

DIOCESE OF CHARLOTTE RISK CONTROL PROGRAM

X. FIRST AID AND MEDICAL EMERGENCIES

I. INTRODUCTION

A worker trained in first aid should be present at each site.

This chapter is intended to assist or refresh those persons trained in the administration of first aid.

First aid in industry may be defined as the immediate necessary, emergency care given in case of injury or illness which occurs during working hours. In many cases, first aid immediately following injury may be all that is necessary. In other instances, prompt treatment by a physician will be indicated. If a person is severely injured so that he or she is unconscious, is bleeding severely, or has a fracture, first aid will reduce the possibility of shock, unnecessary loss of blood, or aggravating of the injury, and may even save a life.

Qualifications of the First Aid Worker

The first aid worker must know what constitutes good first aid, be capable of recognizing cases in need of medical treatment and attempt no care beyond emergency measures unless so authorized by a physician. The person who is assigned the responsibility of first aid should possess such personal characteristics as tact, sympathy, judgment, dependability, and resourcefulness. The person should become technically qualified through training in first aid courses given by the American Red Cross or other sources of appropriate training.

General Rules

- Be calm; size up the situation as completely and quickly as possible before giving first aid.
- Do the simplest things consistent with good first aid.
- Take care of the most important conditions first. Check for airway, breathing, circulation, and then give first aid treatment.
- Be gentle in handling an injured person. If the injury is serious, keep the person lying down and as comfortable as possible. Do not move the person unless you know it can be done without making the condition worse.
- Be clean in treating a wound. A good knowledge of bandaging and familiarity with aseptic technique concerning hands, instruments and materials is essential.

Professional Responsibility and Arrangements

- Designate a physician responsible.
- In the absence or unavailability of the designated physician, an alternate should be identified.
- The local Rescue Squad is an important adjunct.
- Ambulance service and an emergency clinic arrangement should also be available.

This workbook is the primary source used as a guideline for the implementation and administration of cardiopulmonary resuscitation and first aid as described below. Personnel responsible for administering first aid should be adequately trained and certified.

II. WHAT TO DO IN AN EMERGENCY

In an emergency, initiate the four Emergency Action Principles. These Principles will be described in greater detail later:

1. **Survey the Scene**

Determine if the scene is safe for you and the person requiring help. Know your limitations. Do not move the person unless you have to. Find out what happened and how many people are injured.

2. **Do a Primary Survey**

- A. Open the airway using the head-tilt/chin-lift method.
- B. Check for breathlessness. Look at the chest rise and fall. Listen for breathing. Feel for breathing. Do this for 3 to 5 seconds.
- C. Check for circulation. Place 2 fingers on the carotid artery in the neck and feel for a pulse for 5 to 10 seconds.

3. **Phone the Emergency Medical Services (EMS) for Help**

Tell the dispatcher the location of the emergency, the telephone number being used, the caller's name, what happened, the number injured and the condition of the injured. Tell what first aid is being rendered.

4. **Do a Secondary Survey**

Check the vital signs (pulse rate, breathing rate, and skin appearance). Do a head to toe examination.

EMERGENCY ACTION PRINCIPLES

Survey the Scene

Is It Safe?

Do a Primary Survey

Check for Unresponsiveness

Airway Breathing Circulation (ABCs)

Phone EMS

Do a Secondary Survey

Interview Vital Signs Head-to-Toe Exam

III. RESCUE BREATHING (ARTIFICIAL RESPIRATION)

Rescue breathing is important because when the brain does not receive an adequate supply of oxygen, it begins to die within 4 to 6 minutes. The air we breathe contains 21% oxygen. We exhale 16% oxygen, which is sufficient to keep a person alive.

