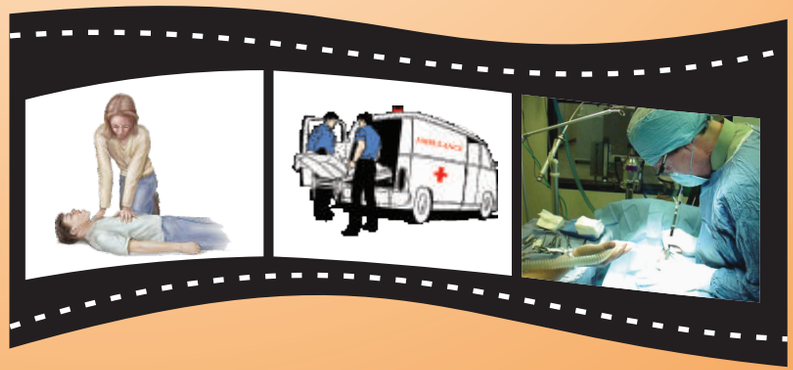
Central Board of Secondary Education

First Aid and Emergency Medical Care

Text Book

Class-XII



Chapter -1

FIRST-AID

1.1 An Overview

First aid is the provision of initial care for an illness or injury. First aid is literally the first assistance you give to someone who has been injured. All of us should know basic first aid techniques, in the home at the office or when out and around. One in three of all accidents take place in our homes, the majority involving children and elderly. Certain self-limiting illnesses or minor injuries may not require further medical care past the first aid intervention. It generally consists of a series of simple and in some cases, potentially life-saving techniques that an individual can be trained in to perform with minimal equipment.

The instances of recorded first aid were provided by religious knights, such as the Knights Hospitaller, formed in the 11th century, providing care to pilgrims and knights, and training other knights in how to treat common battlefield injuries. The practice of first aid fell largely in to disuse during the High Middle Ages, and organized societies were not seen again until in 1859 when Henry Dunant organized local villagers to help victims of the Battle of Solferino, including the provision of first aid. Four years later, four nations met in Geneva and formed the organization which has grown into the Red Cross, with a key stated aim of “aid to sick and wounded soldiers in the field”. This was followed by the formation of St. John Ambulance in 1877, based on the principles of the Knights Hospitaller, to teach first aid, and numerous other organizations joined them, with the term ‘first aid’ coined in 1878 as civilian ambulance services spread as a combination of ‘first treatment’ and ‘national aid’ in large railway centres and mining districts as well as with police forces. First aid training began to spread through out the empire through organisations such as St John, often starting, as in the UK, with high risk activities actraces such as ports and railways.

Many developments in first aid and many other medical techniques have been driven by wars, such as in the case of the American Civil War, which prompted Clara Barton to organize the American Red Cross. Today, there are several groups that promote first aid, such as the military and the Scouting movement. New techniques and equipments have helped make today’s first aid simple and effective.

1.1.1. Objectives of First Aid:

1. To preserve life.
2. To promote recovery.
3. To prevent further injury and deterioration of the condition.
4. To make the victim as comfortable as possible.
5. To put the injured person under professional medical care at the earliest.

1.1.2 The First Aider:

A first aider is just a common person who may have learnt a standard method at application of the first aid best suited to his skill. He/she is trained to reach to sick and injured, identify the problem, and provide emergency care as and when necessary move the patients and injured victims to medicalcare without causing further injury.

A First Aider should have the following qualities:

1. Should be a good observer.
2. Should be able to act quickly.
3. Should not get panicky or excited.
4. Should have the ability to lead and control the crowd and take help from onlookers.
5. Should have self confidence and the ability to judge injuries to be tackled first.
6. Should be able to reassure the victim and his/her anxious and nervous relatives by demonstrating competence and expressing sympathy.

1.1.3. Responsibilities of the First Aider:

1. Gain access to the patient in the easiest and safest way.
2. Observe the accident scene and assess the situation.
3. If necessary, ask others to direct the traffic, keep bystanders at a safe distance and make essential telephone calls.
4. To find out if the casualty is conscious, unconscious, dead or alive.
5. Identify the disease or medical condition from which the casualty is suffering.
6. Give immediate, appropriate and adequate treatment considering priorities of first aid measures, such as restoration of breathing and circulation will be the first priority while stopping the bleeding will be the second.
7. Should keep in mind that the casualty might have more than one injury and that some casualties may require more attention than others.
8. Arranging for shifting the casualty to the hospital or nearest medical facility without delay, in such a manner so as not to complicate the injury or subject the victim to unnecessary discomfort.
9. Keeping a record of the patient, incident and witnesses.

10. Once a first aider has voluntarily started taking care of the situation he should not leave the scene until a responsible person relieves him.

    The responsibility of the first aider ends when the causality is handed over to the care of a doctor, a nurse or other appropriate person. He/she may assist the doctor later on, if required.

1.1.4. Warning to the First Aider:

1. First aider should keep in mind that he/she is not a Doctor.
2. He/she should not examine wounds by opening those which have already been bandaged by somebody else.
3. He/she should not declare any person dead. That is not his/her scope as a first aider.

1.2 Emergency

Emergency is defined as a sudden, unexpected, or impending situation that may cause injury, loss of life, damage to property, and/or interference with normal activities of a person and which, therefore requires immediate attention and remedial action.

Emergencies may broadly be seen in **three categories**:

- **Life threatening or potentially disabling**: These types of emergencies can cause death or disability within minutes and, therefore, require immediate intervention, medical care and usually hospitalization.
- **Serious, or potentially life threatening or disabling**: Because these may soon result in a life threatening situation or may produce permanent damage, they must be tackled as soon as possible.
- **Non life threatening**. These are identified as any injury or illness that may affect the general health of a person, the person should be evaluated as soon as possible and parents notified. First Aid is to be provided.

The **basic immediate response protocol** for all health emergencies may be followed as given below :

- Don’t panic, get organized.
- Take charge of the situation.
- Act quickly but efficiently.
- Get assistance from other staff personnel so that they can notify the emergency response team if needed.

- Make a preliminary assessment of the victim's condition in the position you found him in (if possible).
- Determine the foremost life-threatening condition.
- Maintain treatment until qualified assistance arrives.

MEDICAL EMERGENCIES

A medical emergency is an injury or illness that is acute and poses an immediate risk to a person's life or long term health. These emergencies may require assistance from another person, who should ideally be qualified enough to do so, although some of these emergencies can be dealt with by the victim themselves. Depending on the severity of the emergency and the quality of treatment required, it may need the involvement of multiple levels of care, from a first aider to an emergency physician, to specialist physicians/ surgeons.

The emergency guidelines are meant to serve as basic information for "what to do in an emergency".

Emergency medical services (EMS)

This system is a community based system that delivers specialized care for victims who are ill or injured. Care is provided at the scene of the emergency and is continued during transportation and following arrival at an appropriately staffed and equipped health care facility.

Below are examples of emergencies for activating Emergency Medical Services **through the Emergency Response Team(ERT)**:-

- Breathing problems.
- Severe bleeding.
- Anaphylactic reaction/shock.
- Severe burns.
- Head, neck or back injury.
- Concern about a heart problem.
- Poisoning/snake bite.
- Loss of consciousness.
- Seizures, more than one.
- Serious limb injury or amputation.
- Penetrating injuries.
- Foreign body/object in the throat.

1.3 First Aid Kit - Constituents and Uses

A properly equipped first aid kit can save vital minutes in an emergency. In addition to your first aid kit at home, keep one in your car and take a portable kit on camping trips and holidays.

Make sure you:

- Label the kit 'First Aid Kit'.
- Use a container that is childproof and waterproof.
- Replace items as they are used, do not keep medications for any length of time and safely dispose off prescribed medicine once the course of treatment is completed.
- Tape a card, listing emergency phone numbers and the blood group, allergies and special medical problems of family members, to the container.
- Keep the kit handy but beyond the reach of children.
- Keep this book close to the kit for quick reference secure it in the kit.

Home Kit:

A first aid kit for a family should contain the following:

- Adhesive dressing strips for minor cuts and grazes.
- Adhesive tape to hold dressings in place.
- Analgesic tablets, such as paracetamol for headaches and minor pain.
- Antihistamine cream for bites and stings.
- Antiseptic Cream.
- Antiseptic Solution.
- Cotton buds.
- Disposable gloves.
- Eye pad.
- Measuring glass or spoon.
- Plastic cup.
- Roller bandages in a range of size.
- Round-ended scissors (use only for first aid).
- Safety pin.
- Splinter forceps or remover.

- Sterile combine dressing for severe bleeding.
- Sterile eye pads, wrapped singly.
- Sterile non-adherent absorbent dressing for burns.
- Sterile gauze swabs for cleaning wounds.
- Non macury Thermometer in a protective case.
- Triangular bandages.
- Tubular gauze finger bandage with applicator.

Car Kit:

Always remember to keep a first aid kit in your glove box in the car. Your car kit should contain at least a selection of the dressing, pads and bandages listed above, scissors and safety pins among others.

Chapter -2

Cardio-Pulmonary Resuscitation (CPR)

2.1 History

In the 19th century, Doctor H. R. Silvester described a method (The Silvester Method) of artificial respiration in which the patient is laid on his back, and his arms are raised above the head to aid inhalation and then pressed against the chest to aid exhalation. The procedure is repeated sixteen times per minute.

However, it was not until the middle of the 20th century that the wider medical community started to recognize and promote artificial respiration combined with chest compressions as a key part of resuscitation following cardiac arrest. The combination was first seen in a 1962 training video called “The Pulse of Life” created by James Jude, Guy Knickerbocker and Peter Safar. Jude and Knickerbocker, along with William Kouwenhoven and Joseph S. Redding had recently discovered the method of external chest compressions, whereas Safar had worked with Redding and James Elam to prove the effectiveness of artificial respiration. It was at Johns Hopkins University where the technique of CPR was originally developed. The first effort at testing the technique was performed on a dog by Redding, Safar and JW Perason. Soon afterward, the technique was used to save the life of a child. Their combined findings were presented at annual Maryland Medical Society meeting on September 16, 1960 in Ocean City, and gained rapid and widespread acceptance over the following decade, helped by the video and speaking tour they undertook. Peter Safar wrote the book ABC of resuscitation in 1957. In the U.S., it was first promoted as a technique for the public to learn in the 1970s.

2.2 Definition

Cardiopulmonary resuscitation, commonly called CPR, combines rescue breathing (one person breathing into another person) and chest compression in a lifesaving procedure performed when a person has stopped breathing or a person’s heart has stopped beating.

2.3 Purpose

When performed quickly enough, CPR can save lives in such emergencies as loss of consciousness, heart attacks or heart "arrests," electric shock, drowning, excessive bleeding, drug overdose, and other conditions in which there is no breathing or no pulse. The purpose of CPR is to bring oxygen to the victim's lungs and to keep the blood circulating so that oxygen gets to every part of the body. When a person is deprived of oxygen, permanent brain damage can begin in as less as four minutes and death can follow minutes later.

2.4 Description

Cardiopulmonary arrest is the cessation of heart function and respiration. The patient in cardiopulmonary arrest has no respiration and no pulse. The process of biological death begins as the cells are deprived of Oxygen. If the patient remains in cardiopulmonary arrest for longer than 4 to 6 minutes irreversible brain damage is likely to occur. The longer the patient remains in this state the lower is the chance of survival.

CPR is part of the emergency cardiac care system designed to save lives. Many deaths can be prevented by prompt recognition of the problem and notification of the emergency medical system (EMS), followed by early CPR, defibrillation (which delivers a brief electric shock to the heart in an attempt to get the heart to beat normally), and advanced cardiac life support measures.

CPR must be performed within four to six minutes after cessation of breathing so as to prevent brain damage or death. It is a two-part procedure that involves rescue breathing and external chest compressions. To provide oxygen to a person's lungs, the rescuer administers mouth-to-mouth breathing, then helps circulate blood through the heart to vital organs by external chest compressions. Mouth-to-mouth breathing and external chest compression should be performed together, but if the rescuer is not strong enough to do both, then only the external chest compressions should be done. This is more effective than no resuscitation attempt, as is CPR that is performed "poorly."

When performed by a bystander, CPR is designed to support and maintain breathing and circulation until emergency medical personnel arrive and take over. When performed by healthcare personnel, it is used in conjunction with other basic and advanced life support measures.

CPR by bystanders may prolong life during deadly ventricular fibrillation, giving emergency medical service personnel time to arrive.

However, many CPR attempts are not ultimately successful in restoring a person to a good quality of life. Often, there is brain damage even if the heart starts beating again. CPR is therefore not generally recommended for the chronically or terminally ill or frail elderly. For these people, it represents a traumatic and not a peaceful end of life.

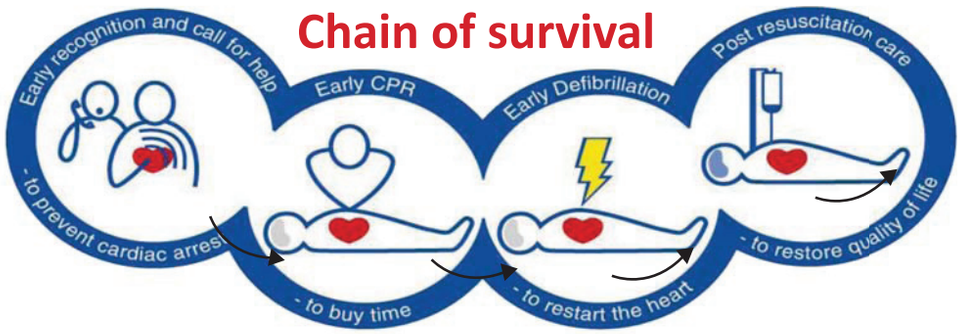
2.5 Performing CPR

Untrained. If you're not trained in CPR, then provide hands-only CPR. That means uninterrupted chest compressions of about 100 a minute until more help arrive (described in more detail below). You don't need to try rescue breathing.

Trained, and ready to go. If you're well trained, and confident in your ability, then you can opt for one of two approaches: 1. Alternate between 30 chest compressions and two rescue breaths. 2. Just do chest compressions. (Details described below.)

Trained, but rusty. If you've previously received CPR training, but you're not confident in your abilities, then **<u>just do chest compressions at a rate of at least 100 a minute.</u>** The basic procedure for CPR is the same for all people, with a few modifications for an infant, where the rescuer gives at least 100 chest compressions per minute.

A cardiac arrest is the ultimate medical emergency – the correct treatment must be given immediately if the patient is to have any chance of survival. The interventions that contribute to a successful outcome after a cardiac arrest can be conceptualized as a chain – the Chain of Survival.



The steps followed in CPR are as follows:

1. If the victim appears to be unconscious with either no breathing or no pulse, the person should be shaken or tapped gently to check for any movement. The victim is spoken to loudly, asking if he or she is OK. If there is no response, emergency help must be called and CPR begun immediately.

2. The victim is placed on his or her back on a level surface such as the ground or the floor. The victim's back should be in a straight line with the head and neck supported slightly by a rolled up cloth, small towel, or piece of clothing under the neck. A pillow should not be used to support the head. The victim's clothing should be loosened to expose the chest.

3. The rescuer kneels next to the victim, tilts the victim's head back, lifts the jaw forward, and moves the tongue forward or to the side, making sure it does not block the opening to the windpipe. The victim's mouth must be kept open at all times, reopening when necessary.

4. The rescuer listens by putting himself close to the victim's mouth for any sign of breathing, and watches the chest for movement. If the victim is found to be breathing, and has perhaps fainted, he or she then can be placed in the recovery position until medical assistance arrives.

5. This is done by straightening the victim's legs and pulling the closest arm out away from the body with the elbow at a right angle or 3 o'clock position, and the other arm across the chest.

6. The far leg should be pulled up over the victim's body with the hip and knee bent. This allows the victim's body to be rolled onto its side. The head should be tilted back slightly to keep the windpipe open. The head should not be propped up.

7. If the victim is not breathing, rescue breathing begins, closing the victim's nostrils between a thumb and index finger, and covering the victim's mouth with the rescuer's mouth. Two slow breaths, about two seconds each, are breathed into the victim's mouth with a pause in between. This is repeated until the chest begins to rise.

8. The victim's head should be repositioned as often as necessary during the procedure. The mouth must remain open and the tongue kept away from the windpipe.

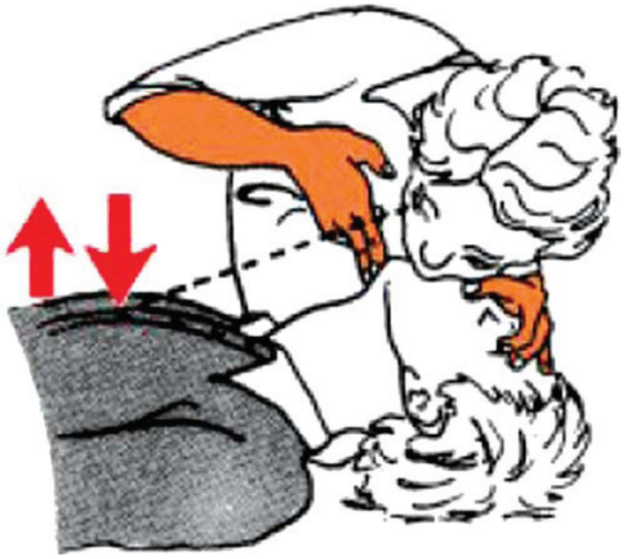
9. When the chest begins to rise, or the victim begins to breathe on his or her own, the rescuer looks for signs of circulation, such as coughing or movement. If a healthcare professional has arrived by this time, the pulse will be checked before resuming resuscitation.

10. If chest compressions are needed to restart breathing, the rescuer will place the heel of a hand above the lowest part of the victim's ribcage where it meets the middle-abdomen. The other hand will be placed over the heel of the first hand, with fingers interlocked.

11. Keeping the elbows straight, the rescuer will lean his or her shoulders over the hands and press down firmly about 15 times. It is best to develop an up-and-down rhythm, keeping the hands firmly on the victim's chest.

12. After the compressions, the rescuer will give the victim two long breaths. The sequence of 15 compressions and two breaths will be repeated until there are signs of spontaneous breathing and circulation or until professional medical help arrives.

2.5.1 CPR ON ADULTS

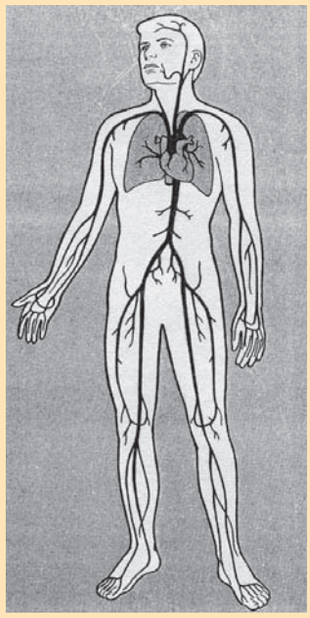


A Look at the Heart

The heart is a tough muscular organ about the size of your fist. It is located roughly in the center of your body between the lungs and under the lower half of the breastbone. The heart is protected in the front by the ribs and breastbone and in the back by the backbone.

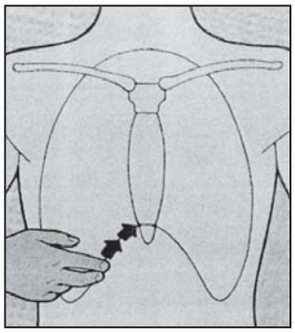
The heart pumps blood to all parts of your body through blood vessels. Blood vessels are the tubes that carry blood to the cells of the blood vessels and your heart .

For the average adult, the haert pumps about 70 times each minutes, or about 100.000 times each day. In the minute or so it takes you to read this section, your heart will pump more than a gallon of blood. If a person's heart should stop beating, the person would need help immediately to keep the oxygen-carrying blood flowing to the body's cells until EMS personnel arrives.



The Heart and Major Blood Vessels

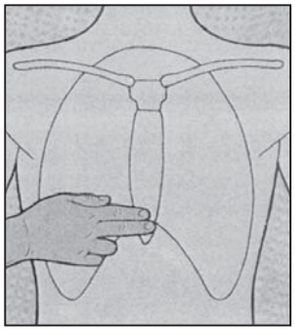
Locating the Compression Position



For chest compressions to work, the victim must be lying flat on his or her back on a firm, flat surface, The victim's head must be on the same level as the heart.

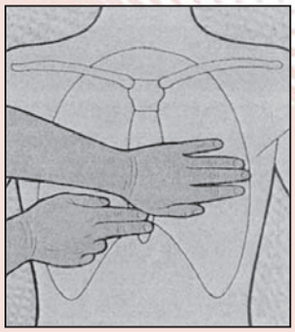
To give effective compressions, your hands and body must be in the correct position. Do the following:

- Kneel facing the victim's chest with your knees against the victim's side.
- Use your hand–the one nearest the victim's legs–to find the lower edge of the rib cage on the side closest to you. Slide your middle and index fingers up the edge of the rib cage to the notch where the ribs meet the breastbone in the center of the lower part of the chest With your middle finger on this notch, place the index finger of the same hand next to it on the lower end of the breastbone.

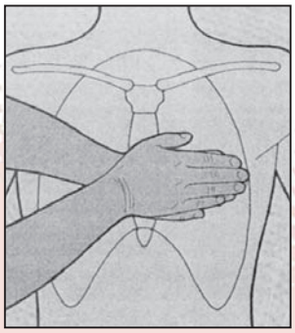


Find Correct Position

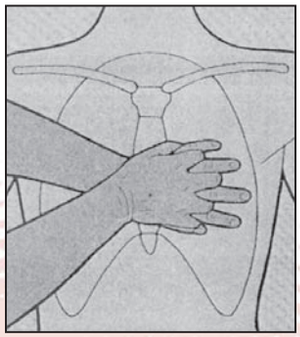
- Place the heel of your other hand on the breastbone right next to the index finger of the hand you used to find the notch. The heel of your hand should rest along the breastbone .
- Once the heel of your hand is in position on the chest, remove the other hand from the notch and place the heel of this hand directly on top of the heel of the hand already on the victim's breastbone.
- Keep your fingers off the victim's chest. To do this, you may interlace them or hold them upward.



Place Heel of Hand on Breastbone

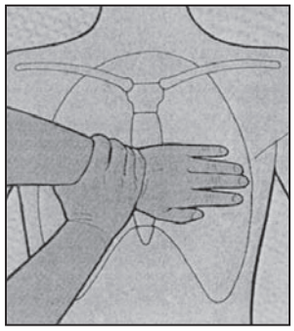


Place Second Hand Over Heel of First



Interlace Fingers

- Finding the correct hand position in this way allows you to compress right on the breastbone, and keeps hand pressure off the ribs and away from the tip of the breastbone. This will decrease the chance of fracturing the ribs, which are on either side of the breastbone. It will also keep you from pushing the tip of the breastbone into the delicate organs beneath it.
- Another acceptable hand position, useful for people with arthritic conditions, is made by grasping the wrist of the hand on the chest with the other hand.



Alternate Hand Placement

Body Position of the First Aider

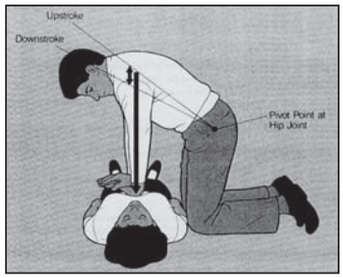
The position of your body is very important when you are giving compressions. You should be kneeling facing the victim's chest and have your hands in the correct position. Straighten your arms and lock your elbows so that your shoulders are directly over your hands. In this position when you push down, you will be pushing straight down onto the breastbone. The weight of your upper body creates the pressure necessary to compress the chest.

Correct Position of First Aider

Compression Technique

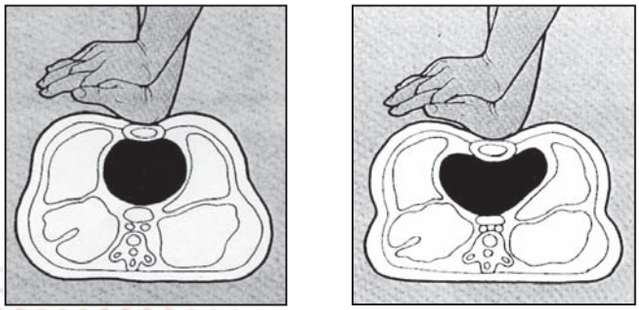
This is how you give chest compressions to an adult:

1. When you compress, push with the weight of your body, not with the muscles of your arms. Push straight down. If you rock back and forth and don't push straight down, your compressions will not be effective.



