump and minimize the pain, have the victim elevate the injured area and apply a commercial ice pack or ice cubes wrapped in a towel for 30 to 45 minutes. Depending on the extent of the injury, this process should be repeated for a few days or until the swelling and the pain begin to dissipate.



Burns

Burns may be classified according to extent and depth of damage as follows:

First degree - Minor

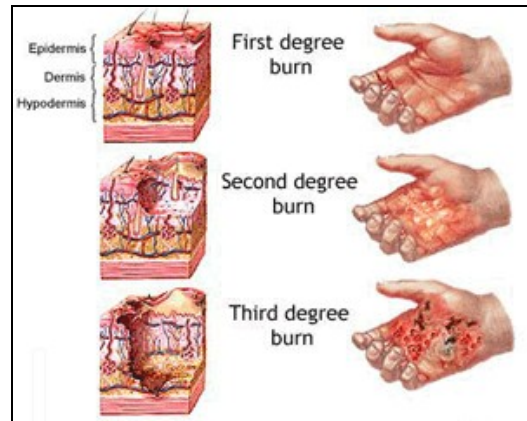
- The burned area is painful.
- The outer skin is reddened.
- Slight swelling is present.

Second degree - Moderate

- The burned area is painful.
- The underskin is affected.
- Blisters may form.
- The area may have a wet, shiny appearance because of exposed tissue.

Third degree - Critical

- Insensitive due to the destruction of nerve endings.
- Skin is destroyed.
- Muscle tissues and bone underneath may be damaged.
- The area may be charred, white, or grayish in color.



Burns may also be classified according to cause. The four major types of burns by cause are as follows:

- Chemical
- Thermal
- Electrical
- Radiation

The seriousness of a burn or scald is influenced by the extent of the body surface involved, as well as by the depth to which the tissues are penetrated. Burns can do more damage than injure the skin. Burns can damage muscles, bones, nerves, and blood vessels. The eyes can be burned beyond repair. The respiratory system structures can be damaged, with possible airway obstruction, respiratory failure, and respiratory arrest. Shock is very severe when burns are extensive and may cause death in a few hours.

First Aid for Burns

The first aid given to a burn victim largely depends on the cause of the burn and the degree of severity. Emergency first aid for burns or scalds should primarily be exclusion of air from the burned area, relief of the pain that immediately follows burns, minimizing the onset of shock, and the prevention of infection.

Remove all clothing from the injured area, but cut around any clothing that adheres to the skin and leave it in place. Keep the patient covered, except the injured part, since there is a tendency to chill. First aid dressings for burns and scalds should be free of grease or oil. The use of greases or oils in the treatment of burns makes it necessary to cleanse the burned or scalded areas with a solvent before medical treatment can begin. This delays the medical treatment and is very painful.

Be careful when dressing burns and scalds. Burned and scalded surfaces are subject to infection the same as open wounds and require the same care to prevent infection. Bandages should be loose enough to prevent pressure on burned surfaces. As swelling often takes place after burn dressings have been applied,

check them frequently to see that they are not too tight. Watch for evidence of shock and treat if it is present. In cases of severe burns, transport the victim to the hospital as quickly as possible.

Burns of the Eyes by Chemicals

Frequently chemical substances, especially lime, cement, caustic soda, or acids or alkalis from storage batteries get into the eyes. The treatment is to wash the eyes freely with clean water. To do this, have the victim lie down, hold the eyelids open with the fingers and pour the water into the inner corner of the eyes from a pitcher or other container. Use plenty of water and wash the eyes thoroughly, being sure the water actually flows across the eyes. Do not put neutralizing solution in the eyes. Cover both eyes with moistened sterile gauze pads and secure in place. Chemical burns of the eyes should receive the attention of an eye specialist as soon as possible.

Chemical Burns

General first aid for chemical burns is as follows:

- Remove all clothing containing the chemical agent.
- Do not use any neutralizing solution, unless recommended by a physician.
- Irrigate with water for at least 15 minutes, use potable water if possible.
- Treat for shock.
- Transport to a medical facility.