Emergencies may be caused by:

- Airway obstructions
- Poisonous substances
- Injury to chest or lungs
- Near drowning
- Electrocution
- Certain drugs
- Burns
- Shock
- Certain diseases and illnesses
- Reactions to insect bites and stings

WHEN AN ADULT STOPS BREATHING

IV. CHOKING (AIRWAY OBSTRUCTION)

According to the American Red Cross, approximately 3,000 people will choke to death this year. The most common causes of choking are:

- Trying to swallow large pieces of food that are poorly chewed.
- Drinking alcohol before or during eating. (Alcohol dulls the nerves that help you swallow.)
- Wearing dentures. Dentures make it difficult to sense the size of food when chewing and swallowing.
- Talking excitedly or laughing while eating, or eating too fast.
- Walking, playing or running with objects in the mouth.

WHEN AN ADULT IS CHOKING

V. HEART ATTACK, CARDIAC ARREST, CARDIOPULMONARY RESUSCITATION (CPR)

Heart Attack

The most significant sign of a heart attack is chest discomfort and pain. The pain is described as being in the center of the chest behind the breast bone. The pain may spread to one or both shoulders or arms or to the neck, jaw or back.

A victim may describe the pain as:

- Uncomfortable pressure
- Squeezing
- A fullness or tightness
- Aching
- Crushing
- Constrictive
- Oppressive
- Heavy

The symptoms of a heart attack are:

- Chest pain
- Sweating
- Nausea
- Shortness of breath

First aid for a heart attack is:

- Recognize the signs and symptoms of a heart attack and take action.
- Have the victim stop what he or she is doing and sit or lie down in a comfortable position. Loosen restrictive clothing. Do not let the victim move around.
- Call the Emergency Medical Services for help. If you are alone, make the call yourself.

It is important that emergency medical help arrives quickly. A person experiencing a heart attack needs medical help quickly so that his or her condition does not worsen. The heart may stop beating, so be prepared to do CPR.

CPR

To help a person in cardiac arrest, you must provide CPR. By breathing into the victim and compressing the chest, you:

- Keep the lungs supplied with oxygen when breathing has stopped.
- Keep blood circulating and carrying oxygen to the brain, heart, and other parts of the body.

CPR FOR AN ADULT

VI. SECONDARY SURVEY

The purpose of a secondary survey is to check the victim carefully and in an orderly way for problems that are not immediately life-threatening, but could become so if not cared for. Secondary surveys are only done on fully conscious persons.

If the person is unconscious, monitor the:

- A. Airway
- B. Breathing
- C. Circulation

until EMS arrives.

Secondary Survey has three steps:

1. Interview the person and/or bystanders
2. Check the person's vital signs
 - Normal vital signs:
 - Pulse rate 60 to 80 beats per minute
 - Breathing rate 12 to 20 breaths per minute
 - Skin appearance
 - Temperature (warm, not hot or cold)
 - Moisture (not moist, not dry)
 - Skin color (face should be normal skin color, not pale or bluish)
3. Check for signs of shock
 - Very fast or very slow pulse rate
 - Very slow or fast breathing

VII. BLEEDING

Types of Bleeding

- **Arterial bleeding** is the loss of blood from an artery. The color of the blood is bright red and blood spurts with each heart beat. Arterial bleeding is usually severe and hard to control, and it needs immediate medical attention.
- **Venous bleeding** is the loss of blood from a vein. It has a steady flow, which can be heavy, and the color is dark red.
- **Capillary bleeding** is the loss of blood from capillaries. The blood flow is usually slow.

External Bleeding

There are four types of wounds:

- Abrasions - rubbing or scraping
- Incised wounds or cuts (as made with a knife or broken glass)- bleed freely.
- Lacerations or tears (as made by machinery)- slight bleeding, easily infected, dirt is apt to be ground into the wound.
- Punctures or stabs (as made by a nail or penetrating instrument)- slight bleeding, difficult to clean, easily infected.

The chief dangers from wounds are hemorrhage, shock, infection, and tetanus in the unimmunized individual.

Internal Bleeding

Internal bleeding ranges from small bruises to conditions serious enough to cause shock, heart failure or lung failure. It can result from crushing injuries, punctures, injuries from blunt objects, tears in organs and blood vessels, bruised tissues and fractured bones.