Giving Chest Compressions

2. Each compression should push the breastbone down from 1½ to 2 inches (3.8 to 5 centimeters).



Compress Chest 1½ to 2 Inches

The downward and upward movement should be smooth, not jerky. Maintain a steady down-and-up rhythm and do not pause between compressions. Half the time should be spent pushing down, and half the time should be spent coming up. When you are coming up, release pressure on the chest completely, but don't let your hands lose contact with the chest or lose their correct position on the breastbone.

3. Give compressions at the rate of at least 100 compressions per minute.

4. If your hands lose contact with the chest, find the compression position again before you start compressing. Find the notch as you did before, in order to position your hands correctly.

Compression / Breathing Cycles

When you give CPR, do cycles of 30 compressions and 2 breaths. In each cycle, give 30 compressions and then open the airway and give 2 full breaths .

Each time you begin a new cycle of compressions and breaths, locate the correct hand position for compressions by finding the notch at the lower end of the breastbone.

15 Compressions, Then 2 Breaths

5. The first aider should then check the adequacy of the second first aider's breaths and chest compressions. This is done by watching the victim's chest rise and fall during first aider breathing and by feeling the carotid pulse for an artificial pulse during chest compression. This artificial pulse will tell you that blood is moving through the body.

Practice Session: CPR for an Adult

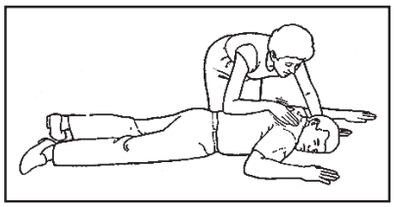
During this practice session, you and a partner will practice only on a manikin.

Before you practice on the manikin, clean its face and the inside of its mouth. Clean the manikin's face and mouth before each person in your group practices.

Skill Sheet: CPR for an Adult

You find a person lying on the ground, not moving. You should survey the scene to see if it is safe and to get some idea of what happened. Then do a primary survey by checking the ABCs.

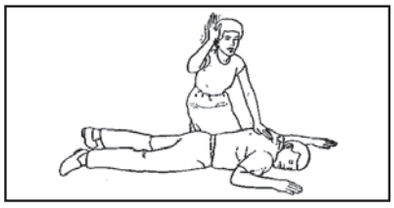
- **Check for Unresponsiveness**



Tap or gently shake victim.

First Aider shouts, "Are you OK?"

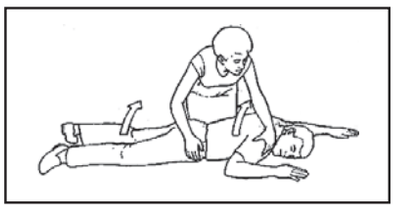
Partner/Instructor says, "Unconscious."



First Aider repeats, "Unconscious."

First Aider shouts, "Help!"

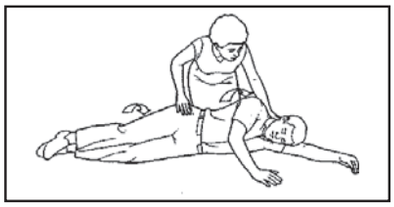
- **Position the Victim**



Roll victim onto back, if necessary.

Kneel facing victim, midway between victim's hips and shoulders.

Straighten victim's legs, if necessary, and move victim's arm closest to you above victim's head.



Lean over victim, and place one hand on victim's shoulder and other hand on victim's hip.

Roll victim toward you as a single unit. As you roll victim, move your hand from victim's shoulder to support back of the head and neck.

Place victim's arm closest to you alongside victim's body.

- **Open the Airway** (Use head-tilt/chin-lift)

Place your hand – the one nearest the victim's head – on victim's forehead.

Place fingers of other hand under bony part of lower jaw near chin.

Tilt head and lift jaw. Avoid closing victim's mouth. Avoid pushing on the soft parts under the chin.

- **Check for Breathlessness**

Maintain open airway with head-tilt/chin-lift.

Place your ear over victim's mouth and nose.

Look at chest; listen and feel for breathing for no more than 3 to 5 seconds.

Partner / Instructor says, "No breathing"

First Aider repeats, "No breathing"

Note : This step is omitted in recent guidelines. However recommended for training purpose only.

- **Give 2 Full Breaths**

Maintain open airway with head-tilt/chin-lift. Pinch nose shut.

Open your mouth wide, take a deep breath, and seal your lips tightly around outside of victim's mouth.

Give 2 full breaths at the rate of 1 to 1½ seconds per breath. Pause between each breath for you to take a breath.

Look for the chest to rise and fall, listen and feel for escaping air.

- **Check for Pulse**

Maintain head-tilt with one hand on forehead.

Locate Adam's apple with middle and index fingers of hand nearest victim's feet.

Slide fingers down into groove of neck on side closest to you.

Feel for carotid pulse for no more than 5 seconds. Partner/Instructor says, "No breathing and no pulse." First Aider repeats, "No breathing and no pulse."

- **Phone the EMS System for Help**

  Tell someone to call for an ambulance.

  First Aider says, “No breathing, no pulse, call local emergency number.

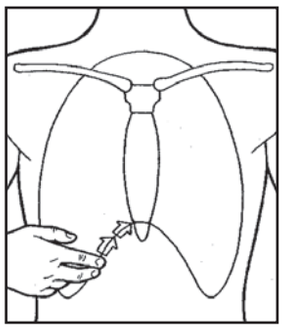
- **Locate Compression Position**

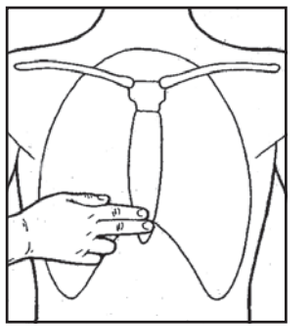
  Kneel facing victim’s chest.

  With middle and index fingers of hand nearest victim’s legs, locate lower edge of victim’s rib cage on side closest to you.

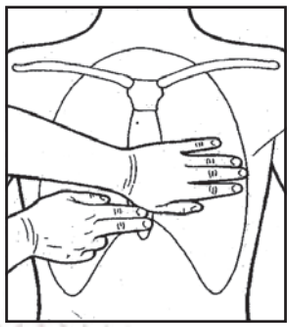
  Slide fingers up the edge of rib cage to notch at the lower end of breastbone.

  Place middle finger in notch, and index finger next to it on the lower end of breastbone.





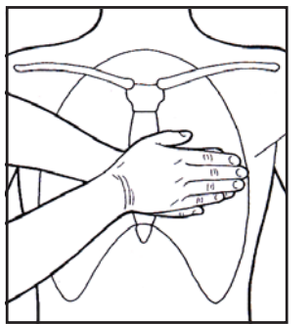
Place heel of hand nearest victim’s head on breastbone next to index finger of hand used to find notch.

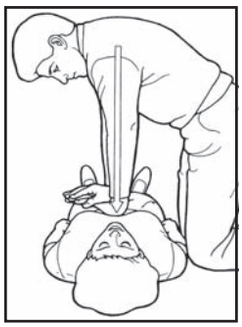


Place heel of hand used to locate notch directly on top of heel of other hand.

Keep fingers off victim's chest.

Position shoulders over hands with elbows locked and arms straight.

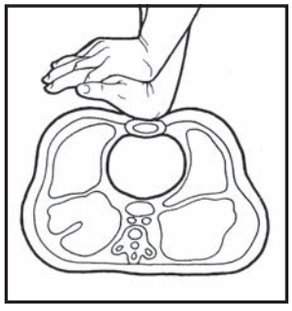




- **Give 30 Compressions**

Compress breastbone 1½ to 2 inches (3.8 to 5 centimeters) at a rate of at least 100 compressions per minute. (30 compressions should take 15-17 seconds.)

Compress down and up smoothly, keeping hand contact with chest at all times.



- **Give 2 Full Breaths**

Open airway with head-tilt/chin-lift.

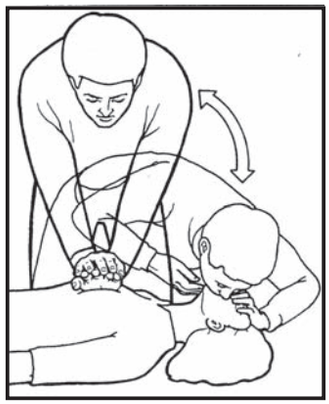
Not required to be performed by a lay rescuer.

Pinch nose shut.

Open your mouth wide, take a deep breath, and seal your lips tightly around outside of victim's mouth.

Give 2 full breaths at the rate of 1 of 1½ seconds per breath. Pause between each breath for you to take a breath.

Look for chest to rise and fall; listen and feel for escaping air.



- **Do Compression/Breathing Cycles**

  Do 4 cycles of 30 compressions and 2 breaths.

- **Recheck Pulse**

  Tilt head.

Locate carotid pulse and feel for 5 seconds.

Partner/Instructor says, "No pulse."

First Aider repeats, "No pulse."

- **Give 2 Full Breaths**

Open airway with head-tilt/chin-lift.

Pinch nose shut.

Open your mouth wide, take a deep breath, and seal your lips tightly around outside of victim's mouth.

Give 2 full breaths at the rate of 1 to 1½ seconds per breath.

Look for the chest to rise and fall; listen and feel for escaping air.

- **Continue Compression/Breathing Cycles**

Locate correct hand position.

Continue cycles of 30 compression and 2 breaths.

Recheck pulse every few minutes.

- **What to Do Next**

When the first aider stops to check pulse, the partner should read one of the following statements.

1. Victim has a pulse.
2. Victim does not have a pulse.

Based on this information, the first aider should decide what to do next and continue giving the right care.

Put the Steps Together

We need to emphasize the need of high quality CPR

Here are the steps you should follow when you give CPR to an adult:

1. Check for unresponsiveness. Tap or gently shake the person and shout, “Are you OK?”
2. Shout for help.
3. Position the victim.
4. Open the airway.
5. Look, listen, and feel for breathing (3 to 5 seconds)
6. If the victim is not breathing, give 2 full breaths.
7. Check the victim’s carotid pulse for heartbeat (do this in not move than 5 second).
8. Tell someone to phone the EMS system for help.
9. If there is no pulse, find the correct hand position and position your body to give compressions.
10. Give 100 compressions without stopping, at the rate of at least 100 per minute. A compression depth of at least 2 inches (5 cm) in adults and a compression depth of at least one third of the anterior- posterior diameter of the chest in infants and children (approximately 1.5 inches [4 cm] in infants and 2 inches [5 cm] in children).
11. Quickly tilt the victim’s head back and lift the jaw. Give 2 full breaths to the victim the same way you gave the first 2 breaths.
12. Recheck pulse. After doing 4-5 cycles (or about 100 compressions / minute) of continuous CPR, check to see if the victim has a pulse. If there is no pulse, give 2 breaths and continue CPR (compressions and first aider breaths). Repeat these pulse checks every few minutes.
13. If you do find a pulse, then check for breathing for 3 to 5 seconds. If breathing is present, keep the airway open and monitor breathing and pulse closely. This means that you should look, listen, and feel for breathing while you keep checking the pulse. If there is no breathing, do first aider breathing and keep checking the pulse.
14. Continue CPR until one of the following things happen;
    - The heart starts beating again.
    - A second first aider trained in CPR takes over from you.
    - EMS personnel arrive and take over.
    - You are too exhausted to continue.

More about CPR for an Adult

If No One Comes When You Shout for Help

One of the first things you do when you find an unresponsive victim is to shout for help. You do this to attract the attention of someone nearby who can phone the EMS system for help. But what if no one responds to your shouts for help? You should do CPR for at least 2-3 minute. During this minute you should continue to shout for help whenever you can. You should also use this minute to plan how to make the call yourself.

If no one answers your shouts for help by the end of 1 minute of CPR, you should get to a phone as quickly as you can and phone the EMPS system. Then return to the victim and begin CPR again.

If a Second Trained First Aider Is at the Scene

If another first aider trained in CPR is at the scene, this person should do two things: first, phone the EMS system for help if it has not been done; second, take over CPR when the first first aider is tired. Here are the steps for entry of the second first aider.

- The second person should first identify himself or herself as a CPR trained first aider who is willing to help.
- If the EMS system has been called and if the first first aider is tired and asks for help, then–
    1. The first first aider should stop CPR after the next set of 2 breaths.
    2. The second first aider should kneel next to the victim opposite the first first aider, tilt the head back and feel for the carotid pulse for 5 seconds.
    3. If there is no pulse, the second first aider should give 2 breaths and continue CPR.

2.5.2 CPR ON A CHILD

Cardiac Emergencies in Children

Children's hearts are usually healthy. Unlike adults, children do not often initially suffer a cardiac emergency. In most cases, the child first suffers a respiratory emergency. Then a cardiac emergency develops.

The most common cause of cardiac emergencies in children is injury resulting from motor vehicle accidents. Other common causes include injuries resulting from near-drowning, smoke inhalation, burns, poisoning, airway obstruction, firearms, and falls. Rarely, a cardiac emergency can result from a medical condition or illness such as severe croup, severve asthma, or respiratory infections such as epiglottitis.

Most cardiac emergencies in children are preventable. One way to prevent cardiac emergencies is to prevent children from being injured. Second, it is important to make sure children receive proper medical care. A third preventive measure is learning to recognize the early signals of a respiratory emergency. These signals may include any of the following:

- Agitation
- Drowsiness
- Change in skin color (to pale, blue, or gray)
- Increased difficulty in breathing
- Increased heart and breathing rates

In this section, you will learn how to give first aid to a child who has suffered a cardiac arrest. When a cardiac emergency does happen, you should immediately begin first aid as described.

How to Give CPR to a Child

To find out if a child needs CPR, begin with a primary survey to check the ABCs. You should–

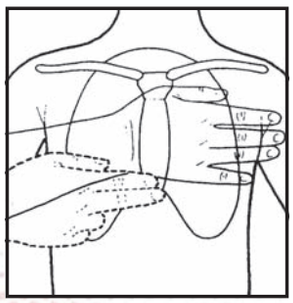
1. Check for unresponsiveness.
2. Shout for help.
3. Position the child on his or her back.
4. Open the airway.
5. Look, listen, and feel for breathing.
6. If the child is not breathing, give 2 slow breaths.
7. Check the carotid pulse.
8. Have someone phone the EMS system for help.

If the child has no pulse, begin CPR. It is important to check the child's carotid pulse for 5 to 10 seconds before you start CPR because it is dangerous to do chest compressions if the child's heart is beating.

- **Pay attention to where you put your index finger.**

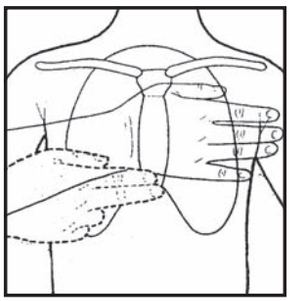
  Lift your fingers off the breastbone, and put the heel of the same hand on the breastbone immediately above where you had your index finger. Keep your fingers off the child's chest.

  Only the heel of your hand should rest on the breastbone. Use this method to find the correct hand position before you begin compressions.



Place Heel of Hand on Breastbone

Having your hands in the correct position will lessen the chance of fracturing the ribs on either side of the child's breastbone into the delicate organs beneath it.



Lift Fingers off Breastbone

To give CPR, kneel beside the child/, lean over the chest, and find the correct position to give chest compressions. Give chest compressions and first aider breaths. These two steps keep oxygen-carrying blood flowing through the blood vessels.

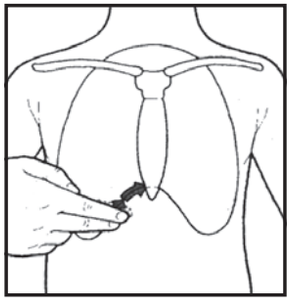
Locating the Compression Position

For chest compressions to work, the child must be lying flat on his or her back on a firm, flat surface. The child's head must be on the same level as the heart.

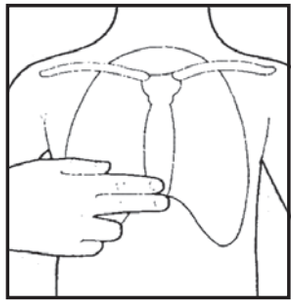
Slide Finger up Edge of Rib Cage

To give effective compressions, your hands and body must be in the correct position. Do the following:

- Kneel beside the child's chest with your knees against the child's side.
- Use your hand-the one nearest the child's head-to keep the child's head in the neutral plus position.
- Use your other hand-the one nearest the child's legs-to find the lower edge of the rib cage on the child's side closest to you Slide your middle finger up the edge of the rib cage to the notch where the ribs meet the breastbone in the center of the lower part of the chest. Your middle finger in this notch, with the index finger beside it. The two fingers should be resting on the lower end of the breastbone.



Find Correct Position



Position Fingers on Breastbone

Compression/Breathing/Cycles

5 Compressions, Then 1 Breath

When you give CPR, do cycles of 5 compressions and 1 breath. In each cycle, give 5 compressions with one hand. Keep your other hand on the child's forehead, tilting the head so that it is in the neutral-plus position. Then remove your hand from the chest, lift the chin, and give 1 breath. Always stop compressions to lift the chin and give 1 breath. After you give the breath, put your hand back on the chest in the correct position.

Body Position of First Aider

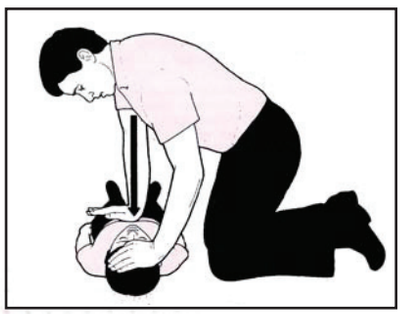
Correct Position of First Aider

The position of your body is very important when you are giving compressions.

You should be kneeling beside the child. After you have placed your hand in the correct position to give compressions, move your body until your shoulder is directly over your hand. In this position, when you push down, you will be pushing straight down onto the breastbone. Your other hand should be on the child's forehead, keeping the child's head in the neutral-plus position.

Compression Technique

This is how you give chest compressions to a child.

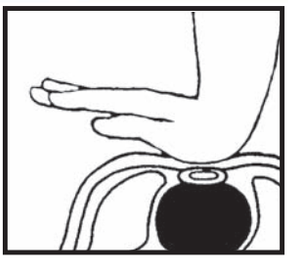


Giving Chest Compressions

1. When you compress, use only the hand that is on the child's breastbone. You will not use both hands to give chest compressions to a child as you practiced for an adult. Push straight down. If you rock back and forth and don't push straight down, your compressions will not be effective.

2. Each compression should push the breastbone down from 1 to 1½ inches (2.5 to 3.8 centimeters) . The down-and-up movement should be smooth, not jerky. Keep a steady down-and-up rhythm, and do not pause

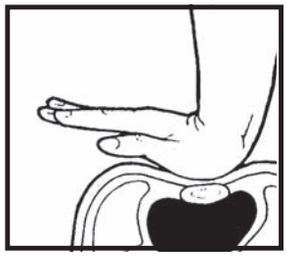
between compressions. Half the time should be spent pushing down, and half the time should be spent coming up. When you are coming up, release pressure on the chest completely, but don't lift your hand off the child's chest. Keep your hand in the compression position.



Compress Chest 1 to 1½ Inches

3. Give compression at the rate of 80 to 100 compressions per minute.

4. Take note of the position your hand is in. When you take your hand off the child's chest, put it back in the same position before you start compressions again.



Compress Chest 1 to 1½ Inches

- **Open the Airway** (Use head-tilt/chin-lift)

  Place your hand - the one nearest child's head - on child's forehead.

  Place fingers of other hand under bony part of lower jaw at the chin.

  Tilt head gently back into the neutral-pulse position and lift chin. Avoid closing child's mouth completely. Avoid pushing on the soft parts under the chin.

- **Check for Breathlessness**

  Maintain open airway with head-tilt/chin-lift.

  Place your ear over child's mouth and nose.

  Look at chest and abdomen; listen and feel for breathing for 3 to 5 seconds.

  Partner/Instructor says, "No breathing."

  First Aider repeats, "No breathing."

- **Give 2 Slow Breaths**

  Maintain Open airway with head-tilt/chin-lift. Pinch nose shut.

  Open your mouth wide, take a breath, and seal your lips tightly around outside of child's mouth.

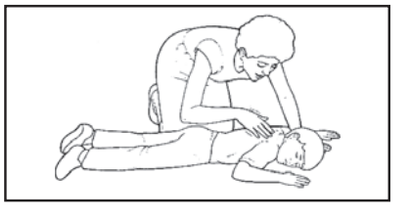
  Give 2 slow breaths at the rate of 1 to 1½ seconds per breath. Pause in between each breath for you to take a breath.

  Look for the chest to rise and fall; listen and feel for escaping air.

Skill Sheet: CPR for a Child

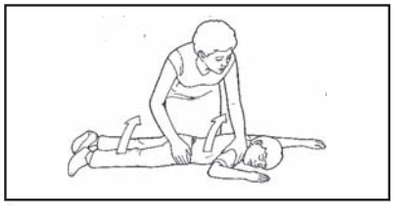
You find a child lying on the ground, not moving. You should survey the scene to see if it is safe and to get some idea of what happened. Then do a primary survey by checking the ABCs.

Check for Unresponsiveness

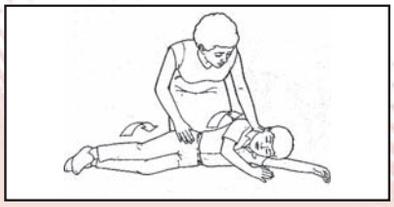


- Tap or gently shake child's shoulder.
- First Aider shouts, "Are you OK?"
- Partner/Instructor say, "Unconscious"
- First Aider repeats, "Unconscious."
- First Aider shouts, "Help!"

Position the Child

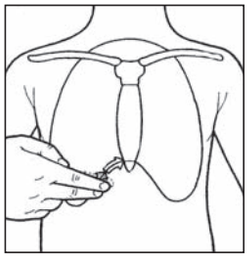


- Roll child on his back, if necessary.
- Kneel facing child, midway between child's hips and shoulders.
- Straighten child's legs, if necessary, and move child's arm closest to you above child's head.
- Lean over child and place one hand on child's shoulder and other hand on child's hip.
- Roll child toward you as a single unit. As you roll child, move your hand from child's shoulder to support back of head and neck.
- Place child's arm closest to you alongside child's body.



Locate Compression Position

- Kneel facing child's chest.
- Maintain head tilt with hand on forehead.
- With middle finger of hand nearest child's legs, locate lower edge of child's rib cage on side closest to you.

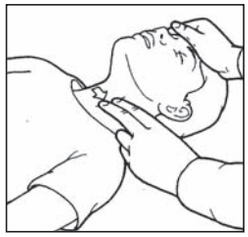


- Slide middule finger up the edge of rib cage to notch at the lower end of breastbone.

Check for Pulse

- Maintain head-tilt with one hand on forehead.

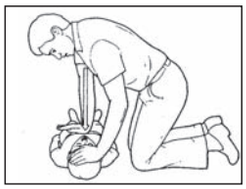
- Locate Adam's apple with middle and index fingers of your hand nearest child's feet.
- Slide fingers toward you into groove of neck on side closest to you



- Feel for carotid pulse for no more than 5 seconds.
- Partner/Instructor say, "No breathing and no pulse."
- First Aider repeats, "No breathing and no pulse.

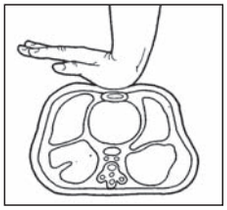
Phone the EMS System for Help

- Tell someone to call for an ambulance.

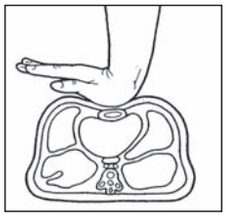


- First Aider says, "Child not breathing has no pulse, Call *local emergency number or operator*
- Position shoulder over hand

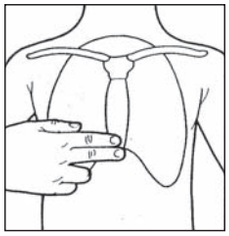
Give 5 Compressions



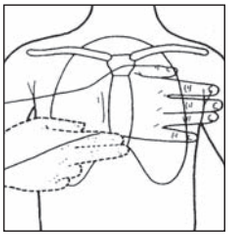
- The adult sternum should be depressed at least 2 inches (5 cm) at a rate of 80 to 100 compression should take 3 to 4 seconds.