First aid for dry chemical (alkali) burns is an exception to the general first aid for chemical burns because mixing water with dry alkali creates a corrosive substance. The dry alkali should be brushed from the skin and water should then be used in very large amounts.

Thermal Burns (Minor)

General first aid for minor thermal burns is as follows:

- Use cool, moist applications of gauze or bandage material to minimize blistering.
- Treat for physical shock.

If the victim has thermal burns on the eyelids, apply moist, sterile gauze pads to both eyes and secure in place.

Thermal Burns (Moderate and Critical)

General first aid for more serious thermal burns is as follows:

- Do not use cold applications on extensive burns; cold could result in chilling.
- Cover the burn with a clean, dry dressing.
- Treat for shock.
- Transport to a medical facility.

Electrical Burns

General first aid for electrical burns is as follows:

- Conduct a primary survey, as cardiac and respiratory arrest can occur in cases of electrical burns.
- Check for points of entry and exit of current.
- Cover burned surface with a clean dressing.
- Splint all fractures. (Violent muscle contractions caused by the electricity may result in fractures.)
- Treat for physical shock.
- Transport to a medical facility.

Respiratory failure and cardiac arrest are the major problems caused by electrical shock and NOT the burn. Monitor pulse and breathing while preparing victim for transportation.

Radiation Burns

Radiation presents a hazard to the rescuer as well as the victim. A rescuer who must enter a radioactive area should stay for as short a time as possible. Radiation is undetectable by the human senses and the rescuer, while attempting to aid the victim, may receive a fatal dose of radiation without realizing it. Notify experts immediately of possible radioactive materials contamination.

Choking (Heimlich Maneuver)

Choking is usually caused by a piece of foreign matter such as food becoming lodged in a person's windpipe. Because a choking victim is fully aware that he cannot breathe normally, a sense of panic may overcome them, making assessing the situation and rescue efforts difficult. It is important to try and keep the victim calm in order to determine whether your assistance is truly necessary or if the victim's own coughing reflex is sufficient.

Start by asking the person if he is choking. This simple step can be deceptively effective - the victim may be coughing violently or even gasping for air, but if he is able to answer then he is probably **not** choking. A choking victim will not be able to speak since oxygen cannot reach his lungs. But if after asking the person if he's choking all he can do is gesture or point to his throat and you notice his face starting to turn blue, then he is most likely choking and you will need to perform the Heimlich Maneuver immediately.

- Start by finding the proper stance - behind the victim with one of your feet approximately between the victim's feet.
- Wrap one of your arms around the victim and place your hand in a closed fist just slightly above his belly button.
- Place your other hand directly on top of the first.
- Squeeze the victim's abdomen in quick upward thrusts as many times as it is necessary to dislodge the object in his windpipe.



Cuts

Breaks in the skin range from pin punctures or minor scratches to extensive cuts, tears and gashes. In First Aid, open wounds are divided into six categories: abrasions, amputations, avulsions, incisions, lacerations, and punctures.

Abrasions are caused by rubbing or scraping with the wound generally shallow and a portion of the skin damaged, leaving a raw surface with minor bleeding.

Amputations involve extremities such as fingers, toes, hands, feet, or entire limbs severed completely from the victim's body. Depending on the type of amputation, bleeding may be excessive or very restricted.

Avulsions are injuries that tear a whole piece of skin and tissue from the body, usually as a result of violent or forcible separation. Although these injuries may often be successfully repaired if treated quickly, there is great danger of infection and bleeding.

Incisions are produced by a sharp cutting edge such as a knife or glass. If an incision is deep, major blood vessels and nerves may be severed making it difficult to control blood flow.

Lacerations are similar to incisions but have rough or jagged edges with the flesh torn or cut with a blunt edge.

Puncture wounds are produced by pointed objects being forced through the skin. Although the small number of blood vessels damaged sometimes prevents excessive bleeding, there is danger of infection due to this poor drainage.

General First Aid for bleeding

The main objectives in administering first aid to a bleeding victim are to stop blood flow and to prevent germs from entering the wound.