Signs and symptoms of internal bleeding are:

- Bruised, swollen, tender or rigid abdomen
- Bruises on chest or signs of fractured ribs
- Blood in vomit
- Wounds that have penetrated the chest or abdomen
- Bleeding from the rectum or vagina
- Fractures of the pelvis
- Abnormal pulse and difficulty breathing
- Cool, moist skin

First Aid for Internal Bleeding

- Apply cold packs for simple bruises
- For more severe internal injuries get medical help immediately and
 - Monitor ABCs
 - Reassure the person and keep him or her still
 - Control all external bleeding
 - Care for shock
 - Loosen any tight fitting clothing
 - If the person is vomiting, place person lying down on his or her side so that any fluids can drain from the mouth easily.

VIII. SHOCK

The first hour after a severe injury is the most important. The major problem is the onset of shock. Once shock reaches a certain dangerous level, the victim cannot be saved.

Shock is a condition in which the blood fails to circulate normally throughout the body, causing the whole system to slow down. Shock always accompanies serious injuries, excessive loss of blood, or severe pain, and sometimes results from minor injuries, anxiety or fright. It may vary in degree from a moment of faintness to a condition severe enough to cause death.

Shock does not always develop immediately; symptoms may occur at any time within a few hours following an injury. Because symptoms develop gradually it is easier to prevent shock than it is to control it after symptoms appear. **Every severely injured person may develop shock and should be treated for shock even though there are no signs of shock immediately following an injury.**

Shock can be caused by :

- | | |
|---------------------------|----------------------------|
| • Bleeding | • Poisoning |
| • Insect bites and stings | • Snakebites |
| • Electrical shock | • Burns |
| • Severe injury | • Psychological trauma |
| • Heart attack | • Other medical conditions |

Signs and symptoms of shock:

- Very confused behavior
- Very fast or very slow pulse rate
- Very fast or very slow breathing rate
- Trembling and weakness in arms and legs
- Cool, moist skin
- Pale or bluish skin, lips, and fingernails
- Enlarged pupils

IX. BURNS

Burns are injuries resulting from exposure to:

- Heat
- Electricity
- Chemicals
- Radiation

The severity of burns depends on their:

- Depth
- Size
- Location

Burns are most serious when they are located on the:

- Face
- Neck
- Hands
- Feet
- Genitals or
- Spread over large areas of the body or
- Combined with other injuries (i.e., fractures)

Burns may cause:

- Pain
- Shock
- Infection

Degrees of burns:

- Redness or swelling
- Mild swelling
- Pain

Second degree burns are deeper than first degree and are characterized by:

- Red or mottled
- Blisters
- Slightly moist from loss of fluid through damaged skin
- Painful because nerve endings are intact

Third degree burns are the deepest and are characterized by:

- White or charred appearance
- May look like second degree burns

HEAT BURNS

CHEMICAL BURNS

ELECTRICAL BURNS

X. EYE AND NOSE INJURIES ACTION GUIDES

EYE AND NOSE INJURIES ACTION GUIDES

XI. HUMAN AND ANIMAL BITES

XII. INSECT BITES AND STINGS

XIII. SNAKEBITES

XIV. FRACTURES, DISLOCATIONS, SPRAINS, and STRAINS

The four major types of injuries that occur to bones, tendons, ligaments, and muscles are:

- Fractures
- Sprains
- Dislocations
- Strains

Fractures or breaks or cracks in bones:

- Closed fractures result in no visible wounds.
- Open fractures result in an opening of the skin permitting a high risk of infection.

Fractures can be caused by:

- Motor vehicle accidents
- Sports injuries
- Falls
- Bone diseases

Signs and symptoms of fractures:

- Sound of bone "snapping"
- Crepitus- grating sensation of bones rubbing together
- Obvious deformities
- Pain
- Tenderness
- Swelling
- Bruising
- Inability to move injured part
- People with rib fractures may have difficulty breathing

Dislocations are injuries and the ligaments surrounding them.

Dislocations can be caused by:

- Falls
- Sports injuries
- Motor vehicle accidents

Signs and symptoms of dislocations are:

- Similar to fractures
- Deformity
- Loss of movement
- Swelling
- Pain in a joint
- Tenderness

Sprains are stretched or torn tendons, ligaments and blood vessels around joints.