- Count aloud, " One and two and three and four and five and". (Push down as you say the number and come up as you say "and'.)
- Compress down and up smoothly, keeping hand contact with chest at all times.



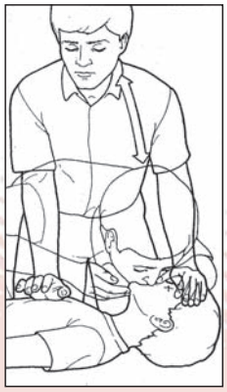
- Maintain head –tilt with hand on forehead .
- Place middle finger in notch and index finger next to it on lower end of breastbone.



- Look at where your index finger is placed on child's breastbone.
- Lift fingers off breastbone.
- Place heel of same hand on breastbone immediately above where index finger was placed.

- Keep finger off child's chest.

Do compression/Breathing Cycles



- Maintain head –tilt with hand on forehead.
- Return hand doing chin-lift directly to compression position.
- Do 5 cycle of 30 compressions and 1 breath.

IMP : Compressions generate critical blood flow and oxygen and energy delivery to heart and brain compression of at least 2 inches are more effetive than $1\frac{1}{2}$ inches.

Give 1 Slow breath

- Maintain head-tilt with hand on forehead.
- Place fingers of other hand under bony part of lower jaw at the chin. Lift chin.
- Pinch nose shut.
- Open your mouth wide, take a breath, and seal your lips tightly around outside of child's mouth.

- Give 1 slow breath (lasting 1 to 1 ½ seconds).
- Look for chest to rise and fall ; listen and feel for escaping air.

Give 1 slow Breath

- Maintain head-tilt with hand on forehead .
- Pinch nose shut.
- Place fingers of other hand under bony part of lower jaw at the chin. Lift chin.
- Open your mouth wide, take a breath, and seal your lips tightly around outside of child's mouth .
- Give 1 slow breath (lasting 1 to 1 ½ seconds).
- Look for the chest to rise and fall; listen and feel for escaping air.

Continue Compression/Breathing Cycles

- Return hand to compression position.
- Continue cycles of 30 compression and 2 breath.
- Recheck pulse every few minutes.

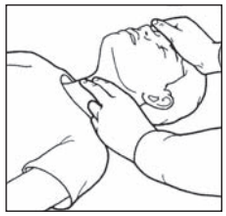
What to do Next

- When the rescuer stops to check pluse, the partner should read one of the following statements:

1. Child has a pulse.
2. Child does not have a pulse.

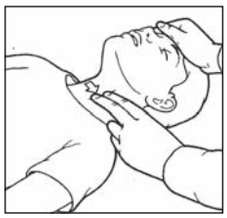
- Based on this information, the rescuer should decided what to do next and continue giving the right care.

Recheck Pulse



- Maintain head tilt with one hand on forehead.
- Feel for carotid pulse for 5 seconds.
- Partner/Instructor says, “No pulse.”
- First Aider repeats, “No pulse.”

Practice Session: CPR for a Child



- During this practice session, you and a partner will practice only on a manikin.
- Before you practice on the manikin, clean its face and the inside of its mouth. Clean the manikin’s face and mouth before each person in your group practices.

Put the steps together

Here are the steps you should follow when you give CRP to a child:

1. Check for unresponsiveness.
2. Shout for help.
3. Make sure that the child is on his or her back on a firm, flat surface.
4. Open the airway.
5. Look, listen, and feel for breathing (3 to 5 seconds).
6. If the child is not breathing, give 2 slow breaths.
7. Check the child’s carotid pulse for heartbeat (5 to 10 seconds).
8. Tell someone to phone the EMS system for help.
9. If there is no pulse, locate the correct hand position and position yourself to give chest compressions.
10. Give 5 compressions without stopping at the rate of 80 to 100 compressions per minute, counting out loud, “One and two and three and four and five and.” Push down as you say the number and come up as you say the “and.” Remember to keep your other hand on the child’s forehead keeping the head in the neutral-pulse position.

11. Next, lift the chin, and give 1 slow breath. The breath should take about 1 to 11/2seconds.

12. Keep repeating-5 compressions, 1 breath, 5 compressions, 1 breath, and so on. The complete cycle of 5 compressions and 1 breath should take from 4 to 6 seconds.

13. Recheck pulse. After you do 10 cycles (or about 1 minute) of continuous CPR, check to see if the child has a pulse. Do this after you give the breath at the end of the 10th cycle of 30 compressions and 2 breath. Check the carotid pulse at the neck for 5 seconds. If there is no pulse, give 1 breath and continue CPR. Repeat the pulse check every few minutes. If you do find a pulse, then check for breathing for 3 to 5seconds. If the child is breathing, keep the airway open and monitor breathing and pulse closely. This means that you should look, listen, and feel for breathing. Check the pulse once every minute. Cover the child, and keep the child warm and as quiet as possible. If the child is not breathing, give rescue breathing and keep checking the pulse.

14. Continue CPR until one of these things happens:

    - The heart starts beating again.
    - A second rescuer trained in CPR takes over for you.
    - EMS personnel arrive and take over.
    - You are too exhausted to continue.

More About CPR on a Child

If No One Comes When You Shout for Help

When you determine that a child is unconscious, always shout for help immediately. Your shout may attract someone who can phone the EMS system for help. But what if no one responds to your shouts for help? You should do CPR for 1 minute. During this minute you should continue to shout for help. You should also use this minute to plan how to make the call yourself. If no one has responded to your shouts for help by the end of 1 minute of CPR, you should get to a phone as quickly as you can and call the EMS system. If possible, you should bring the phone to the area where the child is or carry the child with you to the phone. Then begin CPR again.

If a Second Trained Rescuer Is at the Scene

If another rescuer trained in CPR is at the scene, this person should do two things: first, phone the EMS system for help if this has not been done; second, take over CPR when the first rescuer is tired.

Here are the steps for entry of the second rescuer:

- The second person should identify himself or herself as a CPR. trained rescuer who is willing to help.
- If the EMS system has been called and if the first rescuer is tired and asks for help, then-

    1. The first rescuer should stop CPR after the next breath.
    2. The second rescuer should kneel next to the child opposite the first rescuer, tilt the head into the neutral-plus position, and feel for the carotid pulse for 5 seconds.
    3. If there is no pulse, the second rescuer should give 1 breath and continue CPR.
    4. The first rescuer should then check the adequacy of the second rescuer's breaths and chest compressions. This is done by watching the child's chest rise and fall during rescue breathing, and by feeling the carotid pulse for an artificial pulse during chest compressions. This artificial pulse will tell you that blood is moving through the body.

2.6 Precautions

There are certain important precautions for rescuers to remember in order to protect the victim and get the best result from CPR.

These include:

- Do not leave the victim alone.
- Do not give chest compressions if the victim has a pulse. Chest compression when there is normal circulation could cause the heart to stop beating.

- Do not give the victim anything to eat or drink.
- Avoid moving the victim's head or neck if spinal injury is a possibility.

The person should be left as found if breathing freely. To check for breathing when spinal injury is suspected, the rescuer should only listen for breath by the victim's mouth and watch the chest for movement.

2.7 Prevention

- Loss of consciousness is an emergency that is potentially life threatening. To avoid loss of consciousness and protect themselves from emergency situations, people at risk can follow these general guidelines:

1. People with known conditions or diseases, such as diabetes or epilepsy, should wear a medical alert tag or bracelet.
2. People with diabetes should avoid situations that will lower their blood sugar level.
3. People who feel weak, become dizzy or light-headed, or have ever fainted, should avoid standing in one place too long without moving.
4. People who feel faint, can lie down or sit with their head lowered between their knees.
5. Risk factors that contribute to heart disease should be reduced or eliminated. People can reduce risks if they stop smoking, lower blood pressure and cholesterol, lose weight, and reduce stress.
6. Illegal recreational drugs should never be used.
7. Seeing a doctor regularly and being aware of any disease conditions or risk factors can help prevent or complicate illness, as can seeking and following the doctor's advice about diet and exercise.
8. Using seat belts and driving carefully can help avoid accidental injury.
9. People with poor eyesight or those who have difficulty in walking because of disability, injury, or recovery from illness, can use a cane or other assisting device to help them avoid falls and injury.

2.8 New Developments in CPR

This chapter contains the guidelines for out-of-hospital, single rescuer, adult basic life support (BLS). Basic life support refers to maintaining airway patency and supporting breathing and the circulation without the use of equipment other than a protective device.

It is important that those who may be present at the scene of a cardiac arrest, par cularly lay bystanders, should have learnt the appropriate resuscitation skills and be able to put them into practice. Simplification of the BLS sequence con nues to be a feature of CPR guidelines, but, in addition, there is now advice on who should be taught what skills, par cularly chest-compression-only or chest compression and ventilation.

Within this advice, allowance has been made for the rescuer who is unable or unwilling to perform rescue breathing, and for those who are untrained and receive telephonic advice from the ambulance service.

This change was made because of the evidence that relying on a check of the carotid pulse to diagnose cardiac arrest is unreliable and time-consuming, mainly, but not exclusively, when attempted by non-healthcare professionals. Subsequent studies have shown that checking for breathing is also prone to error, particularly as agonal gasps are often misdiagnosed as normal breathing.

Presently the absence of normal breathing continues to be the main sign of cardiac arrest in a non-responsive victim. Once cardiopulmonary resuscitation (CPR) has started, it is now recommended that the rescuer should only stop CPR if the victim shows signs of regaining consciousness, such as coughing, opening his eyes, speaking, or moving purposefully, as well as breathing normally.

For more than 40 years, CPR training has emphasized the ABCs of CPR, which instructed people to open a victim's airway by tilting their head back, pinching the nose and breathing into the victim's mouth, and only then giving chest compressions," According to the new research from the year 2010, Chest compressions should be the first step in addressing cardiac arrest and should be started immediately on anyone who is unresponsive and is not breathing normally. Oxygen will be present in the lungs and bloodstream within the first few minutes, so initiating chest compressions first will facilitate distribution of that oxygen into the brain and heart sooner.

Previously, starting with "A" (airway) rather than "C" (compressions) caused significant delays of approximately 30 seconds. Presently it is recommended that the A-B-Cs (Airway-Breathing-Compressions) of cardiopulmonary resuscitation (CPR) be changed to C-A-B (Compressions-Airway-Breathing).

It is also recommended that during CPR, rescuers increase the speed of chest compressions to a rate of at least 100 times a minute. In addition, compressions should be made more deeply into the chest, to a depth of at least 2 inches in adults and children and 1.5 inches in infants.

Persons performing CPR should also avoid leaning on the chest so that it can return to its starting position, and compression should be continued as long as possible without the use of excessive ventilation.

Increased emphasis has been placed or high quality-CPR (compression of adequate rate and depth, allowing complete chest recoil between empressions, mini mising interruptions in compressions and avoiding excessive ventilation.

Rescuer should initiate chest compression before giving resume breaths CAB rather than ABC.

In recent years, the CPR guidance has been revised to place more emphasis on cheat has a sudden cardiac arrest. In 2008, the group said viewers untrained heart or those unwilling to do rescue breaths could do hands-only CPR until paramedics arrive, or a defibrillator used to restore normal heart rhythm.

Now, the group says all professionals passersby using standard CPR should begin chest compressions instead of opening the victim's airway and breathing into the mouth first.

Trenches change the old ABC training-breathing airway compressions. They called rescuers to give two breaths first, then alternate with 30 presses.

Trenches change the old ABC training-breathing airway compressions. They called rescuers to give two breaths first, then alternate with 30 presses.

CPR guidelines are changing as a result of a conference that meets every fi ve years: "The International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care with Treatment Recommendations Conference." The goal of the conference is to discuss global resuscitation-science and come up with treatment recommendations. The 2010 conference has concluded and so changes are coming in 2011 in the way the American Heart Association teaches their CPR classes. The most notable change is that the old acronym ABC (Airway, Breathing, Circulation) for CPR is being replaced with a new one: CAB (Circulation, Airway, Breathing).

A-B-C is for babies; now it's C-A-B!

It used to be follow your ABC's: airway, breathing and chest compressions. NQw, Compressions come first, only then do you focus on Airway and Breathing. The only exception to the rule will be newborn babies, but everyone else - whether it's infant CPR, child CPR or adult CPR - will get chest compressions before you worry about the airway.

No more looking, listening and feeling.

The key to saving a cardiac arrest victim is action, not assessment. Call 911 the moment you realize the victim won't wake up and doesn't seem to be breathing right.

Trust your gut. If you have to hold your cheek over the victim's mouth and carefully try to detect a put of air, it's a pretty good bet she's not breathing very well, if at all.

Push a little harder.

How deep you should push on the chest has changed for adult CPR. It was 1 1/2 to 2 inches, but now the Heart Association wants you to push at least 2 inches deep on the chest.

Push a litt le faster

AHA changed the wording here, too. Instead of pushing all the chest at about 100 compressions per minute, AHA wants you to push at least 1 00 compressions per minute. At that rate, 30 compressions should take you 18 seconds.

Source: About.com and AHA website

My thoughts -

As a mother of 2 little girls (1½ yrs and 3 112 yrs old), I would definitely go for the A-B-C method which is still recommended by the American Red Cross. I've talked to nurses, firefighters and CPR Instructors and it is clear that the new American Heart Association guidelines were created because they felt that most people refrain from helping a victim that is not breathing for fear of having to do mouth-to-mouth. It is better to do something, rather than nothing and if they promote chest-only compressions, then the thought is that more people will take action immediately when someone isn't breathing.

Guidelines have changed a few times since the early 1900's. All in all - whichever guidelines you choose to follow - doing something is better than nothing.

References.

1. Resuscitation Council (UK) www.resus.org.uk
2. American heart association. www.heart.org
3. ERC European Resuscitation Council www.erc.edu

Check out new website about :

CPR Certification Training

CPR Guidelines 2011

Recent CPR Guidelines

Rules of CPR

Chapter -3

FIRST AID IN ROAD ACCIDENTS

3.1 Action at a Road Traffic Accident

Road traffic accidents are increasing in number and in severity. With the development of high-speed motorways, multiple collisions and involvements are becoming more common, particularly in times of reduced visibility, fog, or torrential rain.

When confronted with a road traffic accident you must first carefully assess the situation to make sure that you and your car are visible and not at risk of being hit by another vehicle. Pull well away from the traffic stream if possible, as many 'samaritans' have been killed or severely injured.

Assess the position of the cars in the accident, turn off ignition and ensure there is no smoke, particularly if there is a smell of fuel. Detach the batteries if necessary and possible. Check the airway of any people who are injured, unconscious or trapped. Blood, vomit or dentures may need to be cleared, and the position of the patient's head should be adjusted carefully to improve air entry. Quickly examine the patient, assessing features, shock and wounds. If there is excessive bleeding, treat this by the application of a firm pad and bandage, with supplementary splintage if necessary.

If the patient is trapped in the seat, leave him alone unless he is in danger from fire or further damage. Send for assistance rapidly to the nearest medical facility. It is important to inform the ambulance service that the casualties are trapped or there is some other serious hazard.

Attempts should be made to count the passengers, as quite often passengers are thrown from the car and may travel several yards landing behind hedges or in ditches. Children may be lying on the floor of the car and should be looked for. On the whole, it is better to leave trapped patients in the vehicle until the emergency services arrive unless there is considerable risk, in which case swift action should be taken with as many people as possible to move the patient rapidly and steadily, preferably after applying splints. In this situation be careful of the cervical and thoracic spine; move the patient 'in one piece', using as many of the bystanders as possible. He should then be placed in a position of safety; if unconscious in the recovery position, otherwise on his back. If he has a chest injury, he may be more comfortable sitting up.

3.2 What happened

History:

From the sick and the injured.

From bystander.

(Note demage to vehicles which may give clues to the type of injury to be expected).

Count all casualties. Is anyone known to be missing?

What does the casualty feel? (Symptoms)

• Pain	• Breathlessness
• Loss of normal sensation	• Nausea
• Faintness	• Disorientation
• Loss of memory	• For events before the incident

• Thirst	:	
• Palpitations	:	These may indicate bleeding
• Cold, Clammy skin	:	

Information gained by examination (signs)

Adequacy of:

• Airway	• Breathing
• Circulation (and control of bleeding)	• Colour
• Conscious level	• Eyelash reflex
• Swelling	• Deformity
• Bruising	• Tenderness
• Incontinence	• Temperature

3.3 Control of Bleeding

Before you take measures to control bleeding:

- Determine the cause and source of the bleeding and general condition of the victim expose the wound to determine where the blood is coming from.
- Place the victim in a position in which he or she will be least affected by the loss of blood.
- Maintain an open airway.

After bleeding is controlled, take measures to prevent or control shock, take vital signs every 5 minutes and repeat victim assessment every 15 minutes, and stay alert for the complication of blood loss.

3.4 Bleeding and Wounds

Wounds are of different kinds. However, any kind of wound may tend to bleed most especially if the vessels are injured. The amount of blood or pressure would depend on the vessels involved.

The different kinds of vessels are as follows:

- Capillaries.
- Veins.
- Arteries.

Capillaries are minute vessels and naturally would be easy to control when it is wounded.

Veins although are bigger, have lesser pressure and are therefore easy to control after bleeding.

Arteries are almost of the same caliber as veins with respect to size but has greater pressure since it is connected directly from the left side of the heart.

Different Kinds of Wounds

Now that we have an understanding on the different kinds of vessels, it is important that we should also be familiar about the different types of wounds.

- Abrasion
- Incision
- Laceration
- Punctured
- Avulsion

Remember that whatever wound it may be, the most important thing to do is to stop severe bleeding. Severe Bleeding can lead to shock and may cause death. For minor wounds where there is minimal bleeding or no bleeding at all, prevent infection.

Direct Pressure

The first and foremost method in controlling bleeding may not be as difficult as you think. It is simply ***putting pressure directly over the wound***. This can be done with the use of gauze or any cloth available directly over the wound with constant pressure.

Remember that the aim is to stop the bleeding so continuously apply pressure over the wound. This will also allow the blood to clot and will aid in controlling the bleeding. Any gauze or cloth applied to the wound is what we call a dressing. Even your bare hands can be used as a dressing. You can also apply a bandage to hold the dressing in place.

Pressure on Supplying Artery

You may also apply **Pressure on the Supplying Artery**. This is done by pressing the brachial artery or the femoral artery should the wound involve extremities. But again bear in mind that direct pressure is always the first and foremost method in controlling bleeding.

Elevation If there is no fracture in the area of the wound, the wounded part can be elevated. But you have to remember that elevation should be done when direct pressure has been applied already.

Elevate the wounded part above the level of the heart. This will lessen the amount of blood heading to the wound and lessen the flow of blood.

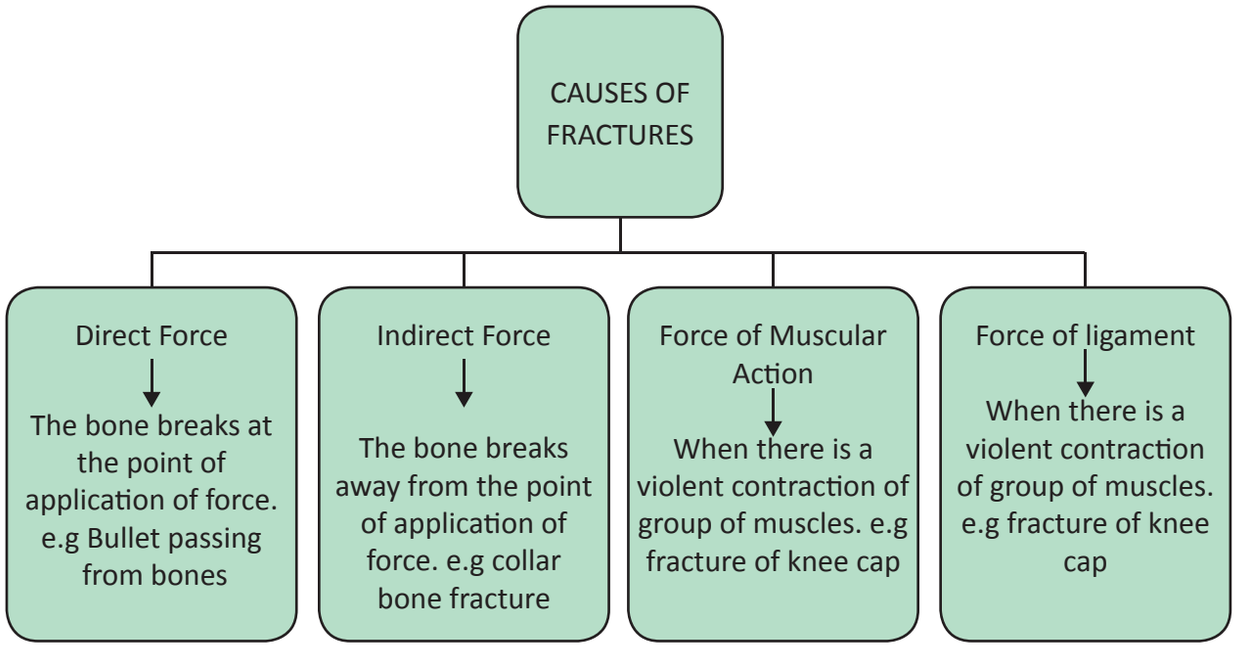
Chapter -4

FIRST-AID IN MEDICAL AND SURGICAL EMERGENCIES

4.1 FRACTURES

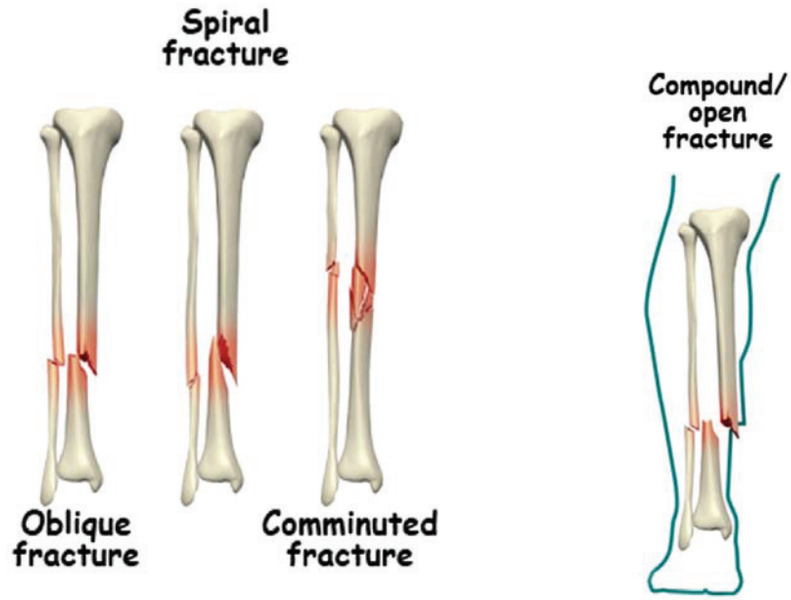
A fracture is a partial or complete breakage of a bone.

4.1.1 CAUSES



4.1.2 TYPES OF FRACTURE

1. Simple (close) fracture - the skin surface is intact around the broken bone.



2. Compound (open) fracture – the broken bone comes out of the skin which leads to extensive blood loss and infection.
3. Complicated (closed/open) fracture – when there is associated injury like injury to nerve/ blood vessel.

4.1.3 SIGNS OF FRACTURE :

1. Pain/tenderness at the site of injury, which increases by movement.
2. Swelling of the area and discoloration.
3. Deformity (change in shape) of broken limb.
4. Loss of power in an affected limb.
5. Crepitus (grating) :- where one end of the broken bone move against the other, crackling sound is heard called as crepitus.

4.1.4 AIM OF THE ASSISTANCE IS:-

1. To prevent further damage.
2. To reduce pain.
3. To make patient comfortable.
4. To get medical help at the earliest.

IMMOBILIZING FRACTURE

1. Immobilizing the injured part by using the body as a splint where possible like tying an injured leg to the uninjured leg.
2. Give nothing by mouth.
3. Do not attempt to straighten a limb before immobilization.
4. If a limb is injured, immobilize the joints above and below the fracture.
5. Do not tie too tightly and watch for blood circulation in toes and fingers. If they become blue loosen the bandage slightly.

IF THE BONE IS PROTRUDING FROM THE WOUND (open fracture) :-

1. Control bleeding by applying pressure along the side of bone.
2. Gently place a clean piece of cloth over the bone coming out of the skin.
3. Raise the injured part if possible and immobilize it.
4. Shift the casualty to hospital at the earliest.