- expose the wound by carefully cutting away at clothing around it
- carefully remove any loose foreign body around the wound with clean material, always wiping away from the wound
- if an object has impaled the victim, do not attempt to remove it as this may cause excessive bleeding and other serious injury
- dress the wound with sterile gauze or similar material, covering the wound completely
- unless otherwise specified, apply direct pressure to the wound to stem blood flow
- keep the victim still and calm
- if necessary, treat the victim for shock
- seek medical attention

Electric Shock

Electricity travels through conductors - any material which allows electrical flow - as it tries to reach the ground. Because people make excellent conductors, minor electric shocks are a common household hazard. Fortunately it is usually more surprising than dangerous and does not require medical attention. However, some basic precautions should be taken to ensure that the shock does not interfere with the body's normal electrical impulses including the functions of the brain and the heart. Prolonged exposure to a direct source of electricity can also cause severe burns to the skin and the tissue.

In the event of electrocution **do not** rush to assist the victim until you are certain that he is no longer in contact with electricity. Otherwise the current will pass through the victim directly to you.

- If at all possible, turn off the source of electricity (i.e. light switch, circuit breaker, etc.) If this is not an option, use **non-conductive** material such as plastic, glass, or dry wood to separate the source of electricity from the victim.
- If the injuries appear serious or extensive, dial 9-1-1.
- Check the victim's vital signs such as the depth of his breathing and regularity of his heart beat. If either one is affected by exposure to electricity or if the victim is unconscious, begin to perform CPR.
- Treat any areas of the victim's body that may have sustained burns.
- If the victim is responsive and does not appear seriously injured but looks pale or faint, he may be at risk of going into shock. Gently lay him down with his head slightly lower than his chest and his feet elevated.

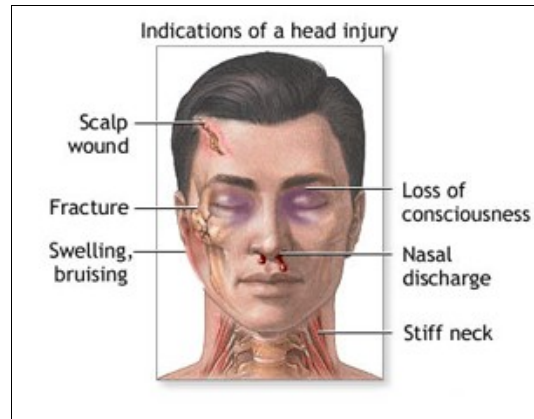
Head Injury

Depending on the severity, a head injury may be evidenced by a visible wound, swelling, nasal discharge, or even loss of consciousness. And although most minor head injuries caused by a fall or a strike to the head may result in a bruise or a bump and are not dangerous, it is extremely important to pay close attention to the following symptoms:

- Excessive bleeding from an open wound
- Loss of consciousness
- Interruption of breathing
- Prolonged disorientation or apparent memory loss

If you detect any of the above, the victim may have sustained serious head trauma and will require professional medical attention. If that's the case, dial 9-1-1 immediately. Until the ambulance arrives:

- If possible, place the victim in a dim, quiet area.
- Lay the victim down with his head and shoulders slightly elevated.
- If the wound is bleeding, dress it with gauze or clean cloth.
- Do not leave the victim unattended.
- If the victim loses consciousness, you may need to perform CPR.



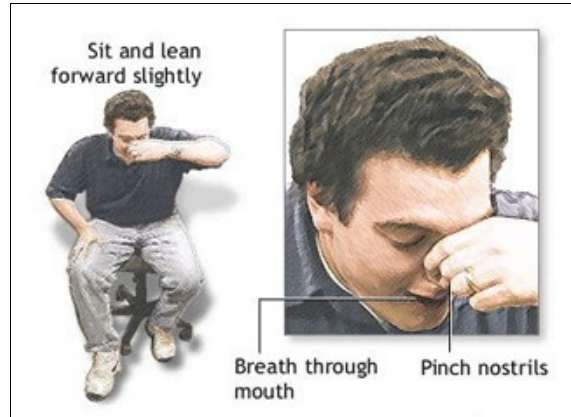
If the injury does not appear serious or extend beyond minor bruising, it should be treated accordingly.