Sprains are caused by:

- Falls
- Motor vehicle accidents
- Sports injuries
- Over exertion

Signs and symptoms of sprains are:

- Pain at the joint
- Discoloration
- Tenderness
- Swelling

Strains are stretched or torn muscles frequently in the back.

Strains are caused by:

- Over exertion
- Lifting something improperly

Signs and symptoms of strains include:

- Sharp pain
- Stiffness
- Possible swelling

FRACTURES, DISLOCATIONS, SPRAINS, AND STRAINS ACTION GUIDES

XV. POISONING

A poison is any substance; solid, liquid, or gas, that causes injury or death when introduced into the body. The four main ways a person can be poisoned are by:

- Swallowing
- Absorbing through skin
- Inhaling
- Injection

Swallowed poisons may show any or all of the following signs and symptoms:

- Evidence of an opened container or parts of plants nearby
- Nausea
- Vomiting
- Diarrhea
- Slow pulse
- Unusual breath or body odors
- Burns around the mouth
- Drowsiness or unconsciousness
- Convulsions

POISONING ACTION GUIDES
Swallowed Poison

Inhaled poisons can include:

- Carbon monoxide
- Hydrogen sulfide
- Refrigeration gases
- Carbon dioxide
- Smoke
- Fumes from spray chemicals

Signs and symptoms of inhaled poisoning may include any or all of the following:

- Dizziness
- Headache
- Unconsciousness
- Weakness
- Difficulty breathing
- Discoloration of the lips and mucus membranes

Inhalation of Hydrogen Sulfide

The toxicity limits of hydrogen sulfide are as follows:

- Up to 10ppm (1/1,000 of 1 percent): This amount can be smelled and is safe for 8 hours of exposure.
- Up to 100ppm (1/1,000 of 1 percent): This amount may sting the eyes and throat. It kills the sense of smell in 3-15 minutes.
- 500ppm (5/100 of 1 percent): This amount can cause a loss of balance. It may cause respiratory paralysis in 30-40 minutes. It may require artificial respiration.
- 1,000ppm (1/10 of 1 percent): This amount may cause instantaneous unconsciousness. It can cause death or permanent brain damage as a result of oxygen deficiency.

Hydrogen sulfide inhalation should be treated as follows:

- First, be sure rescuers have proper respiration protection before they enter a contaminated area.
- Carry the victim into fresh air immediately. If the victim is breathing, you may not need to do anything else.
- Monitor ABCs. If the victim is not breathing, begin mouth-to-mouth resuscitation. If circulation has stopped, begin CPR.

POISONING ACTION GUIDES
Inhaled Poison

Absorbed poisons are corrosives or irritants that injure the skin and are taken into the body tissues.

Examples of absorbed poisons are:

- Insecticides and garden chemicals
- Plants (poison ivy, sumac, oak)
- Venom from certain marine life
- Industrial chemicals

Signs and symptoms of absorbed poisoning may include any or all of the following:

- Skin reaction
- Headache
- Abnormal breathing and pulse
- Eye irritation
- Itching

POISONING ACTION GUIDES
Absorbed Poison

XVI. DIABETIC EMERGENCIES (INSULIN SHOCK AND DIABETIC COMA)

Insulin reaction occurs when there is too much insulin in the body.

Diabetic coma occurs when there is too much sugar and too little insulin in the blood, and body cells do not get enough nourishment.

Signs and symptoms of diabetic emergencies are as follows:

Insulin Reaction:

- Fast breathing
- Dizziness
- Change in level of consciousness
- Sweating
- Numb hands or feet
- Fast pulse
- Weakness
- Vision difficulties
- Headache
- Hunger

Diabetic Coma:

- Drowsiness and confusion
- Thirst
- Fever
- Peculiar sweet or fruity smelling breath
- Deep and fast breathing
- Dehydration
- Change in the level of consciousness

DIABETIC EMERGENCIES ACTION GUIDE

XVII. STROKE

A stroke is a condition that occurs when the blood flow to the brain is interrupted long enough to cause damage.