4.1.5 SOME COMMON FRACTURES & THEIR MANAGEMENT

1. Leg & foot fractures

Legs are often fractured in accidents and as large bones are involved, there can be extensive internal bleeding.

a. When one leg is injured :-

- Cover any wound with clean cloth/dressing.
- Use the unhurt leg as a splint.
- Put pads between thighs, knees & ankles & move the uninjured leg toward the injured leg.
- Tie feet, knees & ankles together.
- Get to hospital on a stretcher.

Do not push back any protruding bone ends.

b. When both legs are injured :-

- Use splints, if available to place between legs.
- Put pads between thighs, knees and ankles.
- Never push the limbs toward the body.
- Put splint in position & tie firmly.
- If splint not available, Bandage the legs together, putting reef knots on the least injured side.
- Support the arm of the injured side with the help of casualty.

2. Collarbone Fractures :

Collarbone is normally broken where the person falls on the tip of the shoulder or on the palm of the outstretched hard Management

- Place a pad in the arm pit.
- Leaving the forearm free , bandage the upper arm to the side of the chest with a broad bandage.
- Support the upper limb with the sling.
- Feel the pulse to make sure that circulation is the limbs is free.
- Shift to the hospital

3. Fractures of the ribs

Ribs are broken by (direct force, indirect force)

Signs of ribs fractures

- Casualty complains of pain in the chest, which is worse on coughing/ deep breathing.
- If a bone has pierced a lung , he may cough up frothy blood.
- Support the arm on injured side in an arm sling.
- If open fracture close wround.

Cover Immediately To Prevent Air Entering The Lungs

- Loosen tight clothing.
- Record pulse rate.
- Reassure the casualty.

4.1.6 SPLINTING THE SUSPECTED FRACTURE

Any device used to immobilize (prevent movement of) a fracture or dislocation is a splint. A splint can be soft or rigid, commercially manufactured or improvised from virtually any object that can provide stability.

Splints are used to support and immobilize suspected fractures, dislocations, or severe sprains; to help control bleeding; to reduce swelling; to help control pain; and to prevent further demage to tissues from the movement of bone ends. Any victim with suspected fracture, dislocation, or severe sprain should be splinted before being moved.

Rules for Splinting:

Regardless of where you apply the splint, follow these general rules:

- Do not splint as it will cause more pain to the victim.
- Both before and after you apply the splint; assess the pulse and sensation below the injury. You should evaluate these signs every 15 minutes after applying the splint to make sure the splint is not impairing circulation.
- Immobilize the joints both above and below the injury.
- Splint an injury in the position you found it. If there is no distal pulse or movement, you may attempt to return the bone to its normal alignment by placing one hand above the injury and another below. Then pull with gentle traction while moving the injury back toward the correct anatomical position.
- Remove or cut away all clothing around the injury site with a pair of bandage scissors so that you do not accidentally move the fractured bone ends and complicate the injury. Remove all jewelry around the fracture site.
- Cover all wounds, including open fractures, with sterile dressing before applying a splint then gently bandage. Avoid excessive pressure on the wound.
- If there is a severe deformity or the distal extremity is cyanotic or lacks pulses, align the injured limb gentle traction before splinting, following the guidelines above.

- Never intentionally replace protruding bone ends.
- Pad the splint to prevent pressure and discomfort to the victim.
- Apply the splint before trying to move the victim.
- When in doubt, splint the injury.
- If the victim shows signs of shock, align the victim in the normal anatomical position and arrange for immediate transport without taking the time to apply a splint.

Types of Splints:

There are four general types of splints:

Rigid Splints:

Rigid splints are commercially manufactured splints made of wood, aluminum, wire, plastic, cardboard, or compressed wood fibers. Some are designed in specific shapes for arms and legs and are equipped with Velcro closure; others are pliable enough to be molded to fit any appendage. One of the most popular commercial splints the SAM splints, a lightweight splint made of pliable aluminum sandwiched between layers of foam; it can be molded to fit any body part. Some commercial splints come with washable pads. But others must be padded before being applied. The splint must be long enough to extend both above and below the fracture.

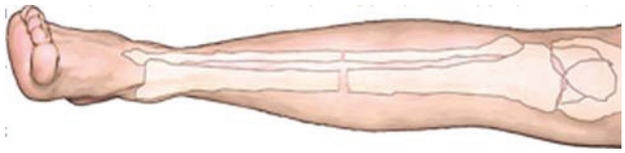
Traction Splints:

Traction splints gently pull in the direction opposite the injury, alleviating pain, reducing blood loss, and minimizing further injury. Traction splints are not intended to reduce the fracture, but simply to immobilize the bone ends and prevent further injury. A traction splints should be used only for a broken thigh and should be applied only by EMTs or those who have had special training in applying traction splints.

Pneumatic (Air) Splints:

Air splints are soft and pliable before being inflated but rigid once they are applied and filled with air. A similar type of splint is the vacuum splint, which works on the principle of a vacuum. Air splints are used mainly on the forearm and lower leg. Air and vacuum splints cannot be sized, may impair circulation, may interfere with the ability to assess pulses, and may lose pressure with temperature and altitude changes.

Improvised Splints:



You may have access to a commercial splint, but it is much more likely that you will need to improvise at the scene. A splint can be improvised from a cardboard box, cane, ironing board, rolled – up magazine, umbrella, broom handle, catcher's shin guard, or any other similar object.

You can also use a self-splint (also called an anatomical splint) by trying or taping an injured part to an adjacent uninjured part; for example, splint a finger to a finger, a toe to toe, a leg to the other leg, or an arm to the chest. An effective improvised splint must be.

- Light in weight, but firm and rigid.
- Long enough to extend past the joints and prevent movement on either side of the fractures.
- As wide as the thickest part of the fractured limb.
- Padded well so the inner surfaces are not in contact with the skin.

An ordinary bed pillow can be an effective improvised splint when wrapped around the area and secured with several cravats.

Hazards of improper Splinting

Improper splinting can:

- Compress the nerves, tissues, and blood vessels under the splint, aggravating the existing injury and causing new injury.

- Delay the transport of a victim who has a life-threatening injury.
- Reduce distal circulation, threatening the extremity.
- Aggravate the bone or joint injury by allowing movement of the bone fragments or bone ends or by forcing bone ends beneath the skin surface.
- Cause or aggravate damage to the tissues, nerves blood vessels, or muscles as a result of excessive bone or joint movement.

Special Consideration in Splinting

There are certain special techniques to remember when splinting long bones or joints or when using a traction splint.

Splinting a Long Bone

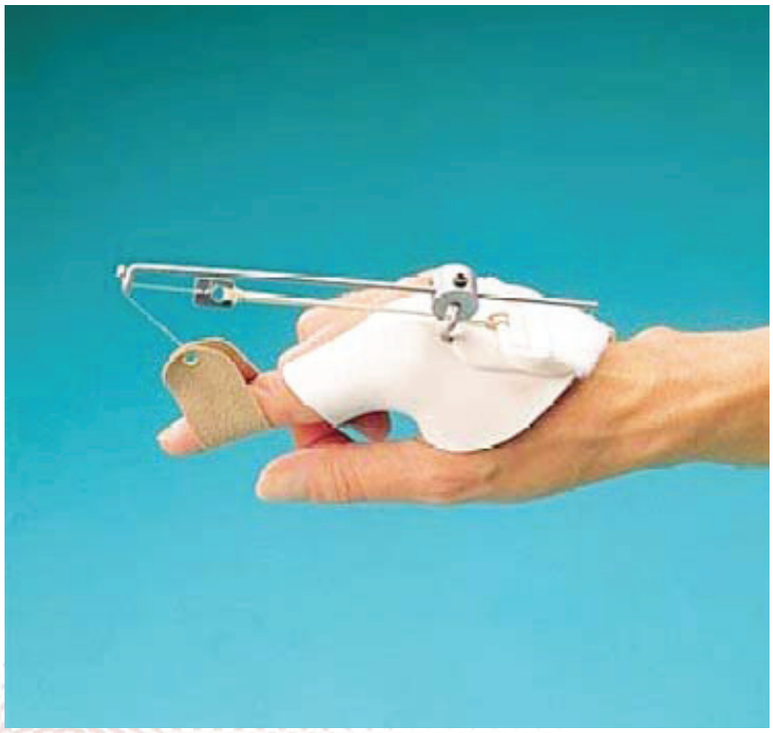
1. Gently grasp the limb and apply gentle, steady pressure to stabilize the bone.
2. Assess the pulse and sensory function below the injury site. Look for Paresthesia (a pricking or tingling sensation that indicates loss of circulation) or paralysis. If the injury involves an upper extremity, nerve function is intact if the victim can make a fist, undo the fist, spread the fingers, and make a hitchhiking sign with the thumb. If the injury involves a lower extremity, nerve function is intact if the victim can tighten the kneecap and move the foot up and down as if pumping an automobile accelerator.
3. If the limb is severely deformed, is cyanotic, or lacks distal pulses, align it by providing steady, gentle pressure along with traction, if pain or crepitus increases, stop.
4. Measure the splint to make sure it is the right size. The splint should be long enough to immobilize the entire bone plus the joints on both sides, if you are immobilizing the leg, ideally, the outside splint should be long enough to reach from the victim's armpit to below the heel; the inner splint should be long enough to reach from the groin to below the heel.
5. Apply the splint, immobilizing the bone and the joint both above and below the injury.
6. Secure the entire injured extremity; you can use the straps or Velcro closures that come with commercial splints, or wrap roller bandages around improvised splints and secure them with cravats.

7. Immobilize the hand or foot in the normal position of function. Make sure you can still see and feel the hand or foot so you can assess pulses and sensation.

Splinting a Joint

Splint a joint as injury follows:

1. Stabilize the joint manually; one first aider should apply firm but gentle stabilization while a second one readies the splint.
2. Assess the pulse and sensory function below the injury site; check for paresthesia or paralysis.
3. If the distal extremity is cyanotic (bluish) or lacks pulses, align the joint with gentle traction. If pain or crepitus increases, stop.
4. Immobilize the site of the injury with a splint.
5. Immobilize the bones both above and below the injured joint to help prevent accidental movement of the joint.
6. After applying the splint, reassess pulse and sensation; every few minutes.



4.2 BURNS AND SCALDS

BURNS result from dry heat, extreme cold, corrosive substances, friction or radiation including suns' rays. SCALDS are caused by wet heat from hot liquids and vapors.

Burns and Scalds may be associated with conditions that pose a greater threat to life or there may be other serious injuries caused.

4.2.1 FIRST-AID PRIORITIES

1. Establish your own safety before attempting to treat the patient.
2. See that airway is clear.
3. Stop the burning, by rapid cooling, to prevent further tissue damage
4. Cover the injury to protect it from infection.
5. Check for other injuries.

4.2.2 THE SKIN

The skin is body's largest organ, covering the entire surface of our body. The skin is made of three layers of tissues, the outer epidermis and the inner dermis and lie on a layer of subcutaneous fat.

EPIDERMIS: Fatty substance that makes the skin water proof.

DERMIS : Blood vessels, nerves, muscles, sebaceous(oil)glands, sweat glands and hair roots(follicles).The sensory nerve within the dermis ensure that the body's surface area is sensitive to heat, cold, pain and the slightest touch.

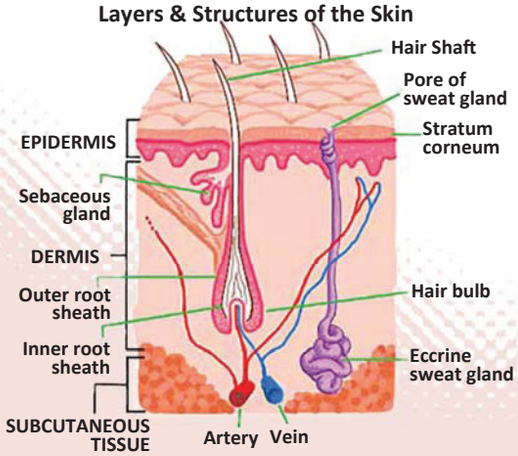


Diagram of the skin layer

4.2.3 ASSESSING BURNS

It is important to consider the size and depth of burn while treating.

The size of burn will tell you whether shock is likely to develop because of excessive loss of tissue fluid (serum).The deeper the burn ,the higher the risk.(explained later).

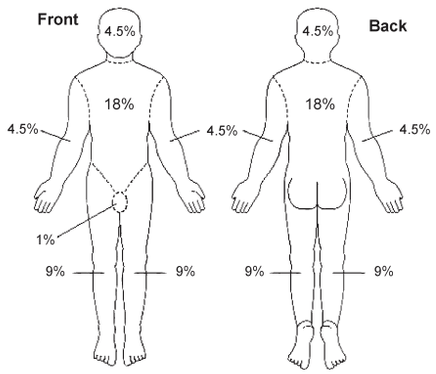
Once the cause is established you can decide on treatment.

HOW BURNS ARE CAUSED?

	Type of burn	**Causes**
1.	Dry Burn	Flames, contact with hot objects e.g. Cigarettes, Friction e.g. rope burns.
2.	Scald	Steam, hot liquids like tea, coffee.
3.	Electrical burn	Low voltage current (household appliances) High voltage current (main overhead cables) Lightning strikes.
4.	Cold injury	Frostbite.
5.	Chemical burn	Industrial chemicals, domestic chemicals like caustic Soda, bleach, paint stripper etc.
6.	Radiation Burn	Sun burn, exposure to radioactive source like X-ray

1. **EXTENT OF BURN:**

Burns are classified on the basis of area by Rule of 9.



(Diagram giving the percentage of burns)

Any burn of over 30% should be hospitalized as priority.

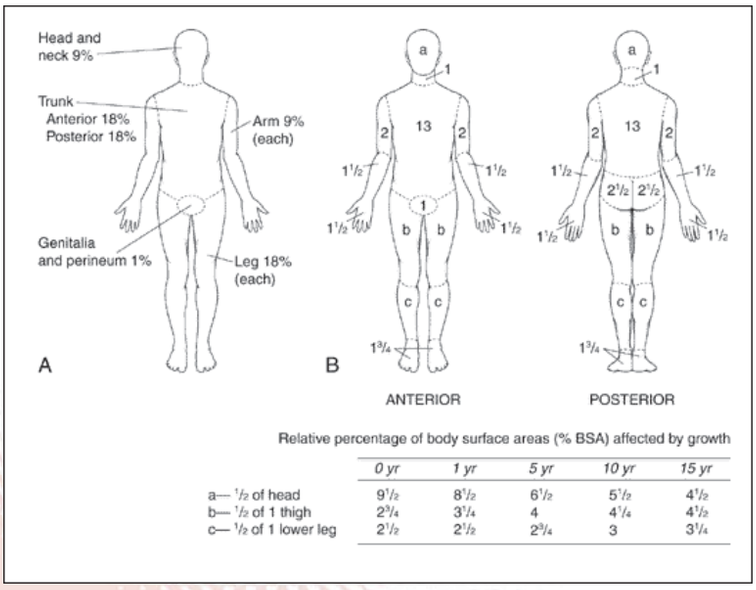
Burns chapter

Burn formulae.

Rule of nines for Establishing Extent of Body Surface Burned

Abatinuc Surface	% of total body surface
Head and neck	9%
Anterior trunk	18%
Posterior trunk	18%
Arms, including hands	9% each
Legs, including feet	18% each
Genitalia	1%

Estimating Percent Total Body Surface Area in Children Affected by Burns



Relative percentage of body surface areas (% BSA) affected by growth

	0 yr	1 yr	5 yr	10 yr	15 yr
a— ½ of head	9½	8½	6½	5½	4½
b— ½ of 1 thigh	2¾	3¼	4	4¼	4½
c— ½ of 1 lower leg	2½	2½	2¾	3	3¼

1. Rule of “nines” 2. Lund-Browder diagram for estimating extent of burns.

Depth of burn injury (deeper burns are more severe)

Superficial burns (first-degree and superficial second-degree burns)

First=-degree burns

Damage above basal layer of epidermis

Dry,red, painful (“sunburn”)

Second-degree burns

Damage into dermis

Skin by re-epithelialization from skin adnexa

The deeper the second-degree burn, the slower the healing (fewer adnexa for re-epithelialization)

Moist, red, blanching, blisters, extremely painful

Superficial burns heal by re-epithelialization and usually do not scar if healed within 2 weeks

Deep burns (deep second-degree to fourth-degree burns)

Deep second-degree burns (deep partial-thickness)

Damage to deeper dermis

Less moist, less blanching, less pain

Heal by scar deposition, contraction and limited re-epithelialization

Third-degree burns (full-thickness)

Entire thickness of skin destroyed (into fat)

Any color (white, black, red, brown), dry, less painful (dermal plexus of nerves destroyed)

Heal by contraction and scar deposition (no epithelium left in middle of wound)

Fourth-degree burns

Burn into muscle, tendon, bone

Need specialized care (grafts will not work)

Deep burns usually need skin grafts to optimize results and lead to hypertrophic (raised) scars if not grafted age

Mortality for any given burn size inncreases with age

Children/young adults can survive massive burns

Children require more fluid per TBSA burns

Elderly may die from small (<15% TBSA) burns

Smoke inhalation injury

Smoke inhalation injury doubles the mortality relative to burn size

Assicated injuries

Other trauma increased severity of injury

Delay in resuscitation

Delay increases fluid requirements

Makes resuscitation more difficult

2. DEPTH OF BURN

There are three types of burns:

A) SUPERFICIAL: (1st Degree)-only outer most layer of skin is involved causing red ness, swelling and tenderness. It requires mild first-aid.

B) PARTIAL-THICKNESS: (2nd Degree)-1%burn affecting layers of epidermis causing rawness and blisters. Requires medical treatment.

C) FULL THICKNESS: (3rd degree)-all the layers of the skin are burnt causing severe damage to nerves, tissues and muscles. Skin may look waxy pale. Needs urgent medical attention.

4.2.4 MINOR BURNS AND SCALDS

Small, superficial burns are often caused by domestic accidents. Most can be treated by a first aider.

The aim of the treatment :-

1. To stop the burning sensation.
2. To relive pain and swelling.
3. To minimize the risk of infection.

TREATMENT

1. Reassure the patient
2. Dip the injured part in cold water for at least ten minutes to stop the burning sensation and relieve the pain.
3. Gently remove any rings, watches, shoes and other constricting clothing from the Injured area before it begins to swell.
4. Cover the area with a clean and sterilised material.
5. Give plenty of fluids orally.

- DO NOT break blisters or otherwise interfere with injured area.
- DO NOT apply adhesive dressings/tape.
- DO NOT apply lotions/ointments/fats to the injuries as they can further damage the tissues and increase the risk of infection.

4.2.5 SEVERE BURNS AND SCALDS

Great care must be taken when treating burns that are deep or extend over a large area. The longer the burning continues, the more severe the injury will be.

Aim of the treatment is:-

1. To stop the burning and relieve pain.
2. To maintain an open airway.
3. To treat associated injuries.
4. To minimize the risk of infections.
5. To arrange removal to hospital.

TREATMENT:-

1. Make the patient comfortable.
2. Cool the burned area with plenty of cold water for at least 10 min.
3. While cooling the burn, watch for signs of difficulty in breathing.
4. Gently remove any jewellery, watches, shoes or constricting clothing before swelling begins.
5. Carefully remove burned clothing ONLY IF IT IS NOT STICKING TO THE BURN.
6. Cover the injury with a clean and sterile material.
7. For facial burns just keep cooling the injury with water to relieve the pain until help arrives or victim reaches the hospital.

    - DO NOT overcool the injured as it may lead to Hypothermia.
    - DO NOT remove anything sticking to the burns.

4.3 SHOCK

Shock is a condition in which the circulatory system fails to circulate oxygen – rich blood to all parts of the body. When vital organs, such as the brain, heart, and lungs, do not receive oxygen – rich blood, they fail to function properly; improper functioning organs trigger a series of responses. These responses are the body's attempts to maintain adequate blood flow to the vital organs, preventing their failure.

When the body is healthy, three conditions are needed to maintain adequate blood flow:

- The heart must be working well.
- An adequate amount of oxygen-rich blood must be circulating in the body.
- The blood vessels must be intact and able to adjust blood flow.

When someone is injured or becomes suddenly ill, these normal body functions may be interrupted. In cases of minor injury or illness, this interruption is brief because the body is able to compensate quickly, with more severe injuries or illnesses, however, the body may be unable to adjust. When the body is unable to meet its demands for oxygen because blood fails to circulate adequately, shock occurs.

4.3.1 WHAT CAUSES SHOCK?

The heart circulates blood by contracting and relaxing in consistent rhythmic pattern. The heart adjusts its speed and the force of its contractions to meet the body's changing demands for oxygen. For instance, when a person exercises, the heart beats faster and more forcefully to move more oxygen-rich blood to meet the working muscles' demand for more oxygen.

Similarly, when someone suffers a severe injury or sudden illness that affects the flow of blood, the heart beats faster and stronger at first to adjust to the increased demand for oxygen. Because the heart is beating faster, breathing must also speed up to meet the body's increased demand for oxygen. You can detect these changes by feeling the pulse and listening to breathing when you check for nonlife-threatening conditions.

For the heart to do its job properly, an adequate amount of blood must circulate within the body. The body can compensate for some decrease in blood volume.

Consider what happens when you donate blood. You can lose 1pint (about ½ liter) of blood over a 10 to 15 minute period without any significant stress to the body. Fluid is reabsorbed from the kidneys, lungs, and intestines to replace lost blood volume. In addition, the body immediately begins to manufacture the blood's solid components. However, with severe injuries involving greater or more rapid blood loss, the body may not be able to adjust adequately. Body cells do not receive enough oxygen, and shock occurs. Any significant fluid loss from the body, such as from severe bleeding or burns or even from diarrhea or vomiting, can precipitate shock.

Regardless of the cause, any significant decrease in body fluids affects the function of the heart. The heart will initially speed up to compensate for loss of body fluids and eventually will fail to beat rhythmically; the pulse may become irregular or be absent altogether.

The blood vessels act as pipelines, transporting oxygen and nutrients to all parts of the body and removing wastes. For the circulatory system to function properly, blood vessels must remain intact, preventing loss of blood volume. Normally, blood vessels decrease or increase the flow of blood to different areas of the body by constricting (decreasing their diameter) or dilating (increasing their diameter). This ability ensures that blood reaches the areas of the body that need it most, such as the vital organs. Injuries or illnesses, especially those that affect the brain and spinal cord, can cause blood vessels to lose this ability to change size Blood vessels can also be affected if the nervous system is damaged by injury, infection, drugs, or poison.

If the heart is damaged, it cannot circulate blood properly. If blood vessels are damaged, the body cannot adjust blood flow. Regardless of the cause, when body cells receive inadequate oxygen, the result is shock.

4.3.2 THREE TYPES OF SHOCK AND THEIR CAUSES :

Common Types of Shock

Type	Causes
Anaphylactic	Life-threatening allergic reaction to a substance, may Cause airway to swell, affecting ability to breath; can occur from insect stings or from foods and drugs.

Cardiogenic	Failure of the heart to effectively circulate blood to all parts of the body; occurs with heart attack.
Hypovolemic	Severe bleeding or loss of blood plasma; occurs with internal or external wounds or burns or with severe fluid loss as from vomiting and diarrhea.

When shock occurs, the body attempts to prioritize its needs for blood by ensuring adequate flow to the vital organs, such as the heart, brain, lungs, and kidneys. The body reduces the amount of blood circulating to the less important tissues of the arms, legs, and skin. This reduction in blood circulation to the skin causes the skin of a person in shock to appear pale or ashen and feel cool. In later stages of shock, the skin, especially the lips and under the nails, may appear blue from a prolonged lack of oxygen. Increased sweating is also a natural reaction to stress caused by injury or illness, which makes the skin feel moist.

4.3.3 SIGNS AND SYMPTOMS OF SHOCK:

Although you may not always be able to determine the cause of shock, remember that shock is a life threatening condition. You should learn to recognize the signs and symptoms of shock.

Shock victims usually show many of the same signs and symptoms. A common sign is restlessness or irritability. This behavior is often the first indicator that the body is experiencing a significant problem. Other clearly recognizable signs are pale or ashen, cool, moist skin; rapid breathing; and a rapid and weak pulse. If the victim does not show the telltale signs and symptoms of specific injury or illnesses, such as the persistent chest pain or heart attack, or obvious external bleeding, it can be difficult to know what is wrong. Remember, you do not have to identify the specific nature of an illness or injury to provide care that may help save the victim's life. If the signs and symptoms of shock are present, assume the victim has a potentially life-threatening injury or illness and proceed with giving care for shock.