Nosebleed

A human nose is rich with small fragile blood vessels which are susceptible to damage. A nosebleed may be caused by a fall, a strike to the nose, or even from breathing excessively dry air.

If the nosebleed is not a symptom of a more serious injury, it is rarely dangerous and can usually be stopped by applying continuous pressure.

- Do **NOT** tilt the victim's head backward.
- Have the victim sit or stand upright to slow down the flow of blood.
- Loosen any tight clothing around the victim's neck.
- If possible, have the victim spit out excess saliva - swallowing may disturb the clot and cause nausea.
- Pinch the nostrils shut and press the tip of the nose against the bones of the face.
- Maintain pressure for 5 to 10 minutes.
- Once the bleeding has stopped, the victim should avoid blowing his nose or otherwise straining himself for at least an hour.



Poisoning

Poisons are any substances which act to produce harmful effects on the normal body process. The major means of poisons entering the body are through ingestion (eating or drinking), inhalation (through the nose and mouth), injection (body tissue or blood stream), and topical absorption (through the skin).

Poisoning by ingestion

Poisoning by ingestion may be caused by intentional or accidental overdose of medication such as drugs and alcohol; household cleaners or chemicals; and spoiled food products.

The signs and symptoms of poisoning by ingestion are:

- nausea, vomiting, and diarrhea
- severe abdominal pain
- irregular respiration and pulse
- unusual appearance of the mouth such as corroded or destroyed tissues or stains

Treating poisoning by ingestion should be preceded by immediate contact with the local poison control center and following provided instructions. This may include diluting the substance by giving the victim water, or inducing vomiting. Vomiting should not be induced if the victim has swallowed a strong acid or alkali, or petroleum product because these substances may cause further damage when vomited. Likewise, if the victim is unconscious or is convulsing, vomiting should not be induced as this may cause the victim to inhale the vomit into his lungs.

The poison control center will determine the best method of treatment depending on the circumstances until professional medical care is available.

Poisoning by inhalation

A number of toxic gases encountered in such industries as mining and oil drilling may prevent a body from normal respiration by eliminating oxygen from the red blood cells. These gases include sulfur dioxide, ammonia, hydrogen cyanide, carbon monoxide, and others.

If a victim is experiencing poisoning by inhalation he may exhibit:

- shortness of breath
- uncontrollable coughing
- cyanosis (bluishness of the skin)
- with carbon monoxide, extreme redness of the skin

Before treating a victim of poisoning by inhalation, make sure that the scene is free of poisonous gases and if necessary, use protective equipment such as a gas mask.

- expose the victim to fresh air as quickly as possible
- maintain an open airway
- treat the victim for shock

Topical poisoning

Many substances such as fumes, mists, liquids, and certain plants can cause poisoning and irritation of the skin, causing discomfort and inflammation. Persons who notice changes in the normal texture or color of

their skin should seek medical advice but may temporarily eliminate discomfort by early treatment:

- remove contaminated clothing
- thoroughly wash contaminated area
- treat with topical ointment to ease itching
- if reaction is severe, seek medical assistance

Shock

Although the term "shock" has a number of meanings, in general this refers to the failure of blood to circulate throughout the body and may result from a variety of causes.

The nervous system plays an important role in shock. The various parts of the body and the organs controlling the body functions are coordinated by the nervous system, the main parts of which are the brain and spinal cord. There are mainly two types of nerves entering and leaving the spinal cord: sensory nerves, which convey sensations such as heat, cold, pain, and touch from different parts of the body to the brain; and motor nerves, which convey impulses from the brain to the muscles causing movement.

The cardiovascular system circulates blood to all the cells in the body which delivers food and oxygen and removes waste products. This system is a complex series of vessels which can dilate and constrict depending on the signals transmitted by the nervous system. When the body is in its normal state, approximately 12 pints of blood circulate through a 150 lbs. adult, and the pumping action of the heart supplies all parts of the body to function properly. Shock is the failure of this system to provide enough circulation of blood to every part of the body.