The common causes of stroke are:

- Blood clots in the brain
- Ruptured artery in the brain
- Compression of artery reducing blood flow in the brain

STROKE ACTION GUIDE

XVIII. SEIZURES

Common causes of seizures are:

- Insulin shock
- Head injuries
- Epilepsy
- Fever
- Drug reaction
- Viral infections of the head

Signs and symptoms of seizures are:

Before Seizure

- Sound and vision hallucinations
- Strange taste in the mouth
- Abdominal pain
- Numbness
- Sense of urgency to move to safety

During the Seizure

- Brief blackouts
- Involuntary movements
- Sudden falls
- Periods of confused behavior
- Convulsions
- Rigidity
- Loss of consciousness
- Loss of bladder and bowel control
- Cessation of breathing

SEIZURES ACTION GUIDE

XIX. HEAT EMERGENCIES

Heat emergencies include:

- Heat stroke - life threatening
- Heat exhaustion
- Heat cramps

TEMPERATURE EXTREMES ACTION GUIDE
Heat Emergencies

XX. COLD EMERGENCIES

Cold emergencies include:

- Hypothermia
- Frostbite

TEMPERATURE EXTREMES ACTION GUIDE
Cold Emergencies

XXI. IMMERSION FOOT (TRENCH FOOT)

Immersion foot affects only the feet. It results from wearing boots and socks that are very cold and wet for prolonged periods of time.

To prevent immersion foot, put on dry socks and re-warm your feet every six or eight hours.

The symptoms of immersion foot are similar to those of frostbite: a sense of cold to numbness and false warmth, dead skin turning white, and impaired motion of the toes.

To treat immersion foot, rewarm and dry the feet using the treatment for frostbite.

Dermatitis

Dermatitis is an irritation of the skin. Main symptoms are itching, redness or inflammation.

Skins vary greatly and the skin of some people is much more susceptible than that of others. Dermatitis seen in industry is frequently not caused by the job. Occupational dermatitis is generally due to contact with chemical substances such as acids, alkalis, solvents, salts, oils, and coal tar products.

Prevention:

Cleanliness is the most important factor in the prevention of dermatitis caused by handling chemical substances. The employee should:

- Wash hands, arms, or any other part of the body that comes in contact with the substance thoroughly and frequently.
- Dry thoroughly after washing.
- Change work clothes frequently.
- Avoid contact with the irritating material as much as possible.
- Use protective equipment:
 - a. Clothing- gloves, aprons, armlets, boots, etc.
 - b. Creams- the particular type to protect against the particular substance.
- Carry out all precautions advised by the manufacturer of the substance causing the irritation.

First Aid

- Follow any instructions given by the physician for handling skin irritations.
- Refer the employee for medical evaluation if the condition does not improve within a day or two.

XXII. RESCUES ACTION GUIDE

XXIII. FIRST AID SUPPLIES

Two sources should be checked before supplies for the first aid cabinet are purchased.

- The designated physician
- Statutory requirements for minimum contents of the industrial first aid kit, where indicated.

The amount and type of supplies is determined by the number of employees and the nature of operations.

The following list is given as a guide.

<u>ITEM</u>	<u>QUANTITY</u>
1" roller gauze bandage	6
2" roller gauze bandage	6
1" adhesive bandages	50
2" elastic bandage	1
Triangular bandage	1
1" x 5 yd. roll of adhesive	1
2" x 5 yd. roll of adhesive	1
2" x 2" sterile gauze compresses	18
3" x 3" sterile gauze compresses	18
Cotton-tipped applicators	50
2 oz. package sterile cotton	1
Plastic bottle irrigating solution for eyes	1
2 oz. bottle of antiseptic	1
Package of safety pins	
Package of cleansing tissues	
Package of paper cups	
Scissors	
Tweezers	
Arm and leg splints	
Covered jars in which to keep applicators, compresses, cotton, etc.	
Box of rubber gloves	
Faceshield	