4.3.4 GIVING FIRST AID TO A PERSON IN SHOCK

People who are injured in a disaster can go in to shock. This is due to bleeding from injury, which may be external or internal. Shock is common in people with dead injuries.

How do you recognize a victim who is in shock?

A person in shock can be recognized by the following features:

- looks pale;
- Hands and feet cold
- Unconscious

What can you do?

- Give immediate first aid to the person in shock.
- Wrap the victim in blankets.
- Give hot, sweet drinks to the victim.
- Do not leave the patient in shock unattended.

  Raise the victim's legs above the level of the body

DONT'S

1. Never use hot water bottles or very warm rugs.
2. Do not rub any part of the body.
3. Do not give anything by mouth.

4.4 POISONING

POISON—A poison is any substance that enters the body and causes temporary or permanent harm.

4.4.1 METHODS OF POISONING:-

a) By Swallowing

b) By Gases

c) By Injections.

A) POISONING BY SWALLOWING

Acids, Disinfectants etc when taken, burns the lips, tongue throat, food pipe and stomach. They cause great pain. Some can cause vomiting, pain and later on diarrhea.

b) POISONING BY GASES

Fumes or gases from charcoal stoves, household gas, motor fumes and Smoke from explosions etc causes choking and suffocation which may result in unconsciousness.

c) POISONING BY INJECTIONS

As a result of bites from some animals, insects, snakes or by hypodermic Syringes.

4.4.2 MANAGING POISONING

- IF UNCONSCIOUS:--Do not induce vomiting, make him lie in three - quarter Position-If breathing is slow, artificial respiration.
- IF CONSCIOUS: (NO CORROSIVE TAKEN), Help in vomiting, make him drink normal water, with 2 tbsp of salt.

Dilute the poison by giving iced water or coconut water.

- IF CONSCIOUS:

  (CORROSIVE SWALLOWED) DO NOT INDUCE VOMITING,

TRANSFER TO HOSPITAL

COMMON POISONS AND THEIR MANAGEMENT

Poison	Cause	Management
1. Arsenic	Rat poisons	a. Induce vomiting
2. Aspirin	Aspirin	a.Induce vomiting.
	Tablets	b. A drink of soda-bicarbonate to be given.
		c. Give strong tea/coffee.
3. Sleeping pills	Chemists	a. Induce vomiting.
		b. Give Magnesium Sulphate (2tsp in water).
		c. Give hot coffee and keep awake.
4. Lead	Paints,	a. Induce vomiting.
	Hair dyes	b. Give Mag - Sulpahte in water.
		c. Give milk/white of egg/barley Water.
5. Petrol,	Houses/	a. Give vegetable oil.
Kerosene	garages/ Industries	b. If available, liquid paraffin as it delays the absorption of poison.
		c. Shift to hospital.
		d. DO NOT INDUCE VOMITING.

4.5 FIRST AID IN ELECTROCUTION

The Danger of electricity is that it surrounds us in our everyday lives, and it is easy to become complacent about it. The fraying plug on the iron, the bare wires on the vacuum flax, and the gaping plug sockets left uncovered with a toddler in the house are all electirc shocks waiting to happen. Electricity harms because it can cause the heart to beat irregularly and then stop; the muscles, nerves and blood vessels to fry and the skin to burn, One – third of all victims of electrical accidents are children, and 20percent of these children die as a result.

One of the main causes of electric shock is contact with faulty electrical appliances or exposed wiring. Children poking sharp objects into sockets or chewnig on electrical cords are other hazards, as is flashing from high – voltage power lines.

4.5.1 TYPES OF INJURIES:

LIGHTING INJURIES :

The severity of an injury due to lightning depends on several factors:

- How long the victim is in contact with the electric current – the longer the contact, the greater the damage.
- The type of current – Alternate Current (AC) is used in electricity mains power cables, because it allows greater amounts of electricity to be sent down the power lines. It is more likely to cause cardiac arrest at lower voltage than Direct Current (DC), which is what batteries produce. AC may also cause muscle spasms, with the result that the victim cannot let go off the electrical source.
- The size of the current – overhead power cable and lighting are more damaging than electricity mains and the batteries.

ELECTRICAL ACCIDENTS :

If you touch someone who is still in contact with a live circuit, they may electrocute you. Make sure that the power sourse is turned off at the fuse box, or unplugged at the socket. Simply turning off the appliance will not work.

If you cannot turn off the power at source or unplug the appliance, try to separate the victim from the power using a non – conducting object, such as a wooden or plastic broom handle or chair or a rubber door mat. Try to do this while standing on some things dry and non – conducting such as a pile of dry newspapers, a telephone directory or a board.

If the source is a high – voltage current from a power line, be aware that the currents can jump a considerable distance. Do not approach the casualty until the power lines are off. Once they are free of the current, check if the casualty is breathing. If not, begin CPR.

4.5.2 TREATING THE CASUALTY :

Once you have excluded any further danger to yourself, approach the victim and assess them. If you are alone, call the emergency services now. Otherwise get someone else to do it for you.

Open the casualty's airway, being aware that if they have fallen or been thrown, they may have cervical spine damage. Avoid moving the head and neck, particularly if they are unconscious. If they are not breathing, begin to do mouth – to – mouth. Start to give cardiac compressions if they are not trying to breathe or move.

Be alert to other injuries if they have been thrown, and splint if necessary. If they have obvious burns, remove any clothing and rinse the burn under cool, running water. Apply a sterile dressing.

4.6 FIRST AID TO AN UNCONSCIOUS INDIVIDUAL

Unconsciousness is an interruption of normal brain activity. It can happen suddenly or gradually. Unconsciousness can be caused by a variety of injuries and medical conditions, as well as by a number of different drugs. An unconscious person may still have some reactions to pain or to commands or may have no reactions at all.

- Whatever the cause or degree of unconsciousness, the immediate emergency treatment remains the same.
- Assess whether the person is unconscious by gently squeezing the shoulders and asking a question.
- Open the airway by lifting the chin, clearing the mouth, and tilting the head.
- Check the breathing and be prepared to resuscitate.
- If the person is breathing, check for life threatening conditions and then turn into the recovery position
- Call for emergency help

This may be all that you have time to do before emergency help arrives. However, if you have more time, there are some things that you can do to gather information that may help medical staff with their diagnosis and treatment.

ASSESS THE LEVEL OF RESPONSE

There is an agreed scale for assessing how responsive an injured or ill person is-the Glasgow Coma Scale. A fully alert person will score 15 while somebody who is totally unresponsive will score 3 with several variations in between the observation chart. You can help collect information to inform medical staff using some of the checks from this scale.

EYES

Do they:

- Open without you having to ask the person to open them?
- Open on command?
- Open if you cause the person pain (this is often done by pinching the earlobe)?
- Remain closed?

MOVEMENTS

Does the person:-

- Understand and follow sensible instructions?
- Move only in response to pain?
- Not move at all?

SPEECH

Does the person:-

- Answer the questions sensibly?
- Answer the questions in a confused way?
- Make sounds that cannot be understood?
- Make no noise?
- Do these check every 10 minutes and record your answers if you can.

MONITOR AND RECORD BREATHING AND PULSE RATE

Breathing is measured by counting the number of breaths in 1 minute (one breath being one rise and fall of the chest). Pulse rate is measured by counting the number of beats at the pulse at either the neck or the wrist for 1 minute. Take these recordings every 10 minutes and write them down if possible. The easiest place to feel a pulse is the carotid artery in the neck, though you can check the wrist.

EXAMINING THE UNCONSCIOUS PERSON

Your initial check of the injured or ill person will be for life-threatening conditions, particularly serious bleeding. If you have more time while waiting for the ambulance, a more thorough check may show up less serious injuries or illness and potential clues to the cause of unconsciousness. This check should never be at the cost of monitoring and maintaining the airway or keeping the injured person as still as possible. If doing a check of the body, it is sensible to do so in the presence of a third person.

Check the body from head to toe, looking for areas of bleeding, or broken bones or burns, or clues as to the cause of unconsciousness.

Potential causes of unconsciousness and some clues to diagnosis

Cause	Clues
Hypoglycemia (low blood sugar)	Card declaring diabetes,diabetic medication.
Epileptic fit	Card declaring epilepsy. Medication.
Head injury	Blood, spinal fluid from ear or nose, dent or bump on the head ort uneven pupils.
Stroke	Paralysis on one side of the body (may be apparent in some body with a higher level of consciousness); uneven pupils.
Heart attack	Details from bystanders (e.g. collapsed holding his chest), pale skin, and blue lips.
Poisoning or drugs	Evidence of drugs or poisons e.g. medicine bottles, syringes, empty canister with poison label, etc. Abnormal heart and /or breathing rate / rhythm.
Fainting	pale before falling, pale falling. May have epileptic-type movements afterwards.

4.6.2 MEDICAL CAUSES OF UNCONSCIOUSNESS

There is an agreed scale for assessing how responsive an injured or ill person is-the Glasgow Coma Scale. A fully alert person will score 15 while somebody who is totally unresponsive will score 3 with several variations in between the observation chart. You can help collect information to inform medical staff using some of the checks from this scale.

Coma Scale

Glasgow coma scale - is used as a quantative measureof conscious sate. it is an important tool, but should be used in conjunction with a full neurological assessment to fully assess the child's neurological state.

EYE OPENING		VERBAL RESPONSE		MOTOR RESPONSE	
Spontaneous	4	Oriented	5	Obeys command	6
To Speech	3	Confused	4	Localizes to Stimuli	5
To Pain	2	Inappropriate words	3	Withdraws to Stimuli	4
Nil	1	Incomprehensible words	2	Abnormal flexion	3
		Nil	1	Extensor Response	2
				Nil	1

I. EPILEPSY

Epilepsy is a disease of the nervous system, which is characterized by sudden attacks of unconsciousness known as fits. Two varieties of this complaint occur – major epilepsy (grand mal), in which the attacks of unconsciousness are accompanied by convulsions, and minor epilepsy (petit mal) in which convulsions are absent.

The disease usually begins in early adult life and fits may occur at intervals, depending upon the severity of the case. Thus, in slight forms of the disease, only one or two fits occur during the course of a year, but in more serious cases fits may recur at short intervals. In severe cases, there may be a sequence of convulsions without regaining consciousness. This is known as 'status epilepticus'. Fortunately, doctors can prescribe a combination of drugs which can prevent the occurrence of attacks.

Major epilepsy

A patient who is about to have an epileptic fit often experiences a warning, known as the 'aura', which calls his attention to the fact that an attack is imminent. This warning may provide him with an opportunity of placing himself in a position of safety before he is overcome by unconsciousness.

This aura takes the form of some subjective sensory premonition, such as numbness, giddiness or even a certain smell, which warns the patient that a fit is imminent.

Soon after the aura the patient may utter a shrill cry and drop to the ground, sometimes hurting himself severely through his fall. He is now immediately and completely unconscious and passes into the first stage of the fit, known as rigidity (tonic phase). Alternatively, the fit may commence with gradual twitching in one part of the body, which spreads until the whole body twitches (clonic phase) and the patient lies unconscious.

Minor epilepsy or petit mal

This is a less serious form of the disease, in which a patient is seized with an attack of unconsciousness but there are no convulsions. Suddenly, perhaps in the course of a conversation, the patient will stop speaking and his eyes will appear to have become fixed, with a dreamy stare.

The attack may be so slight as not to be noticed, except by a careful observer and the patient himself. The disease is of importance, for it may develop into major epilepsy, or an attack may be followed by any of the complications of the major disease. No treatment other than medical attendance is required.

Rigidity

The patient lies on the ground, absolutely stiff, his fists clenched and all his muscles rigid, so that it is impossible to bend his arms or legs. The teeth are firmly clenched and the mouth cannot be opened. The muscles of respiration are similarly in a state of spasm, and thus the patient is unable to breathe; for this reason his colour changes rapidly. He is at first pale, but quickly becomes blue (cyanosed).

The eyes may remain open and turned to one side; moreover, owing to the temporary cessation of respiration with contracted muscles, the whites of the eyes become red and congested.

The patient exhibits a pitiful appearances at this stage, and just as it would appear that he is on the verge of death, twitchings begin in his body as the attack passes into the stage of convulsions.

Convulsions

Forcible and involuntary muscular contractions now involve all the muscles in the body. The convulsions extend to the muscles of the jaw, and the

saliva in the mouth is beaten up into a foam. Moreover, the tongue and checks are frequently bitten, thus blood-stained froth may be seen escaping from the lips.

The face assumes a purplish colour, and the eyeballs appear to be protruding from their sockets. Urine and faeces may be passed involuntarily. This stage lasts from two to three minutes, but breathing, though jerky, prevents death by asphyxia. The convulsions gradually pass off and the breathing becomes easier.

Consciousness may quickly be recovered and the patient is left pale, sweating, and exhausted. He shows little interest in his surroundings and may express the desire for sleep, a tendency which should be encouraged. Sometimes, however, consciousness is not recovered immediately and the patient gradually passes into a condition of coma. Coma gradually passes into a natural sleep, from which the patient finally awakes.

TREATMENT

An epileptic fit is a very unpleasant sight to witness and the first aider must not be alarmed by the appearance of the patient. Fortunately, death in an attack is extremely rare, and a competent first aider can do much for the patient at this stage. It is important, however, to reassure relatives and bystanders who may be present that the fit will quickly pass off and the patient recover. Treatment of a fit can be considered under its respective stage as follows :

STAGE OF RIGIDITY

The most important first aid measure is to ensure that the patient does not further injure himself. He should be able to lie flat and all objects removed from his vicinity.

Airway If the patient can be supported on his side, this will be of value in maintaining his airway. It will not be possible to force open the patient's jaw, and forcing a gag between the teeth is undesirable at this stage.

Clothing : Undo tight clothing around the neck, chest and waist.

Space and time Keep back bystanders. It must be remembered, however, that the stage of rigidity only lasts about half a minute, so there is not much time available for treatment (or indeed a need for it).

Apply gag. The patient's jaw will relax slightly; this may allow a protective gag to be placed between the teeth to prevent further bitting of the tongue. The gag should be a firm object which has been wrapped in some soft material, e.g. a handkerchief. The airway should be maintained by clearing any debris or false teeth from the mouth if possible, and supporting the patient on his side.

Source of danger. Continue to ensure that all objects and persons are clear off the patient's side.

STAGE OF RECOVERY

Examination. A quick examination of the patient should be made to discover injuries caused by the initial fall; wounds of the scalp and even fractures are not uncommon complications of a fit.

Encouragement and rest. The natural tendency for sleep should be encouraged, but the first aider must arrange for the patient to be watched in case the fit recurs.

Promoting comfort. If temporary removal to a suitable shelter is possible – as, for example, to a neighbouring house – the patient should be made comfortable in bed with extra wraps, and the room kept quiet and darkened. A non-stimulating drink, such as diluted milk, may be given (Providing no injury has been sustained). The patient should be kept under close observation for several hours, as behaviour during recovery may be abnormal.

Medical aid. The services of a doctor should be obtained immediately if the patient shows a tendency to recurring fits; in any case, the first aider should advise his patient to obtain medical treatment.

POST-EPILEPTIC COMPLICATIONS

Automatism

Occasionally after an epileptic fit, instead of the normal return to consciousness, the patient may perform an action of which he is entirely ignorant at the time and which he cannot recall afterwards: e.g. he may commence undressing, or even act violently towards bystanders.

Mania

Temporary insanity may occasionally follow a fit. The first aider will appreciate that his primary duty when confronted by a post-epileptic complication is to restrain the patient from doing harm to himself or others, pending the arrival of medical aid.

II. STROKE

Stroke is the common term for a condition of altered consciousness occurring suddenly, usually in elderly people, due to haemorrhage into the substance of the brain (cerebral haemorrhage) or clotting of one of the brain's blood vessels (cerebral thrombosis).

Causes

This condition may be associated with high blood pressure or hardening of the arteries. Patients susceptible to a stroke may experience warning symptoms for some time prior to the onset of the stroke. Giddiness, persistent headaches, shortness of breath, and nose-bleeding should call attention to the possibility of raised blood pressure. If medical attention is sought at this stage, strokes may be prevented by treating the high blood pressure with suitable drugs.

Symptoms and signs

A stroke may occur at night, when the patient is resting or asleep, or after exertion. The patient may be sized by sudden headache or giddiness or may collapse without warning. He may develop complete or partial loss of consciousness, or simply become confused or disorientated.

The temperature of the body is raised and the face may be flushed. The pulse is usually slow and strong, and the breathing becomes characteristic, being accompanied by snores and puffing out of the cheeks on expiration.

The pupils may become unequal and fail to respond to light, while the head and eyes are often turned towards the affected side of the brain.

It is well known that a stroke is usually followed by paralysis of one side of the body and, even in the stage of unconsciousness, the affected side will often be found to be more limp than its opposite, while the corresponding cheek is smooth and puffed out.

Diagnosis

It may be stated that stroke is the most common cause of insensibility in patients over the age of forty-five, and since first aid diagnosis is only intended to be provisional in character, little harm will be done to an elderly Patient who is found unconscious by assuming that he is suffering from a stroke and treating for this condition before medical aid arrives.

It is important to exclude the possibility of poisoning or diabetes, but this is usually easy, for in these cases clues suggesting poisoning are often found, while the circumstances in which the patient is taken ill (for example, while obviously on his way to work) generally point to the onset of a sudden illness rather than an attempted suicide .

Confusion of stroke with the state of alcoholism, however, has frequently occurred in practice, and it must be emphasized that the mere smell of alcohol on the breath does not in itself merit a diagnosis of drunkenness, for a patient may have been feeling ill at the onset of the fit and purposely taken an alcoholic drink.

The first aider must not be misled by a rapid return to consciousness, for in a number of cases there is a quick recovery, but the patient remains extremely susceptible to recurrence.

It must also be remembered that not every case of stroke conforms to the type described above, and various modifications are possible according to the area of the brain affected. Thus, sudden loss of speech occurs in certain forms of stroke, although there may be no other paralysis.

Treatment

The golden rule in the treatment of cases of suspected strokes is to examine the patient as little as possible and to avoid moving him more than what is absolutely necessary. Thus, wherever possible, the patient

should be allowed to remain lying where he has fallen. It is quite feasible, for example, in the home, to make up a bed on the floor and to carefully move the patient on to it. Any attempt to carry the patient may easily end fatally by increasing the hemorrhage.

If it is essential to move a patient, for instance when the seizure has occurred in the street, careful and gentle handling is essential if bleeding is to kept to its minimum.

Airway. Maintenance of the patient's airway is always of prime importance. The recovery position should be used for the unconscious patient.

Care of the mouth. False teeth should be removed and carefully preserved. If the mouth is allowed to fill up with saliva there is always the risk that some of the saliva may be sucked down into the lungs and cause bronchopneumonia, a common and often fatal complication.

Warmth. The patient should be covered with a blanket, and suitable wraps placed under him and tucked well in at the side and feet. Care should be taken not to allow the patient to lie on keys, coins, or other sharp objects.

Major inactivity is the most important treatment to adopt after the above procedures have been undertaken. It comprises doing absolutely nothing beyond watching the patient and appreciating the fact that additional treatment, such as trying to give stimulants or medicine, will do more harm than good. It is one of the most difficult treatments to apply in medical work and first aid.

Medical advice is always essential, since in some cases people are treated at certain special hospitals by a surgical operation on the blood vessels in or around the brain.

III. INFANTILE CONVULSIONS

Fits occurring in infants and children are known as infantile convulsions.

The complaint is most common up to the age of eighteen months, but convulsions may occur in older children.

Causes

The most common cause precipitating a convulsion in the pre- school child is a sudden high grade fever, the nature of the infection being less important than the speed and height of the temperature.

There are other potential causes, such as hypoglycemia, meningitis, tetany, intracranial hemorrhage, ear infection, reaction to drugs and teething.

Symptoms

An infant liable to develop a fit will often show sings of general nervous irritability for some time before the actual onset of convulsions. Thus it may be somewhat jerky in its manner, and restless. The actual signs of the fit itself may be summarized as follows:

Breath–holding. The infant develops irregularity in breathing, or may stop breathing for a second or two.

Rigidity. He throws his head back and becomes stiff all over.

Altered colour. Alteration in the colour of the face may vary, from slight pallor or sallowness to marked blueness of the face or limbs.

Twitching: The infant may not exhibit true convulsions as have been described in epilepsy. Some twitching of the body will, however, be noticed in the majority of cases.

Squinting and frothing at the mouth are occasional signs.

Treatment

It must be remembered that fits in childhood cause alarm to parents but are only rarely fatal. The parents should be reassured, therefore, that the child will soon recover and that there is no need for them to worry whilst medical aid is being sought.

General measures to protect the convulsive child from harming himself are most important. Where there is high fever, try sponging or fanning it It may bring down the temperature and prevent further fitting.

Send for medical aid to determine the cause of the fit and obtain advice as to aftercare.

IV. FAINTING (SYNCOPE)

Fainting or syncope is a state of temporary unconsciousness due to diminished blood supply to the brain. The cerebral ischaemia may be due to any of the following causes, which are frequently combined:

1. Exhaustion, lack of food, or exertion while in a state of fatigue.

2. Emotion, especially fright or fear.
3. Accidents, including minor accidents, especially those involving loss of blood.
4. Lack of fresh air; close atmosphere and heat.
5. Posture, e.g. standing for a long time on a hot day or suddenly standing upright after resting.

Symptoms and signs

The patent feels giddy, swoons and falls to the ground. The face is pale, the skin is cold, clammy and covered with sweat. The pulse is quick and feeble and may become almost imperceptible at the wrist.

Treatment

Lay the patient down. A quick examination must be made to exclude the presence of haemorrhage, e.g. burst varicose veins. Any bleeding must be arrested before treating the faint. In the absence of haemorrhage the treatment is as follows:

Position. The patient should be kept lying down with his head and shoulders low, and the feet raised and supported in an elevated position. If unable to lie down, the head may be placed down between the knees, but recovery is quicker when the patient is laying flat.

Warmth. Covering the patient with blankets or with coats, etc. borrowed from bystanders will prevent him becoming cold or wet, this can be a problem.

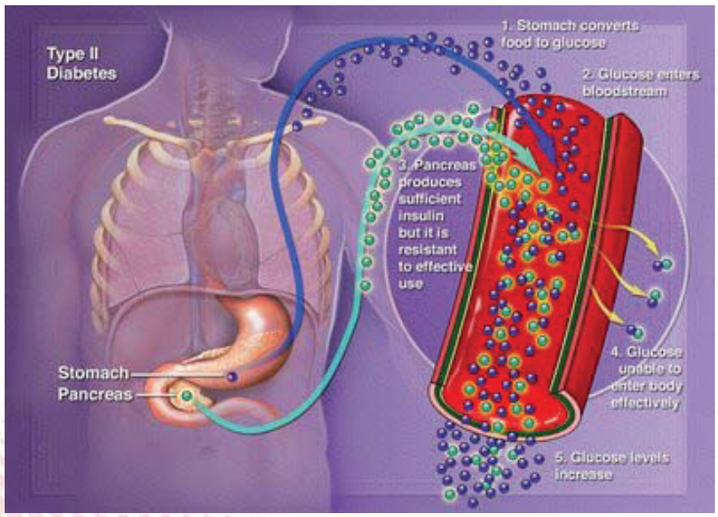
Clothing. Tight clothing round the neck, chest and waist must be loosened or removed.

Space. Instruct bystanders to avoid crowding the patient. If it is necessary to remove the patient from a crowded room, a stretcher should be used.

Fluids. On return to consciousness, hot tea or coffee, to which sugar has been added, may be given in sips, but it is undesirable to give too much at a time owing to the risk of vomiting.

V. DIABETES MELLITUS

Diabetic patients are always liable to lose consciousness due to a progressively decreasing amount of sugar in the food (hypoglycemic). The effect of low blood sugar may be quite rapid, and circumstances in which it has not been possible to obtain adequate food, perhaps due to a long



journey or delays, are very liable to precipitate an attack.

On the other hand, though this is much rarer, patients may over-inject themselves with insulin or fail to take the meal which should follow within half an hour of the injection. Patients on oral anti-diabetic drugs may also suffer hypoglycemia if a meal is missed.

Hypoglycaemic coma (low blood Sugar)

Diagnosis

There may be history of missing or irregular meals, unaccustomed exercise or an overdose of insulin. Behavior before may be quite normal,or may resemble or be mistaken for drunkenness.