This collapse may be caused by any of three conditions:

- blood loss
- excessive blood vessel dilation
- heart failure

Regardless of the cause of shock, the result is that there is insufficient nourishment and oxygen to all parts of the body. This causes organs to begin to die, especially the brain. As the brain weakens the victim's power of reasoning may become decreased and he may exhibit anxiety, disorientation, confusion, and even lose consciousness.

Major Causes Of Shock are:

- severe or extensive injuries
- severe pain
- loss of blood
- severe burns
- electrical shock
- allergic reaction
- poisoning
- extreme temperature exposure
- substance abuse

Physical signs of shock may be determined by observing:

- dazed look
- excessive paleness
- nausea and vomiting
- excessive thirst
- weak, rapid pulse
- shallow, irregular breathing
- dilated pupils

While shock is a very serious condition it is reversible if recognized quickly and treated properly.

- If possible, keep the victim lying down. Elevate the lower extremities if the injury will not be aggravated. Remember that if an accident was severe enough to result in a head injury, there may be spinal damage – when in doubt, keep the victim flat.
- Make breathing and circulation easier by loosening any constricting clothing from the neck, chest, and waist.
- Minimize the victim's movement.
- Maintain the victim's body temperature as near-normal as possible.
- Keep the victim calm as his emotional distress may unnecessarily stimulate shock symptoms.



Anaphylactic Shock

This type of shock occurs when a person comes into contact with something they are extremely allergic to. Violent reaction may be caused from ingesting shellfish, berries, nuts, or such drugs as penicillin, or from insect stings.

The symptoms of anaphylactic shock are:

- itching, burning skin
- hives over a large area
- swelling of the tongue
- severe breathing difficulty
- tightening in the chest
- weak pulse
- convulsions

If the victim has any medication to counteract the allergy, administer it immediately and transport him to the nearest medical facility as quickly as possible.

Fainting

Fainting is a temporary loss of consciousness due to an inadequate supply of oxygen to the brain and is a mild form of shock. If a person feels faint, the initial response might be to sit down resting the head between the knees, thus easing blood flow to the brain. If the victim loses consciousness and remains unconscious for any length of time, this may be an indication of a more serious condition and arrangements for medical observation should be made immediately.

Temperature (exposure)

Hypothermia

Hypothermia is a general cooling of the entire body and is caused by extensive exposure to extreme cold at which time the body fails to generate heat. Individuals experiencing fatigue, hunger, and poor physical condition are more likely to experience hypothermia and should take every possible precaution to avoid exposure to the elements.

First Aid treatment for a victim of hypothermia are:

- protect him from the elements (wind, rain, snow, cold, etc.) as quickly as possible
- remove all wet clothing
- wrap the victim in blankets making sure that the blankets are under him as well as over him.
- provide the victim with warm liquids to drink
- seek immediate medical attention

Frostbite

The signs of frostbite are not always apparent to the victim since the nature of this injury is its numbing effect of the affected area.

Treating frostbite consists of the following:

- apply loose sterile dressing to the injury
- have the victim drink warm fluids containing sugar
- do NOT rub the frostbitten area
- do NOT attempt to heat the area with heat lamps or hot water bottles
- do NOT place the victim near a stove, fire or radiator
- do NOT allow the victim to drink coffee, tea, or hot chocolate as caffeine restricts blood flow by constricting blood vessels
- seek immediate medical help

Heat Stroke

Heat stroke is a sudden onset of illness from extensive exposure to the sun or other sources of heat. The most important and damaging effect of heat stroke is the victim's inability to produce sweat, causing the body temperature to rise uncontrollably.

The signs of heat stroke are:

- flushed, dry, very hot skin
- strong and rapid pulse which may become weak as the victim's condition worsens
- irregular respiration followed by loss of consciousness

Failure to quickly lower the victim's body temperature will result in brain damage or death. To treat the victim of heat stroke:

- move the victim to a cool environment
- remove all clothing
- wrap the victim in moist sheets or immerse him in cool water
- seek immediate medical attention