The face is pale and the skin shows profuse sweating when blood sugar is very low. Breathing is shallow and the pulse rapid, though this may become weaker and difficult to feel as unconsciousness approaches.

Treatment

Provided the patient is still conscious and can swallow, the treatment is simple and recovery dramatic. The ability to swallow can be tested by tipping a spoonful of water into the side of the mouth. If this is swallowed, he should be given heaped spoonful of sugar in half a cup of water. This should be repeated if recovery is not complete.

If the patient is already unconscious a doctor may give the sugar solution via the rectum or intravenously. Nothing should be given by mouth. Most diabetics carry sugar with them in anticipation of an impending hypoglycemic attack.

Hypoglycemic coma may occur quite rapidly. Once the patient is unconscious, fits may occur, and urgent medical help is required to prevent serious brain damage.

Rebound low blood sugar is possible, so the patient should be checked by a doctor.

Hyperglycaemic coma (high blood sugar)

This emergency may result form lack of insulin. It is usually precipitated by illness, excitement, fatigue or over-indulgence. It is much less likely to occur without warning, and is usually preceded by a variable period of ill health.

Diagnosis

The skin is dry and the patient complains of headache and increasing drowsiness, which deepens in to coma. Breathing becomes prolonged and sighing with 'air hunger'. The breathing has a characteristic smell of nail varnish (acetone) and reflexes are diminished. The patient's tongue is very dry and he may complain of thirst.

Treatment

Medical aid should be sought as quickly as possible, or the patient urgently removed to hospital. Meanwhile, he should be kept warm and quiet. If there is doubt about cause of decreased conscious level in a known diabetic, the administration of a sugary drink to the patient (providing he can take it) is safer whilst awaiting medical help: this will do no harm and help, as confusion may easily occur between hyper-and hypoglycaemia.

VI. URAEMIA

Uraemia is the term applied to a serious complication of kidney disease, due to an accumulation of poisonous substances in the bloodstream which would normally be removed from the body by the kidneys. Uraemia may take several forms, e.g.:

1. Increasing drowsiness leading to a deep sleep; this is by far the commonest form.
2. Recurrent fits occurring in elderly people are suggestive of this complication.
3. A seizure resembling stroke.
4. Coma, with distressed respiration.

Patients suffering from uraemia are usually already under medical care, which has been sought as a result of warning symptoms. It is necessary, therefore, to summon medical aid immediately, and in the meantime to keep the patient quiet, warm and comfortable.

Coma due to uremia is very unlikely in a previously healthy patient.

4.7 EFFECTS OF HEAT AND COLD

The human body is designed to work best at or close to a temperature of 37C (98.4F).To maintain this temperature, the body possesses mechanism that generate and conserve heat when the environment is cold and conversely that lose heat when it is hot. These mechanisms are controlled by a special center in the brain. In addition, humans control their environment to some degree through clothing, heating and air-conditioning, which makes it easier for the body to perform well in a wide range of temperature. In spite of all this, excessive heat or cold can still cause serious or even fatal injury.

4.7.1 THE BODY TEMPERATURE

To keep the body temperature within its optimum range of 36-38C (97.8-100.4F),the body must maintain constant balance between heat gain and heat loss. A "Thermostat" deep within the brain regulates the balance.

A) HOW THE BODY KEEPS WARM:

Heat is generated in the body by:-

- Conversion of food to energy in the body cells.
- Muscle activity.

Heat is absorbed:-

- From outside sources-sun, fire, hot air etc.

In cold conditions the body saves heat by:-

- Constricting blood vessels at the body surface to keep warm blood.
- Reducing sweating.
- Erecting body hair to trap warm air at the skin.
- Brining the body's fat.

B) HOW THE BODY LOSES HEAT

Heat may be lost by:-

- Cool surrounding air- by radiation and by evaporation from the skin and in breath.
- Cool objects in contact with the skin which provides a pathway for heat to escape.

In hot conditions, the body reacts and loses heat by:-

- Blood vessels that lie in or near the skin dilating to lose blood heat.
- Sweat glands becoming active and secreting sweat; heat is then lost as the sweat evaporates from the skin into the cooler air.
- Increased rate and depth of breathing; warm air is expelled and cool air is drawn in to replace it.

The body reacts to cold by shutting down blood vessels in the skin to stop "core heat" escaping.

4.7.2 EFFECTS OF EXTREME COLD

1. FROSTBITE

When deprived of warm blood, extremities such as fingers or toes may freeze in severe conditions causing frostbite. This condition usually occurs in freezing and often dry and windy conditions.

Signs and Symptoms:-

- At first "pins-and-needles".
- Paleness followed by numbness.
- Hardening and stiffening of the skin.
- A color change to the skin of the affected area: first white: then mottled and blue; and eventually; on recovery, red, hot, painful and blistered.

Treatment:-

Aim of the treatment is:

- To warm the affected area slowly, to prevent further damage.
- To obtain medical-help, if necessary.
    1. Remove the patient to shelter. Remove clothing over the affected area.
    2. Remove constrictive things like rings or watches.
    3. Warm the affected parts with your hands.
    4. Place the injured part in hot water if available.
    5. Elevate (raise) the affected parts to relieve swelling and pain.
    6. Lightly cover the affected part with soft dressing /cloth.
    7. Shift the patient to hospital.

DO NOT :

- Let the patient walk on a defrosted foot.
- Rub or massage the part affected by snow.
- Break blisters/apply ointments to injured area.
- Rewarm by dry or radiant heat.

This is caused by prolonged exposure to near freezing temperature in damp, slushy conditions and can be aggravated by lack of mobility, tight shoes and wet socks. The feet will be white, cold and numb, then red hot and painful on rewarming.

2. HYPOTHERMIA

This condition develops when the body temperature falls below 35°C (95°F). Moderate Hypothermia can usually be completely reversed. however, deep hypothermia (core temperature <26°C) is often; though not always fatal; it is always worth persisting with resuscitation until a doctor arrives to assess the condition.

HOW HYPOTHERMIA OCCURS?

Hypothermia may develop due to:

- Very low environmental temperature.
- Prolonged immersion in cold water.
- Inadequate protection in cold water.
- Exhaustion in cold climate.
- Wearing wet clothes.
- High altitude.
- Unheated or poorly heated house for long periods

SIGNS AND SYMPTOMS

- Shivering which is intense.
- Cold, pale and dry skin.
- Muscle in coordination and slurred speech.
- Irritability, confusion and restlessness.
- Slow and shallow breathing.
- Loss of consciousness.
- Breathing and heart beat become increasingly difficult.

TREATMENT

Aim of the treatment is:

- To prevent the patient from losing more heat.
- To rewarm the patient.
- To obtain medical help.

a) For indoor patients:

- For a patient brought in from outside, quickly replace any wet clothing with warm, dry garments.
- If the patient is young, fit and able to walk again then he can bathe with warm water.
- Put the patient in a bed and ensure that he is well-covered.
- Give him warm drinks, soup etc.
- Inform/call upon a doctor if the patient is old or a small child.
- If the patient becomes unconscious, open the airway and check breathing and if required, resuscitate.

DO NOT PLACE HEAT SOURCES SUCH AS HOT WATER BOTTLES OR FIRE NEXT TO THE PATIENT.

DO NOT GIVE ANY ALCOHOL.

b) For outdoor patients:

- Provide warmth with extra clothing or blankets and cover his head.
- Carry the patient to a sheltered place as quickly as possible. Protect the patient from the ground. Put him on a dry cloth, cover with blankets or newspaper. If cloth not available then make a thick layer of dry insulating material like leaves and branches or sticks etc.
- Send for help.
- If conscious, give warm drinks if available.
- Always check pulse and respiration after every one minute.

4.7.2 EFFECTS OF EXTREME HEAT

When the atmospheric temperature is the same as your body temperature, the body cannot lose heat by radiation or evaporation. If there is also a humid atmosphere, sweat will not evaporate from the body. In these circumstances particularly during strenuous exercise or hot weather, when the body generates more heat, HEAT EXHAUSTION OR HEAT STROKE can occur.

SIGNS AND SYMPTOMS

HEAT EXHAUSTION	HEAT STROKE
a) Headache, dizziness, slower onset nausea, vomiting, abdominal cramps, collapse.	a) A dangerous situation coming on suddenly, but it may follow untreated Exhaustion.
b) Unconsciousness follows	b) Unconsciousness rapid but may Come up after headache.
c) Face pale with cold, sticky, sweat.	c) Face flushed, skin hot and dry.
d) Pulse: weak.	d) Pulse: Full and bounding.
e) Temperature:normal	e) temperature:rises rapidlyupto107°F
f) Symptoms of shock	f) death will occur soon if temperature not decreased

MANAGEMENT

Aim of management is:

- To replace lost fluid and salt.
- To cool down the patient if necessary.

1. HEAT EXHAUSTION:

A) If the patient is Unconscious then follow the general rule.

B) If the patient is conscious:

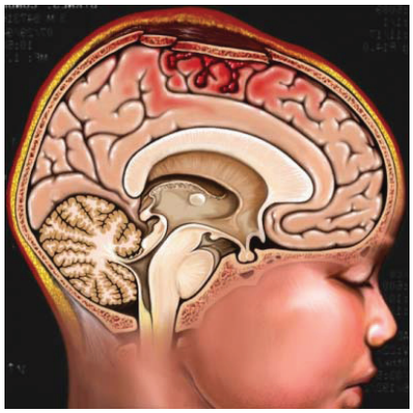
- Move him to a cool place.
- Give plenty of salted water (1/4 tsp of salt in a glass of water).
- Watch for the development of heat stroke.

2. HEAT STROKE: BRING DOWN THE BODY TEMPERATURE QUICKLY.

- Remove clothing and sprinkle cool water (preferably iced water) on his body or wrap him in a thin wet sheet and fan him.
- The temperature should not fall < 102°F.
- On recovery, treat as for heat exhaustion.

4.8 HEAD INJURY

4.8.1 INTRODUCTION



The human brain is a complex organ that allows us to think, move, feel, see, hear, taste and smell. It controls our body, receives information, analyses it and stores it. The brain of an average adult is one of the largest organs of the body.

The brain is covered by meninges (three membranes) and cerebrospinal fluid(CSF) that provides cushion to the brain from jolts.

If there is significant force against the skull, the brain inside the CSF moves or turns. This movement of brain plus the damage to the tissues directly beneath the blow ,are responsible for the symptoms associated with Head Injury(H.I).

a) CLASSIFICATION OF VARIOUS TYPES OF ACUTE HEAD INJURIES

1. SKULL-Fractures	
2. MENINGES AND THEIR SPACES	Epidural hemorrhage Dural Laceration Subdural hemorrhage Subarachnoid hemorrhage
3. BRAIN:	Concussion Contusion Laceration Intracerebral Haemorrhage

4.8.1 CAUSES OF INJURIES

- Road accidents
- Sports
- Illness and intoxication
- Mining
- Blasts

The fractures and hemorrhages are the conditions that need hospitalization, there are certain conditions where if we are aware of the signs and symptoms and timely identified first-aid is given, the damage could be minimized and a life can be saved. Some of them are discussed further.

1. CONCUSSION

A concussion may be defined as a transient cerebral paralysis. It is the least serious form of brain trauma. In this condition, the temporary disturbance of the brain occurs.

Signs and symptoms:-

- Brief or partial loss of consciousness.
- Breathing may be shallow.
- Face may be pale.
- Skin may be cold and clammy.
- Rapid and weak pulse.
- Nausea and vomiting.
- On recovering consciousness, he may not remember any events just before or after the incident.

Management of Concussion:-

a) If the patient is conscious and there is any wound then treat the wound/bump.

b) If Unconscious then manage in following ways:

- See that there is a free supply of fresh air and air passages are free.
- Make the patient lie flat in a comfortable position.
- Keep back the crowd, they only obstruct.
- Loosen clothing at the neck, chest and waist.
- If breathing has stopped or about to stop then start CPR (cardio Pulmonary Resuscitation).
- If breathing is noisy, then support the patient in three-quarter prone position.
- Watch continuously for any changes in the condition. DO NOT LEAVE THE PATIENT UNTIL MEDICAL HELP ARRIVES.
- No form of drinks should be given.
- On return to consciousness, wet the lips with water.

2. CONTUSION

More serious condition. Contusions are associated with damage to the brain substance itself. The damage with contusion is more extensive than that seen with concussions. Contusions are often associated with other serious injuries like cervical fractures.

Signs and Symptoms:

- At first may be stupor followed by coma.
- Noisy breathing.
- Flushing of face and rapid pulse.
- Raised temperature.
- Paralysis of one side or a part of the body.
- Convulsions in some cases.

Management:-

1. As the patient becomes unconscious, manage as stated in the contusion patient.
2. Shift the patient immediately to the hospital.

Head Injuries may further be classified on the degree of injury:

MINOR	MODERATE	SEVERE
↓	↓	↓
No Loss of Consciousness headache.	Brief loss of consciousness.	Loss of consciousness, severe back pain.
↓	↓	↓
Apply ice to The affected the Area.	Quick return to baseline.	Do not attempt to move patient.
↓	↓	↓
Observe for Drowsiness, Headache, Nausea, Vomiting.	Observe for drowsiness, headache, nausea, vomiting.	Apply clean dressing to open wound.
		↓
		Call for ambulance, Family members.

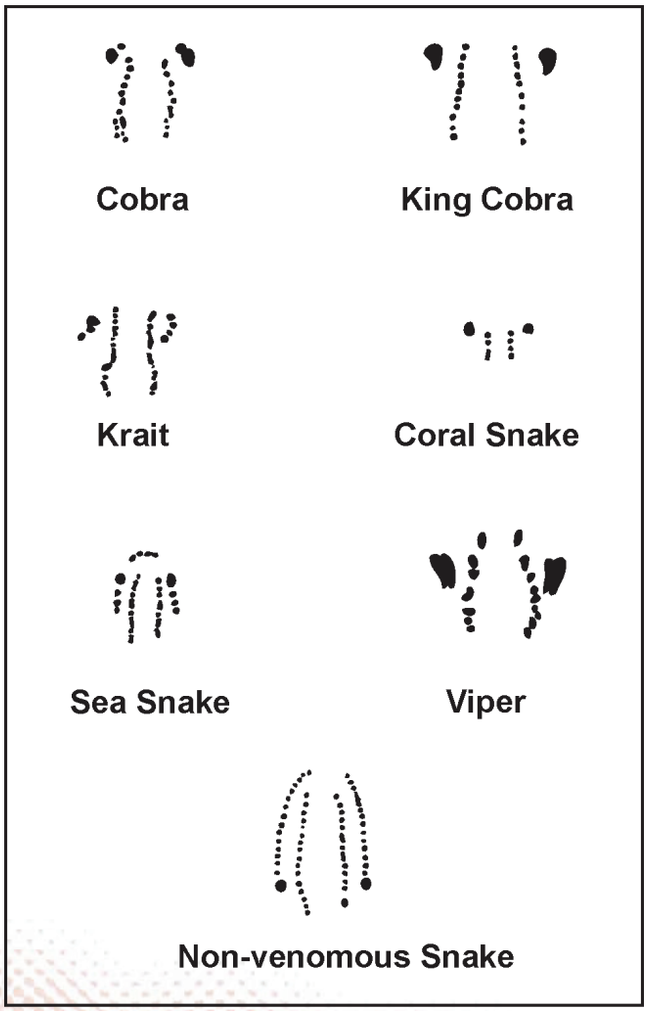
4.9 SNAKE-BITE AND ITS MANAGEMENT

There are more than 2500 different kinds of snakes. Only about 200 of them are venomous (poisonous).

- All snake-bites are not poisonous.
- Only a small quantity of venom(snake poison) may be fatal.

Distinguishing between the patterns of snake-bite:

a) Non-Poisonous b) Poisonous



Aim of the Treatment:

- To reassure the person.
- To stop spreading of venom.
- To obtain medical help.

Signs and Symptoms:

- Pain and numbness at the site of bite.
- Drowsiness.
- Burning pain at the site.
- Swelling.
- Dimness of vision.
- Difficulty in breathing and speech.
- Area becomes bluish purple after bite in 12 Hrs.
- Dribbling of saliva and paralysis.
- Convulsions, coma.

Management:

- Lay the patient down
- Calm him down → DO NOT MAKE HIM WALK
- Apply a constrictive (tight) bandage between the wound and heartside
- Wash the area with lots of water
- Cover the wound with a clean cloth
- Carry the patient to hospital on a Stretcher.

Do not suck the poison. It is a controversial practice.

If the snake has been killed, take it for identification.

If breathing stops, give artificial respiration.

4.10 DIABETES & ITS MANAGEMENT

All cells require sugar for normal functioning and for conversion as an energy source. diabetes makes the body incapable of utilizing the sugar as an energy source because of deficiency in Insulin.

METABOLISM OF SUGAR

Normal Individual.	Diabetic Individual.
a) Food is eaten.	a) Food is eaten.
b) Digestion begins in the stomach.	b) Digestion begins in stomach.
c) Food gets broken down into simple sugar in small intestine.	c) Food gets broken into simple sugars in small intestine.
d) simple sugar enters the blood stream.	d) simple sugar enters the blood stream.
e) Insulin is released by Pancreas.	e) Little or no insulin is released.
f) Sugar enters body cells with the help of insulin.	f) Sugar stays in the blood stream and is finally eliminated in urine.

4.10.1 TYPES OF DIABETES

There are two types of Diabetes:

1) IDDM (Insulin dependent Diabetes Mellitus/Juvenile)

2) NIDDM (Non-insulin dependent diabetes mellitus/maturity onset)

IDDM is of major concern since it appears before the age of 15 Years.The therapy for such cases are Insulin injections and careful planning of diet.

The EMERGENCY CONDITION which can occur in children is either Diabetic Ketoacidosis or Hypoglycemia

HYPOGLYCEMIA: Too little sugar in the blood.

Causes:-

- The diabetic child has eaten too little food.
- The child has missed a meal.
- The child takes too much “insulin by mistake”.
- Too much of playing/exercising in the school.

Signs and Symptoms:

- Dizziness
- Headache
- Skin moist with sweating
- Breathing is shallow and quiet
- Fainting
- Visual disturbances.

MANAGEMENT:

1. IF CONSCIOUS:--Immediately give sugar/chocolate/glucose water etc.
2. IF UNCONSCIOUS BUT BREATHING NORMALLY:
    - Place in left lateral position.
    - Shift to hospital immediately/inform parents.

4.11 ASTHMA

Recognising asthma

- Difficulty in breathing often accompanied by coughing
- Wheezing on breathing out
- Distress and anxiety
- Tiredness from laboured breathing
- Bluish tinge to face and lips

SIT her forward to ease breathing

Treatment

1. Ensure the room is well-ventilated and smoke-free.

   IF it is a first attack, CALL A DOCTOR
   IF the attack is severe or does not respond to medication, CALL AN AMBULANCE.

OR

SIT her on your lap

2 Help the child to relax. Sit her down with her arms resting on a table or on your lap. Reassure her as she will be frightened.

IF the child has special medication, use it early in any attack, see below.

Taking medication

If the child has medication, let him use it. Follow the directions carefully. The attack should ease. If it does not, CALL AN AMBULANCE

Various types of medication are prescribed. Familiarise your child with his medication so that he knows how to use it when he has an attack.

Help him to use his inhaler, if he has one

4.12 DENTAL EMERGENCIES

Most Emergencies Seen the Same Day

Dental injuries require immediate attention and appropriate response. Knowing how to handle these emergencies can make the difference between saving or losing a tooth.

BAD - BREATH

1. Brush your teeth after every meal with toothpaste.
2. Do not brush your tongue, use a tongue scraper to clean you tongue regularly and floss daily.
3. If you wear dentures take them out daily and clean them thoroughly and brush your teeth and/or gums thoroughly.
4. Use a dentist administered cleansing mouth rinse “Breath RX” which contains “Zytex” that neutralizes the sulfur compounds and kills the bacteria that contributes to bad breath.
5. Make sure to drink at least eight cups of fluoridated water every day.
6. Keep a log of food you eat to determine which foods are causing your problem.
7. Schedule regular dental checkups with professional cleanings.
8. Keep your mouth moist.
9. Use humidifiers during the hot season.
10. Use a moisturizing nasal spray to control post-nasal drip, which can be a contributing factor.
11. Tobacco causes bad breath, ask your dentist/doctor for tips to kick the habit.

ORTHODONTIC PROBLEMS -Braces

1. If a wire is causing an irritation, cover the end of the wire with some wax or a piece of gauze.
2. If a wire becomes embedded in the gum or cheek DO NOT remove it, go to the dentist immediately.

CROWN COMES OFF

1. Try to snap it back in.
2. Purchase a small tube of denture adhesive paste put a small amount in the crown and place it back on your tooth.
3. Try Dent Temp or Tempenol as a temporary adhesive.
4. Do NOT use ordinary household glue.
5. Call the dentist as soon as possible to recement it properly.

DENTAL INJURIES CAN BE PREVENTED:

1. Child proof your home.
2. Make sure your children are belted safely in their stroller and car seat. Wear helmets while biking, skateboarding & roller blading.
3. The whole family uses seat belts.
4. Wear a custom made mouth guard while in “school” sports and during weekend sports and activities.
5. If you are away from home, be sure to carry your doctor’s business card. So if you have a problem you can call for a telephone consultation so he can help you decide whether you need to seek immediate dental care.

BROKEN DENTURE, BRIDGE, OR PLATE

1. Save all the parts of your broken denture, bridge or partial.
2. Call your dentist.
3. If it is possible it may be repaired or it may need to be replaced as soon as possible.
4. Temporary bridges, plates and dentures can keep you comfortable until the permanent one is repaired or replaced.

DRY MOUTH

1. Many medications such as antidepressants can cause this Consult with your docter to see if there are alternative medications that will not cause this symptom.
2. Put water in a spray bottle to keep your mouth moist. Try a little Lemon juice in the water to stimulate your saliva glands.
3. Chew sugarless gum to keep your mouth moist.
4. Use a moisturizing gel.
5. Use a saliva substitute such as glandosane.
6. Have custom-made fluoride trays made by your dentist for home application of fluoride. Also use a fluoride mouth rinse.

BLEEDING AFTER AN EXTRACTION

1. Slight bleeding after an extraction is normal. Clots usually form within one hour if you follow doctor's post-op instructions.
2. Place a thick gauze pad over the extraction site and apply pressure by biting on the gauze.
3. Avoid rinsing, drinking or eating for at least one hour following the extraction.
4. After 24 hours rinse the area with warm salt water(1/2 tsp. salt in 8 oz of water) after eating to keep the site clean.
5. Wet a tea bag and place it on the extraction site and bite on it.
6. Avoid sucking, spitting, and smoking.

PAIN AFTER 36 HOURS AFTER AN EXTRACTION

1. Contact your dentist you could have a "dry socket" or infection.

NUMBNESS CONTINUES AFTER EXTRACTION

1. If a tooth has been extracted on the lower back area, it is possible that you may not regain full sensory feelings immediately.
2. After 24 hour contact your dentist to let him know your symptoms.

STILL UNHEALED EXTRACTION SITE

1. If you are still unhealed one week after an extraction you need to go to the dentist for an X-ray to see if a root tip or fragment is still embedded.
2. Do NOT wait to see your dentist.

BROKEN/ FRACTURED /CHIPPED TOOTH OR FILLING

1. If the tooth is broken/chipped/fractured and there is no other damage requiring hospital care go to the dentist within 2-3 hours. Quick action can save the tooth, prevent infection and reduce the need for extensive dental treatment. The dentist can smooth minor chips. The tooth may also need to be restored with a composite filling.
2. Stop any bleeding by applying direct gentle pressure to the gums. If an upper tooth, apply pressure to the gums above the tooth. If a lower tooth, apply pressure to the gums below the tooth. Do NOT press directly on the broken tooth.
3. Rinse the mouth with warm water and apply cold compresses to reduce swelling.
4. Find the broken tooth fragments and bring the pieces with you, they may be able to be “cemented” back together.
5. To avoid further aggravation from the damaged tooth, place a piece of soft wax into the area that was chipped.
6. Eat only soft foods. Avoid this side of your mouth when eating. Avoid food and drink that are hot or cold, eat only lukewarm.
7. Do not take aspirin or aspirin-substitutes that can slow clotting. The more the tooth is bothering you before you go to the dentist the more difficult it is for the dentist to treat you comfortably.
8. If the pulp is damaged it can mean a root canal.
9. This tooth may need a full permanent crown to protect if from further breakage and tooth loss.

INJURY TO THE SOFT TISSUE INSIDE THE MOUTH

1. These include tear, puncture wounds or lacerations to the cheek, lips or tongue.
2. Clean the area right away with warm salt water.
3. Bleeding from the tongue can be reduced by pulling the tongue forward and using gauze to place pressure on the wound area.
4. Go to the doctor/hospital if it needs stitches.

SORE GUMS

1. Purchase Peroxyl to rinse with
2. Brush your teeth and gums CAREFULLY
3. Call the dentist for an evaluation

SORE AFTER SCALING AND ROOT PLANNING

1. Follow after care instructions
2. Use fluoride rinse
3. Try eating soft food
4. Continue to gently brush and clean the area well

GUM SURGERY

1. After the time determined by your dentist rinse with warm salt water (1/2 tsp. salt in 8 oz of water) to help with the discomfort.
2. Try taking extract vitamin C to help quicken the healing period
3. SMOKING WILL DELAY ALL HEALING

FRACTURED JAW

1. If your jaw hurts when it is moved or you cannot close your mouth in a normal manner, immobilize the jaw with a towel or tie.
2. Go to the doctor/hospital. A blow to the head can be especially life threatening to a child. They can give you treatment and tell you if you need to see the dentist

SWOLLEN JAW

1. Place a cold compress to the area swollen
2. Call the dentist immediately as you may have an infection and need to be on antibiotics

SMALL BLACK LESION

1. This could be an “amalgam tattoo” where some of the silver from an Amalgam filling has rubbed onto the cheek
2. Gently clean the area with brushing and rinsing Up To Top

SMALL WHITE LESION

1. Check with your dentist about this lesion because it could be pre-cancerous

4.13 FIRST AID IN FOOD POISONING

Self-Care at Home

Short episodes of vomiting and small amounts of diarrhea lasting less than 24 hours can usually be cared for at home.

A) Do not eat solid food while nauseous or vomiting but drink plenty of fluids.

- Small, frequent sips of clear liquids (those you can see through) are the best way to stay hydrated.
- Avoid alcoholic, caffeinated, or sugary drinks, if possible. Over-the-counter rehydration products made for children such as pedialyte and rehydralyte are expensive but good to use if available.
- Sports drinks such as Gatorade and PowerAde are fine for adults if they are diluted with water because at full strength they contain too much sugar, which can worsen diarrhea.

B) After successfully tolerating fluids, rating should begin slowly, when nausea and vomiting have stopped. Plain foods that are easy on the stomach should be started in small amount. Consider eating rice, wheat, breads, potatoes, cereals (low-sugar cereals), lean meats, and chicken (not fried) to start. Milk can be given safely, although some people may experience additional stomach upset due to lactose intolerance.

C) Most food poisoning do not require the use of over-the-counter medication to stop diarrhea, but they are generally safe if used as directed. It is not recommended that these medications be given to children If there is a question or concern, you should always check with your doctor.

Medical Treatment

The main treatment for food poising is putting fluids back in the body (the process of rehydration) through an intravenous line or by drinking. May need to be admitted to the hospital. This depends on the dehydration, your response to therapy, and your ability to drink fluids without vomiting. Children, in particular, may need close observation.

- Antivomiting and Anti diarrohea medication may be given.
- The doctor may also treat any fever to make you more comfortable.

- Antibiotics are rarely needed for food poisoning. In some cases, antibiotics would worsen the condition. Only a few specific causes of food posing are improved by using these mediation. The length of illness with traveler's diarrhea (shigellae) can be decreased with antibiotics, but this specific illness usually runs its course and improves treatment.
- With mushroom poisoning or eating food contaminated with pesticides, aggressive treatment may include pumping the stomach (lavage) or giving medication as antidotes. Such poisoning is very serious and may require intensive care in the hospital.

Food Poisoning and Safe Food Handling- Home Treatment

Most cases of food posing will go away in a few days rest and care at home. The following information will help you recover.

Prevent Dehydration

Dehydration is the most frequent complication of food poisoning. Older person and children should take special precautions to prevent it.

To prevent dehydration, take frequent sips of a rehydration drink (such as Lytren, Pedialyte, or Rehydralyte). Try to drink a cup of water or rehydration drink for each large, loose stool you have. Sports drink, soda pop, and fruit juices contain too much sugar and not enough of the important electrolytes that are lost during diarrhea and should only be taken alternately with a rehydration drink. You can make your own rehydration drink.

Try to stick to your normal diet as much as possible. Eating your usual diet will help you get enough nutrition. Doctors believe that eating a normal diet will also help you feel better faster. But try to avoid foods that are high in fat and sugar. Also avoid spicy food and coffee for 2 days after all symptoms have disappeared.

Take extra precaution to prevent dehydration in children

- Symptoms of mild dehydration in your child can include being irritable, agitated, fussy, or restless and urinating less frequently than usual.
- Symptoms of moderate dehydration can include a decreased interest in play, sunken eyes with few tears, and urinating fewer than 3 times in 24 hours.
- Symptom of severe dehydration can include a lack of interest in playing, extreme sleepiness, a dry mouth and tongue, fast breathing, a rapid

heartbeat, and not urinating for more than 12 hours. Severe dehydration is a medical emergency. (CALL emergency services immediately.)For children who are breast-feeding or bottle-feeding, continue the regular breast milk or formula feeding as much as possible. You may have to feed at more frequent intervals to replace lost fluids. Give an oral rehydration solution (ORS), such as pedialyte, between feeding only if you see signs of dehydration

For older children, give ½ cup [4fl oz] to 1 cup [8fl oz] of water, milk , or a rehydration drink each hour, and try to keep feeding your child his or her usual diet. Try to include potatoes, chicken breast without the skin, cereal, yogurt, and fresh fruit and vegetable. Try to avoid foods that have a lot of fat or sugar. Supplement feeding with small with small sips or spoonful of a rehydration drink or clear liquid every few minutes.

Antidiarrheal Medicines

Medicines that stop diarrhea can reduce the severity and length of symptoms of diarrhea. Using them may help. Antidiarrheal medicines should not be used if you have a fever or bloody diarrhea because they can actually make you more sick. Do not give antidiarrheals to children.

Prevention Tips

Proper Storage

- Keep products in their original container. Don't put chemical in containers that are used for eating and drinking.
- Never store food with cleaning products, pesticides or medicines.
- Use child lock on cabinets
- (In the garage and basement, too).
- Put poisons (toxic products, cleaning supplies, pesticides, medicine) in a locked cabinet –out of your child's sight and reach.
- Properly and quickly dispose off products from do-it-yourself projects including paint removers, gasoline and antifreeze.
- Put poisons away after using them. If you are using a household product when the phone/door rings, take the product with you.
- Don't leave your child alone in a room with cleaning products.

Medicines

- Keep medicines out of the medicine cabinet. Put them in a locked box and place box on a high shelf.
- Ask for and use medicines/household products with child resistant caps.
- Always read the label before giving medicine or using chemical. Check with caregivers to avoid double dose and always measure the dose-don't guess.
- Never call medicine or vitamins candy.
- Never take medicine in front of children. They like to imitate.
- Keep all purse and diaper bags out your child's reach. They may contain medicine or other items that could harm a child.

Plants

- Know the names of all the plants in your house and yard. Keep indoor plants out of reach of children and watch children playing outdoors safely.
- Keep the poison control center phone number on or near your telephone.

Carbon monoxide

- Install carbon monoxide detectors with audible alarms – install one near the sleeping area.For added protection install a second at least 15 feet from a furnace.
- Have a professional check all venting systems annually for proper safety.
- Have your combustion appliance (stoves, heaters) checked.
- Never leave a car running in an enclosed area such as the garage.

4.14 TRANSPORTATION OF THE CASUALTY

GENERAL PRINCIPLES

The method of transport depends on :-

- The nature and severity of injury.
- The number of helpers.
- Facilities available.
- The casualty's build.
- Distance to be covered.
- Route to be traveled.
- Never attempt to move a seriously injured casualty on your own if help is available.
- If the casualty is to be removed to the hospital arrange for an ambulance.
- Wherever possible, the position in which the casualty is found or has been placed should not be changed and the general condition watched carefully throughout.

Aim of Transport

To enable the casualty to reach the destination without deterioration or discomfort.

Lifting Casualty

- If lifting is done correctly even a very heavy casualty can be lifted without undue strain.
- Two principles of lifting:
  a. You should always use the most powerful muscles of your body.
  b. The weight should be kept as close to your body as possible.
- Follow correct posture for lifting
- Keep your back straight and head erect and hold the casualty close to your body using your shoulders to support the weight. Use your whole hand to strengthen the grasp. If the casualty begins to slip, do not injure your own back by trying to prevent the casualty from falling. Let the casualty slide slowly and gently to the ground without causing more damage to the injured area.
- When lifting, it is important to keep your back straight and knees bent.

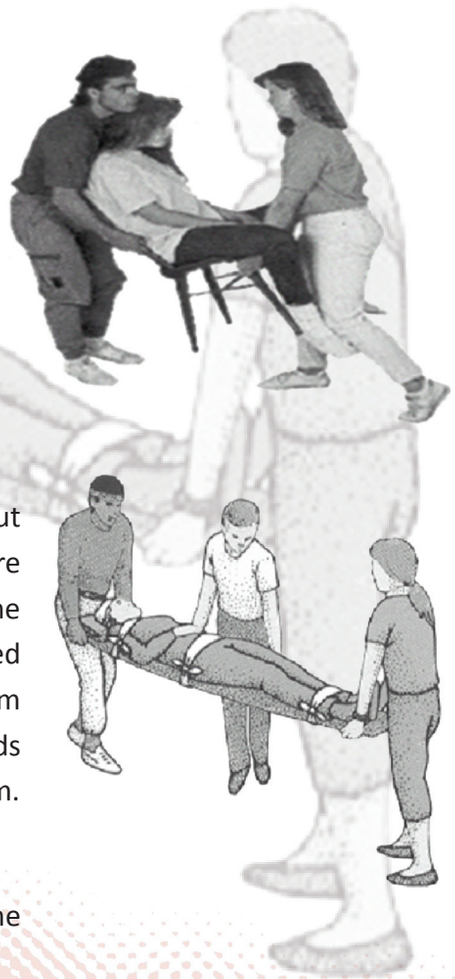
Wheel Chair:

Wheel chair bound casualties can be transported where they sit by adapting the chair method.

Make the causality sit the casualty well back in the chair.

Examine the wheelchair to find out which parts are fixed – arm rests and side supports are often removable. And will detach. Hold the chair by fixed parts.

Stretchers



These are used to carry a seriously ill or injured casualty to an ambulance or similar shelter to minimize the risk of further injury. There are a variety of stretchers in general use such as; the standard stretcher; the pole-and-canvas stretcher, the scoop stretcher; the carrying sheet; the carrying chair; the trolley bed; the nail Roberson stretcher; and the par guard stretcher.

Most stretchers can be used to transport casualties with any injury and should be rigid enough to carry casualties with suspected spine fracture without additional boards. All equipment must be tested before it is used. canvas can be folded and sliding under the casualty where the casualty lies. The poles are passed through sleeves down the side of the canvas to form the stretcher. Spacer bars may be placed over the ends of the poles to keep them apart and the stretcher firm.

Manual Lifts

If a blanket is not available you will have to lift the casualty using one of the following methods:

For four Bearers: Three bearers should place themselves on the left of the casualty: one facing the knees, one facing the hips and the third facing the shoulders. The bearers in charge of the casualty should be on the casualty's right facing the middle bearers.

All bearers should go down on their left knees and place their forearms beneath the casualty paying particular attention to the site of the injury. The person in charge should grasp the left wrist of the bearers at the shoulders with the left hand and the right wrist of the bearer opposite with the right hand. The person at the shoulders should support the head and shoulders and ensure an open airway and the fourth bearer should support the lower limbs.

When the order “lift” is given by the person in charge raise the casualty gently, slowly and evenly and place on the knees of the other three bearers.

If a fifth person is not available to move the stretcher, the person in charge should disengage, get the prepared stretcher and place it under the casualty. It should be positioned so that the casualty’s head will be just clear of the top traverse when lowered on to it. The bearer should then resume the original position and rejoin hands.

When the order “lower” is given, work together and gently raise the casualty slightly from the bearers’ knees. Then slowly and evenly lower the casualty on the stretcher bed.

For three bearers : place the stretcher in line with the casualty as near the head as possible. One bearer should kneel on one knee on the injured side of the casualty level with the knees and place the hands under the casualty legs . the other two should kneel on opposite sides of the casualty’s chest and grasp each other’s wrists under the shoulders hips.

Once the order “lift” is given, gently and evenly raise the casualty and stand up. Then, moving with side paces, carry the casualty head first over the stretcher.

When the order “lower” is given, gently, slowly and evenly lower the casualty onto the stretcher.

Loading an Ambulance

A few ambulances have flat built-in beds with grooves to take the runners of a standard stretcher. Four people will be required to load this ambulance: one to stand inside the ambulance ready to guide the stretcher, while the other three stand, one on either side of the stretcher and one at the end ready to lift. If there are two berths, Always load the left one first.

While loading a trolley bed into an ambulance, two bearers should take up their positions one at each end of the trolley bed.

Working together, raise the trolley bed to the required height and carry head first into the ambulance.

Unloading from an Ambulance

Two bearers take hold of the handles of the stretcher at the rear and gently withdraw the stretcher. As it is withdrawn, two more bearers may take hold of the handles at the head and, taking the weight, lower it so that their arms are fully extended. Then, moving with side paces, bring the stretcher out of the ambulance

4.14.1 TRANSPORT OF THE SICK AND INJURED

GENERAL PRINCIPLES

Rescue

In accidents the victim may be trapped in wreckage or debris. In such cases the first aider must decide whether or not the patient should be removed before first aid is given. This will depend upon the need to give life-saving attention. In many cases it will be less disturbing to the patient if he is left until rescue services with adequate equipment arrive. At all times it is the comfort and welfare of the patient which must be considered. Anything which might worsen injuries or increase shock must be avoided. Transport of the sick and injured is an important branch of first aid; much may depend on the careful manner in which a patient is removed to shelter after an accident. The two methods of transport are manual or by stretcher.

Manual methods

These include all methods of carrying a patient by hand. They are suitable for moving a patient for a short distance, e.g. off a football field. Their great advantage is that they can be undertaken by one or two helpers. Except in an emergency, they should not be used for patients who have been seriously injured.

Manual methods can be divided into two categories:

1. Support by a single helper.
    - (a) The cradle carry
    - (b) The human crutch
    - (c) The pick-a-back
    - (d) The drag carry
    - (e) Fireman's lift and carry.
2. Support by two helpers.
    - (a) The two-hand seat
    - (b) The human stretcher
    - (c) Three hands seat
    - (d) The four-hand seat
    - (e) The fore-and-aft carry.

Stretcher methods

These include stretcher-bearing and the use of ambulances. They are more satisfactory than manual methods and should be used for all serious cases such as shock, hemorrhage, and fractures of the spine, pelvis and lower limbs.

Four helpers are necessary for stretcher-bearing if the journey is a long one; shorter journeys can be undertaken by two bearers. Whenever possible, however, long journeys should be avoided. Hence it is often wise, if the case is serious, to remove the patient on a stretcher to a temporary shelter where he can await the arrival of the ambulance, thus avoiding a long journey by stretcher.

Rules for transport

Whichever method of transport is adopted, it must fulfill the following conditions :
Safety. It hardly seems necessary to mention that transport must be safe. However, cases have occurred in which patients have fallen off a stretcher or the stretcher itself has become unserviceable and collapsed. Stretchers should be inspected periodically.

Steadiness. Transport must be steady and great care must be taken to avoid jolting or jarring the patient.

Speed. The patient must be removed as quickly as possible provided that safety and steadiness are preserved. Sometimes, for example, it is necessary to drive an ambulance slowly and to sacrifice speed to provide comfort and safety.

Observation. The patient must be kept under continuous observation throughout the removal. Dressings must be examined to see that they remain securely fixed and that there is no recurrence of bleeding. Constrictive bandages must be readjusted at intervals and the patient should be watched carefully to make certain that there is no change for the worse in his condition.

(1) Support By A Single Helper

(a) The cradle carry

This is valuable for carrying children and patients who are light; it cannot be used for those who are heavy.

Method. The first aider stoops by the side of the patient, places one arm under his knees and the other well round his back, rises (using the power of his legs) and caries the patient.

(b) The human crutch

This can be used for a patient who is suffering from a slight injury to one leg only e.g. a sprained ankle. The patient must be able to help by placing light weight on the injured foot and by supporting himself against the first aider's body.

Method

1. The first aider stands on the injured side of his patient, places his arm round the waist, and grasps some of the clothing on the sound side of the patient's body near his hip.

2. He instructs the patient :

   (a) to place his arm round his neck so that his hand can be supported;

   (B) to march out of step with the first aider, beginning with the injured foot; and

   (c) to throw his weight onto the first aider as the patient takes each step his injured foot.

3. Using his free hand, the first aider grasps and supports that of the patient.

4. The patient tends to fall away from the first aider as they walk; to prevent this the first aider should pull the patient slightly towards him each time the sound foot is on the ground.

(c) Pick-a-back

This well-known method can be used if the patient is conscious and able to support himself on the first aider's back. When carrying by the pick-a-back method, always try to clasp your hands. This will assist you when carrying the patient.

(d) The Drag Carry

This is used to remove an unconscious patient for a short distance. E.g. away from machinery or from a burning room. The patient should be turned onto his back; the first aider stoops behind his head, facing his feet, places his hands under patient's armpits and walks backwards.

To drag a patient down a staircase, the first aider should crawl backwards down the stairs, supporting the patient's head upon his chest. When time permits, the patient's hands should be tied together on the front of his chest before dragging is begun.

Method

1. The patient should be placed on his back and his wrists tied together.

2. The first aider kneels astride his patient and threads his neck through the loop made by the tied wrists.

3. By crawling forwards on his hands and knees, the first aider can drag his patient to safety.

(e) The fireman's lift and carry

This is a useful method of carrying a patient who is unable to walk, but must only be used when the patient is not too heavy for the first aider. It has the advantage of leaving the first aider one hand free .

Method. The first aider lifts the patient into the upright position and grasps the patient's right wrist with his left hand; then, bending down with his head under the patient's extended right arm, places his right arm round or between the patient's legs. Taking the weight on his right shoulder he rises to the erect position and pulls the patient across both shoulders, transferring the patient's right wrist to his right hand, so leaving the first aider's left hand free.

(2) Support By Two Helpers

These methods consist chiefly of the hand-seats which are used to carry patients when a stretcher is not obtainable. By these methods a patient can be carried for a short distance efficiently, but it is difficult to maintain steady transport.

In all two-helper methods (except the fore-and aft carry) the helpers must walk out of step, beginning with their feet which are furthest away from the patient. They should keep their knees slightly bent to avoid jolting the patient and march with cross-over and not short side-steps.

(a) The two-hand seat

This is used to carry a patient who is unable to use his arms. He must, however, be conscious and be able to keep his body erect.

Method

1. The patient should be placed in the sitting position.

2. The two helpers stoop, facing each other, one on either side of the patient's body. They must not kneel, because they would have difficulty in rising again.

3. Each helper now places his arm which is nearest to the patient's head across his back and grasps some of the clothing on the opposite side of the patient's body. Thus the helpers have crossed arms behind the patient's back.

4. The helpers raise the patient slightly with their crossed arms, and then pass their free forearms under the middle of his thighs, where they clasp hands by a special method called the hook grip. which is made as follows:

   The helper on the left side of the patient keeps his palm upwards and holds a folded handkerchief in his hand to prevent discomfort caused by the fingernails of his colleague.

   The helper on the right grasps his colleague's hand, keeping his palm downwards.

5. Both helpers rise together, raising the patient between them.

(b) The human stretcher

This is a very valuable method of carrying a patient in the lying-down position, and can be used for unconscious cases.

Method

1. The helpers face each other , one on either side of the patient, and stoop beside him.

2. Each helper places his left hand under the patient's hips and clasps that of his colleague, by the hook grip mentioned above.

3. The helper with a free hand near the patient's head places his arm under the head, neck and shoulders, which must be carefully supported.

4. The helper with a free hand near the feet places his wrist and hand under the calves.

5. The helpers rise and carry the patient.

(c) Three-hand seat

This is used to carry a patient who is able to assist by using his arms. It is designed to supply support for one or both of the lower limbs during transport.

Method

1. The patient should be placed in the sitting position.

2. The helpers stoop, facing each other, one on each side of the patient.

3. The patient is told to place his arms round the helpers' necks and to raise himself slightly from the ground so that a seat can be formed under him.

4. The helper on the injured side places his hand which corresponds to that of the injury under the calf or thigh of the affected limb. Hence he has one hand free to make a seat for the patient.

5. A suitable seat is formed under the patient as follows :The helper who has one arm free interlocks his hand with that of his colleague by clasping his free wrist and allowing his own to be grasped.

6. Both helpers rise together, keeping the injured limb well supported.

(d) Four-hand seat

This can be used when the patient is able to assist by using one or both of his arms and does not require support for either of his lower limbs.

Method

1. The patient should be in the sitting position.

2. The helpers stoop, facing each other, on opposite sides of, and slightly behind, the patient's body.

3. The patient is instructed to place his arms round the necks of the helpers and raise himself slightly from the ground.

4. A seat is formed under the patient as follows :

   Each helper grasps his left wrist with his own right hand, keeping the colleague's right wrist with his left hand.

5. The helpers rise together, lifting the patient.

(e) Fore-and-aft method

This must be undertaken when space does not permit the use of ordinary hand seats. It is invaluable for removing a patient through a door or along a narrow corridor, but otherwise the method is not satisfactory, because it is uncomfortable and may cause difficulty in breathing

Method

1. The first helper stoops behind the patient's back and passes his hands under the armpits, clasping his hands together at the front of the chest.

2. The second helper places himself in front of and between the patient's legs with his back to the patient. He stoops and grasps the legs above the knees so that the legs are on either side of his body.

   If the patient is a woman, or when both legs have been injured, the limbs can be tied together and carried under the arm.

3. Both helpers rise together and walk in ordinary steps.

Chapter -5

DISASTER MANAGEMENT

5.1 Introduction

Disaster Management is a multi-disciplinary subject with a pro-active approach.

The thrust is on vulnerability reduction to all types of hazards, be it natural or man-made. This is not an easy task to achieve, keeping in view the vast population and the multiple natural hazards to which this country is exposed. In a nutshell disaster management is a comprehensive integrated program of mitigation, preparedness and management. However, if we are firm in our conviction and resolve that the Government and the people of this country are not prepared to pay the price in terms of massive casualties and economic losses, the task, though difficult, is achievable and we shall achieve it.With a massive awareness generation campaign and building up of capabilities as well as institutionalization of the entire mechanism through a techno legal and techno financial framework, we are gradually moving in the direction of sustainable development.

Our vision 2020 is to build a safer and secure India through sustained collective effort, synergy of national capacities and people's participation. What looks a dream today will be transformed into reality in the next two decades. This is our goal and we shall strive to achieve this goal with a missionary zeal. The path ahead, which looks difficult today, will become a lot easier as we move along together.

What is a Disaster ?

(i) A Disaster is an unusual occurrence characterized by sudden calamity, causing great material and human damage, loss and distress.

(ii) A complete definition of disaster may be an event, concentrated in time and space, which threatens the society, or its subdivision, with major unwanted consequences. It is caused as a result of collapse of precautions which had hitherto been accepted as adequate.

TYPES OF DISASTER

Generally, disasters are of two types – Natural and Man-made.

Man-made disasters are events which, either intentionally or by accident cause severe threats to public health and well-being. Because their occurrence is unpredictable, man-made disasters pose an especially challenging threat that must be dealt with through vigilance, proper preparedness and response.

A natural disaster is the effect of a natural hazard (e.g. flood, tornado, hurricane, volcanic eruption, earthquake, or landslide) that affects the environment, and leads to financial, environmental and/or human losses. The resulting loss depends on the capacity of the population to support or resist the disaster, and their resilience. This understanding is concentrated in the formulation: "disasters occur when hazards meet vulnerability." A natural hazard will hence never result in a natural disaster in areas without vulnerability, e.g. strong earthquakes in uninhabited areas.

5.2 Management of Train Accident

Phases of disaster management

Phase-I (Golden Hour)

In the period immediately after the accident where grievous injuries to passengers, loss of property etc. takes place, action has to be taken on war footing to render definite medical care which gives relief to affected persons and also help them to overcome the trauma. This first one hour period is known as the **Golden Hour.**

During this **Golden Hour** period, efforts should be made to render every possible medical aid to the injured.

Phase-II (Arrival of Crack Team)

On reaching at accident site, the crack team shall perform following activities: -

- Extrication/removal of injured passengers from the coach.
- First Aid to the injured.
- Relieve panic and create re-assurance among passengers

Phase-III (Site Organisation)

For the site organisation to cater for

1. Medical relief camp
2. Security of luggage
3. Clue preservation
4. Relief rescue and restoration
5. Coordination with civil and press
6. Liaison with control
7. Communication- STD phones, Walkie-talkies, mobiles, PA System etc.
8. Lighting arrangements
9. Commercial-information booth, Arrangement of Tea, Food and Water.
10. Evacuation of passengers, payment of ex-gratia etc.

Special Task Teams

- Medical Relief and transportation of injured to hospitals.
- Commercial and RPF Security of luggage, parcels and Railway property
- Operating Liaison with control and arranging logistics including shunting.
- Extreme care must be exercised while tackling damaged coaches. Cold cutting equipments should be used on coaches containing passengers so as to avoid burns to passengers by use of flame cutting.

Handling of dead/injured

- Dead bodies should be handled with care and respect.
- Cover dead bodies with white shrouds.
- Expeditious issue of death certificates.
- List of dead and injured must be passed on to control and disaster management cell from time to time.
- A photographer should take coloured photographs of the dead and injured.
- Availability of free food, drinking water, tea, etc.
- Correct picture to media
- Press and other media should be given correct picture timely.

Phase-IV (Handling injured Passengers)

Phase-IV mainly refers to dealing with injured passengers. Following action must be planned:

- Relief trains clearing injured or stranded passengers must get overriding priority.
- Road vehicles can also be arranged for stranded passengers.
- List of injured, hospital-wise, should be conveyed to all concerned and displayed at prominent locations.
- Ex-gratia payment should be arranged.

Phase-V (Restoration of Traffic)

Restoration operation should be planned and acted upon without affecting the relief operations. Restoration of passenger services gives a senses of normalcy, besides providing means to relatives/dependents of victims to visit them and attend to them.

Do's

- Arrange to protect the adjacent line/lines and then the affected line.
- Send information through the quickest means.
- Take action to save lives/render first-aid.
- Call for doctors and volunteers on the train, seek their assistance.
- Seek assistance of Railwaymen on the train for attending to the injured and for other relief operations.
- Make a quick assessment of the assistance needed and advice control or nearest Station Master.
- Arrange protection of belongings of the passengers and railway property through RPF, GRP and other railway staff.

Don't's

- Lose patience.
- Ignore the safety aspects.
- Manipulate the control charts.
- Argue with the station staff.

PASSENGER CARE

General

- Providing assistance to passengers and their relatives/dependents is of utmost importance in helping them relieve their misery.
- Injured passengers and their relatives/dependents are to be treated with utmost courtesy and sympathy so as to alleviate their trauma and discomfort.

Provide factual information to public with regard to accident.

convey any other information which is of use to passengers.

Convey specific information which is of use to relatives/dependents of dead and Injured passengers.

5.3 Disaster Management in Air Accidents

To Survive an airplane crash or emergency landing is possible. While the news usually reports on catastrophic loss of life as a result of an airplane crash. Most of these emergency landings or minor crashes are survivable if passengers remain calm and follow directions. To survive an airplane crash, pay close attention to the safety speech by the cabin staff.

- Review the safety card provided by the airline.
- Look around the plane to orient yourself. Count the number of rows to the exit .
- Make sure your seat belt is tightly fastened across the lap, and leave it fastened throughout the flight.
- Few common sense precautions to increase the ability to survive an airplane crash - Wear long sleeved cotton garments and sensible shoes.
- Have a jacket or blanket ready in case the airplane crash occurs in a cold area.
- When the cabin staff indicate that an airplane crash or emergency landing is going to occur, follow their directions closely.
- Make sure that your luggage is properly stowed, and that no sharp objects are in your pockets.
- Assume the crash position by bracing your hands on the seat in front of you and tucking your head against the chest.
- Brace your feet firmly on the floor of the aircraft, and hold the crash position until the airplane has come to a complete stop.

- An airplane crash is often accompanied by smoke and fire. The smoke can be very toxic,so it is important to protect your lungs.
- Put your oxygen mask on before helping other passengers. When evacuating or moving in a smoke filled aircraft, protect your airway with a damp cloth over your nose and mouth.
- When the airplane stops moving, start evacuating. Leave your belongings behind.
- Remain calm, and assist other passengers if they need help.
- Move towards the nearest exit and check to make sure that conditions are safe before going outside.
- If the airplane crash has occurred in water, inflate your life vest after you exit the plane, and get rid of your shoes and heavy garments to make it easier to swim.
- If the airplane crash is on dry land, exit the plane safely and wait for rescue team to arrive.

Knowledge Check

In the last few years, there has been an increased incidence of civil disasters; the spectrum of possible catastrophes has also dramatically increased as a result of an increasing technologically sophisticated society. Disaster preparedness plans must encompass the possibility of nuclear accidents, hotel and high-rise fires, terrorist attacks, aviation accidents, bomb blasts, riots and industrial explosions as well as natural calamities such as floods, epidemics drought and cyclone's

The emphasis of medical management shifts from individualised treatment to standardised therapy for disaster victims with the aim of providing maximum benefit to a maximum number of salvageable patients.

During the last 10 years varied terrorist activities have become increasingly common as expressions of the opinions of extreme political groups, especially in India.

Transportation is of vital importance when coping with such disasters. Ambulances must be requisitioned for transporting the seriously injured to hospitals. This delay at times resulted in late initiation of the management of a few patients. During the bomb blasts, rapidly growing crowds consisting of curious bystanders and over-enthusiastic paramedical and medical personnel occasionally hampered a rapid triage.

Triage System

Triage (French: sorting) means categorization and distribution of casualties, which establishes priorities and proper location of treatment. The triage must be carried out at the disaster site as well as in the hospital.

Three factors are essential to an efficient triage system: identification, communication and transport.

1. Identification: Casualty categorization not only includes initial evaluation of the injuries but assigns a value to the injury - relative to the mass casualty situation. Patients were classified according to their therapy needs viz. 1) requiring only outpatient treatment. 2) requiring indoor admission and expectant treatment, 3) needing immediate exploration and 4) capable of tolerating delayed treatment. Sections for each group were temporarily created. Subsequently, these patients were managed effectively by different groups of doctors.
2. Communication: The communication system though sub-optimal, was useful in rapid notification of all the necessary support groups. There was no effective communication between the disaster site, transport vehicles and referral facilities such as the hospitals.
3. Transport: For transporting patients to operation theatres and wards.
4. Provision for temporary morgue facilities. Photographs of the deceased were displayed on the Notice Board. A relatives' guidance cell in front of the Emergency Room, efficiently managed
5. Reduction in mortality and morbidity in mass disaster can be achieved only by a well organized, concise but flexible pre-disaster situations, to avoid potential chaos at such situations. The need to develop such a plan in order to accurately assess the magnitude of the disaster and make provision for sufficient trained personnel and logistic support to meet the demands of the mass disaster.
6. Reduction in mortality and morbidity in mass disaster can be achieved only by a well organised, concised but flexible pre-disaster situations, to avoid potential chaos at such situations. There is a need to develop such a plan in order to accurately assess the magnitude of the disaster and make provisions for sufficient trained personnel and logistic support to meet the demands of the mass disaster.

7. Communication is a major bottleneck in case of any major disaster particularly when the traditional network system already in force brakes down. In order to strengthen communications, it has been decided that police network (POLNET) will also be used for disaster management.

8. For emergency communication, mobile satellite based units which can be transported to the site of the disaster are being procured. This provides for a dedicated communication system for disaster management with built in redundancies.

Besides the satellite, communication and education can play a proactive role in mitigation through awareness about the types of disaster and as to how prevention measures can be taken up.

Which agencies need to be involved ?

- Police
- Fire
- Ambulance
- Hospitals
- Clinics
- Doctors
- Red Cross
- Blood Banks
- Marine operations (are there bodies of water?)
- Coast guard
- Department of transportation
- Departments of environment (if there is clean-up involved)
- Airlines
- Rail companies
- Local transit companies
- Bus companies (in case of evacuation)

Disaster Management is a comprehensive, integrated program of mitigation, preparedness, response, and recovery for emergencies/disasters (all-hazards) of any kind. No public or private entity is immune to disasters and no single segment of society can meet the complex needs of a major emergency or disaster on its own. **"No man is an island, entire of itself;** every man is a piece of the continent, a part of the main." When disaster strikes,

the community is clearly divided into only two entities; those who need help and those who can provide help. In its simplest form, the bottom line of Disaster Management is **helping people help people!**

5.4 Disaster Management in Drought

Drought is a temporary reduction in water or moisture availability significantly below the normal or expected amount for a specific period. This condition occours either due to inadequacy of rainfall, or lack or irrigation facilities, under-exploitation or deficient availability for meeting the normal crop requirements in the context of the agro-climatic conditions prevailing in any particular area. This has been scientifically computed as Moisture index (M I). There is a drought in jaisalmer (Rajasthan) (Average rainfall 200 mm) if rainfall is not sufficient to grow grass an paltry coarse-grains, whereas in Bolangir or Koraput (Orissa-rainfall above 1000 mm) there is a drought if there is not enough rainfall for bringing the paddy crop to maturity

- Close monitoring of the emerging drought scenario so as to develop an advance warning system
- Relief measures required for providing immediate succour to the affected population and the upkeep of the cattle wealth, and if possible to integrate it with long term objectives and
- Hammering out an alternative crop strategy for maximum possible retrieval of the Kharif crop and a better ensuing Rabi crop.

Since drought prediction methods are at a very nascent stage, IMD (Indian metrological department) has made efforts to provide a long range forecast of monsoon rainfall. In 1988, a parametric power regression model was developed on the basis of global and

regional meteorological and oceanic parameters (physically related monsoon and rainfall) for estimating the monsoon rainfall of India. The model is successful in estimating the correct nature of monsoon and can be utilized for drought mitigation planning. IMD carries out rainfall monitoring unto district level on a real time basis. All this helps in estimating the drought conditions over any particular region.

5.5 Disaster Management in Cyclone

Cyclones in India generally strike the East Coast; some of the Arabian Sea Cyclones strike the west coast of India as well mainly the Gujarat and North Maharashtra coast. Out of the storms that develop in the Bay of Bengal, over 58 percent approach or cross the east coast in October and November.

Possible Risk Reduction Measures

a) Risk Assessment

The evaluation of risk for a tropical cyclone is a relatively straightforward process. A hazard map should be prepared for any given year. The following information could be used to estimate the probability of storms of cyclones of various intersections that may strike different parts of the county.

1. Analyses of climatologically records to determine how often tropical cyclones have struck- their intensities and locations.
2. History of wind strengths, frequencies, height and location of storm surges frequencies of flooding.
3. Information about tropical cyclone occurrences in the past 50-100 years over the ocean adjoining the part of the country in question.

b) An Integrated Warning/Response System

Specific preparedness measures to counter the impact of tropical cyclones may be classified into two categories:

1. Those of long term or seasonal nature, which need to be planned, implemented and operationally tested and co-coordinated by means of simulation exercise well before a seasonal threat commences. Among these are pre-season co-ordination meetings at headquarters, district and local levels, at which operational contingency plans are reviewed and amended, training and community preparedness programs conducted and community lifelines.

2. Those of a short-term nature, which relate to a state of readiness to cut in once a contemporary cyclone threat is announced. Among these are domestic, vocational and animal husbandry arrangements to safeguard the survival, property assets and livelihoods of individual families and communities.

c) Public Warning System

The three main objectives in a tropical cyclone warning are:

1. To alert the people to the danger by announcing the existence of a threat due to a cyclone.

2. To identify the areas where people will be actively threatened by cyclone and where communities should monitor further warning announcements, and

3. To call the people to action by recommending specific preparedness activities, which may be part of, and integrated warning/response plan to protect vulnerable resources.

d) Cyclone Warning Organizations

- Area Cyclone Warning Centre (ACWC's) at Kolkata, Chennai and Mumbai
- Cyclone Warning Centres (CWC's) at Bhuvaneswar, Vishakhapatanam and Ahmedabad.
- Cyclone Warning Dissemination Systems: Satellite based communication system for transmission of warnings. 250 sets have been installed in cyclone prone areas of east and west coast.
- National Data bouy Program: 12 buoys deployed in northern Indian Ocean for meteorological and oceanographic data
- MST (Mesosphere, Stratosphere, Troposphere) Radar installed at Thirupati.

POST DISASTER ASSISTANCE

The initial response by local authorities could include:

- Evacuation
- Emergency shelter
- Search and rescue
- Medical assistance
- Provision of short term food and water
- Water purification
- Epidemiological surveillance
- Provision of temporary lodging
- Reopening of roads
- Reestablishment of communications networks and contact with remote areas
- Debris clearance
- Disaster assessment
- Provision of seeds for replant

5.6 Disaster Management in Floods

Floods are the most common natural disasters. They are usually caused by heavy rainstorms that overflow bodies of water or gather on certain sections of land. Floodwater can gather slowly or quickly, as in a flash flood.

Flash flooding is the most dangerous type of flooding. This occurs when a man-made structure, like a dam or levee, collapses from too much water.

Flood effects can be local, impacting a neighborhood or community, or very large, affecting entire river basins and multiple states.

However, all floods are not alike. Some floods develop slowly, sometimes over a period of days. But flash floods can develop quickly, sometimes in just a few minutes and without

any visible signs of rain. Flash floods often have a dangerous wall of roaring water that carries rocks, mud, and other debris and can sweep away most things in its path. Overland flooding occurs outside a defined river or stream, such as when a levee is breached, but still can be destructive. Flooding can also occur when a dam breaks, producing effects similar to flash floods.

Be aware of flood hazards no matter where one lives, but especially if one lives in a low-lying area, near water or downstream from a dam

One will not always have warning that a flood is coming. Pay attention to one's local radio or TV stations. They will let one know if there's a flood watch or warning in one's area. Before a flood happens, make sure one is ready:

- Do NOT keep valuable items and appliances in one's basement. They could get ruined during a flood.
- Have flood insurance.
- Make sure one's fuse box (or main breaker) and utility meters are raised above the flood level in one'shome. Water and electricity don't mix. (If one're not sure what one'sflood level is, check with one's local building official, city engineer, or planning and zoning administrator.)
- When floods happen, here's what one should do:
- Go to higher ground immediately.
- Do NOT try to drive through water, even if it's not moving. Even the car can easily get swept away.

During a Flood

One has to leave home, remember

- Do not walk through moving water. Six inches of moving water can make one fall. If one has to walk in water, walk where the water is not moving. Use a stick to check the firmness of the ground in the front.
- Do not drive into flooded areas. If floodwaters rise around the car, abandon the car and move to higher ground if one can do so safely. The vehicle can be quickly swept away.

Driving Flood Facts

The following are important points to remember when driving in flood conditions:

- Six inches of water will reach the bottom of most passenger cars causing loss of control and possible stalling.
- A foot of water will float many vehicles.
- Two feet of rushing water can carry away most vehicles including sport utility vehicles (SUV's) and pick-ups.

After a Flood

The following are guidelines for the period following a flood:

- Listen for news reports to learn whether the community's water supply is safe to drink.
- Avoid floodwaters; water may be contaminated by oil, gasoline, or raw sewage. Water may also be electrically charged from underground or downed power lines.
- Avoid moving water.
- Be aware of areas where floodwaters have receded. Roads may have weakened and could collapse under the weight of a car.
- Stay away from downed power lines, and report them to the power company.
- Return home only when authorities indicate it is safe.
- Stay out of any building if it is surrounded by floodwaters.
- Use extreme caution when entering buildings; there may be hidden damage, particularly in foundations.
- Service damaged septic tanks, cesspools, pits, and leaching systems as soon as possible. Damaged sewage systems are serious health hazards.

Clean and disinfect everything that got wet. Mud left from floodwater can contain sewage and chemicals

5.7 Disaster Management in Earthquakes

One of the most frightening and destructive phenomena of nature is a severe earthquake and its terrible aftereffects. An earthquake is a sudden movement of the earth, caused by the abrupt release of strain that has accumulated over a long time. For hundreds of millions of years, the forces of plate tectonics have shaped the earth, as the huge plates that form the earth's surface slowly move over, under, and past each other. Sometimes, the movement is gradual. At other times, the plates are locked together, unable to release

the accumulating energy. When the accumulated energy grows strong enough, the plates break free. If the earthquake occurs in a populated area, it may cause many deaths and injuries and extensive property damage.

An earthquake is when the Earth suddenly shakes. This is caused when rocks beneath the Earth's surface move and break.

Earthquakes happen without warning. They can happen any time of day, at any point during the year. Almost all states in the country can experience earthquakes, both small and big. Sometimes an earthquake will be so small one can barely feel it. Other times an earthquake will cause the ground to shake so much that buildings and bridges collapse. Fires, landslides, avalanches, and flash flooding might even happen.

Stay alert for aftershocks, which are smaller earthquakes that follow the main one. Aftershocks could happen within a few hours of the main earthquake, or they could happen weeks or months later.

What should one do?

One will never have warning that an earthquake is coming. If one lives in an area that has a lot of earthquakes, make sure that one and one's house are prepared:

- Secure cupboards and bookcases to the wall using bolts. Also try to keep heavy objects on lower shelves so they won't fall on one during an earthquake.
- Make sure one's water heater is secured to a wall. That way, it won't fall during an earthquake and hurt someone or start a fire.
- Make sure that one's home is bolted to one's foundation. Although this might be expensive, it could save one from a lot of damage to one'shouse during an earthquake
- Do NOT go outside. One could get hurt from falling glass or parts of buildings. If one is outside, stay away from buildings and power lines.
- Take cover under a desk, table, or other large and stable piece of furniture. Hold on to it. Or stand in a doorway and brace oneself.

- Stay away from windows, heavy furniture, appliances, mirrors, pictures, and anything else that could fall and hurt one. Also stay away from fireplaces. One could lose one'sbalance and hurt oneself on the fire.
- If one is driving when an earthquake happens, stop the car if it's safe. Stay inside one'scar until the earthquake stops, and don't drive near bridges or tunnels. Try not to stop by power lines, light posts, signs, or trees. These could fall and hurt one.
- Stay alert for falling objects. Most people get injured by falling objects during an earthquake, not by the shaking itself.
- Do NOT use matches, lighters, or candles. If there is a broken gas line, one could spark a fire or explosion.
- Do NOT use elevators. There might be a power outage due to the earthquake, and one could get stuck in the elevator.

During an Earthquake

Minimize one'smovements during an earthquake to a few steps to a nearby safe place. Stay indoors until the shaking has stopped and one are sure exiting is safe.

If one is	Then:
1. Indoors	• Take cover under a sturdy desk, table, or bench or against an inside wall, and hold on. If there isn't a table or desk near one, cover one's face and head with one's arms and crouch in an inside corner of the building. • Stay away from glass, windows, outside doors and walls, and anything that could fall, such as lighting fixtures or furniture. • Stay in bed - if one are there when the earthquake strikes - hold on and protect one'shead with a pillow, unless one are under a heavy light fixture that could fall. In that case, move to the nearest safe place. • Use a doorway for shelter only if it is in close proximity to one and if one know it is a strongly supported, loadbearing doorway.

	• Stay inside until shaking stops and it is safe to go outside. Most injuries during earthquakes occur when people are hit by falling objects when entering into or exiting from buildings. • Be aware that the electricity may go out or the sprinkler systems or fire alarms may turn on. • DO NOT use the elevators.
2. Outdoors	• Stay there. • Move away from buildings, streetlights, and utility wires.
3. While moving	• Stop as quickly as safety permits and stay in the vehicle. Avoid stopping vehicle near or under buildings, trees, overpasses, and utility wires. • Proceed cautiously once the earthquake has stopped, watching for road and bridge damage.
4. Trapped under debris	• Do not light a match. • Do not move about or kick up dust. • Cover one's mouth with a handkerchief or clothing. • Tap on a pipe or wall so rescuers can locate one. Use a whistle if one is available. Shout only as a last resort - shouting can cause one to inhale dangerous amounts of dust.

EMERGENCY ACTION PRINCIPLES

Survey the scene

Is it safe?

↓

Conduct a primary survey

Check for unresponsiveness

Airway **B**reathing **C**irculation (ABCs)

↓

Phone Emergency Medical Services

↓

Do a secondary survey

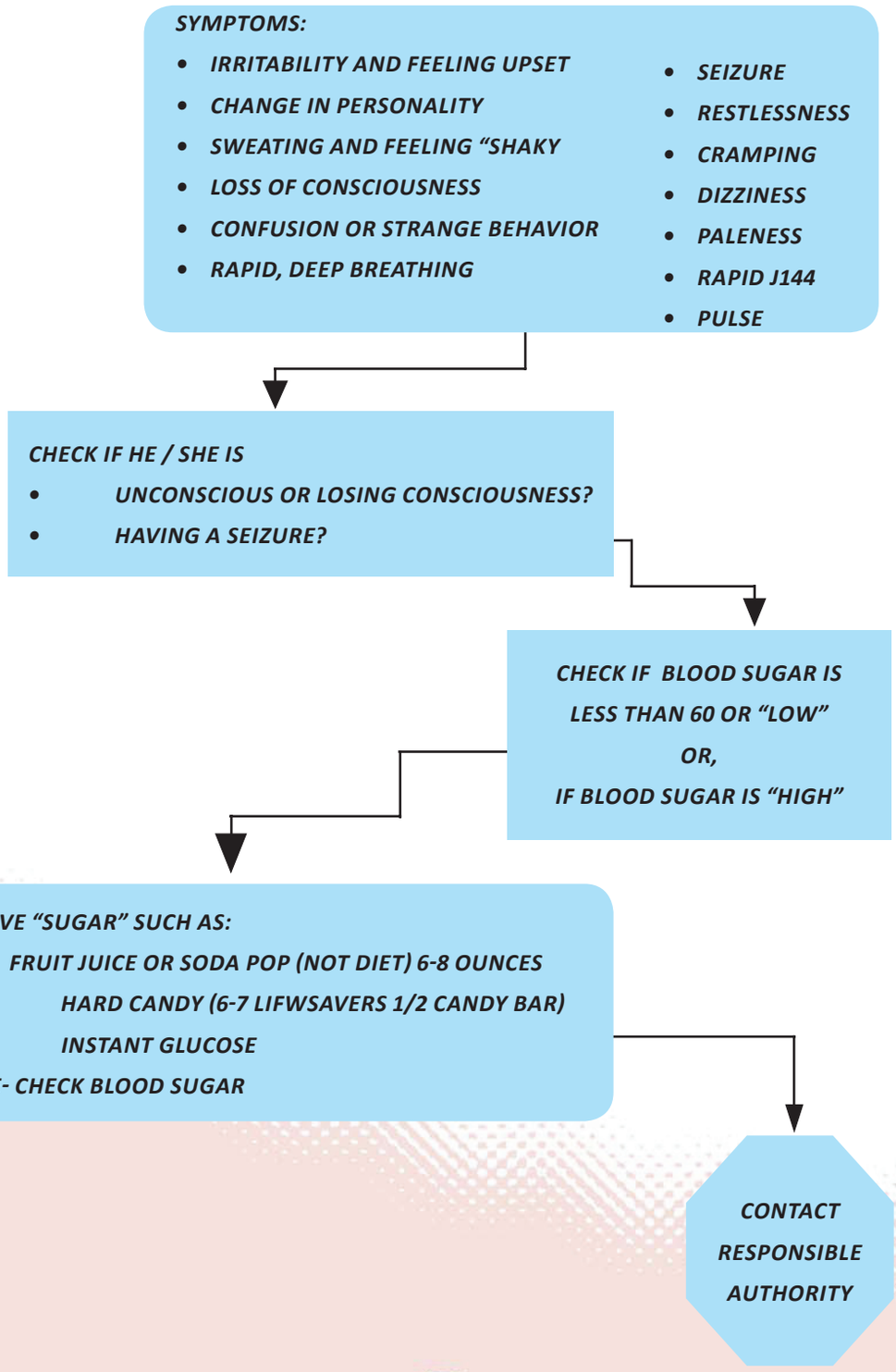
Interview | Vital Signs | Head – to- Toe Exam

Chapter -6

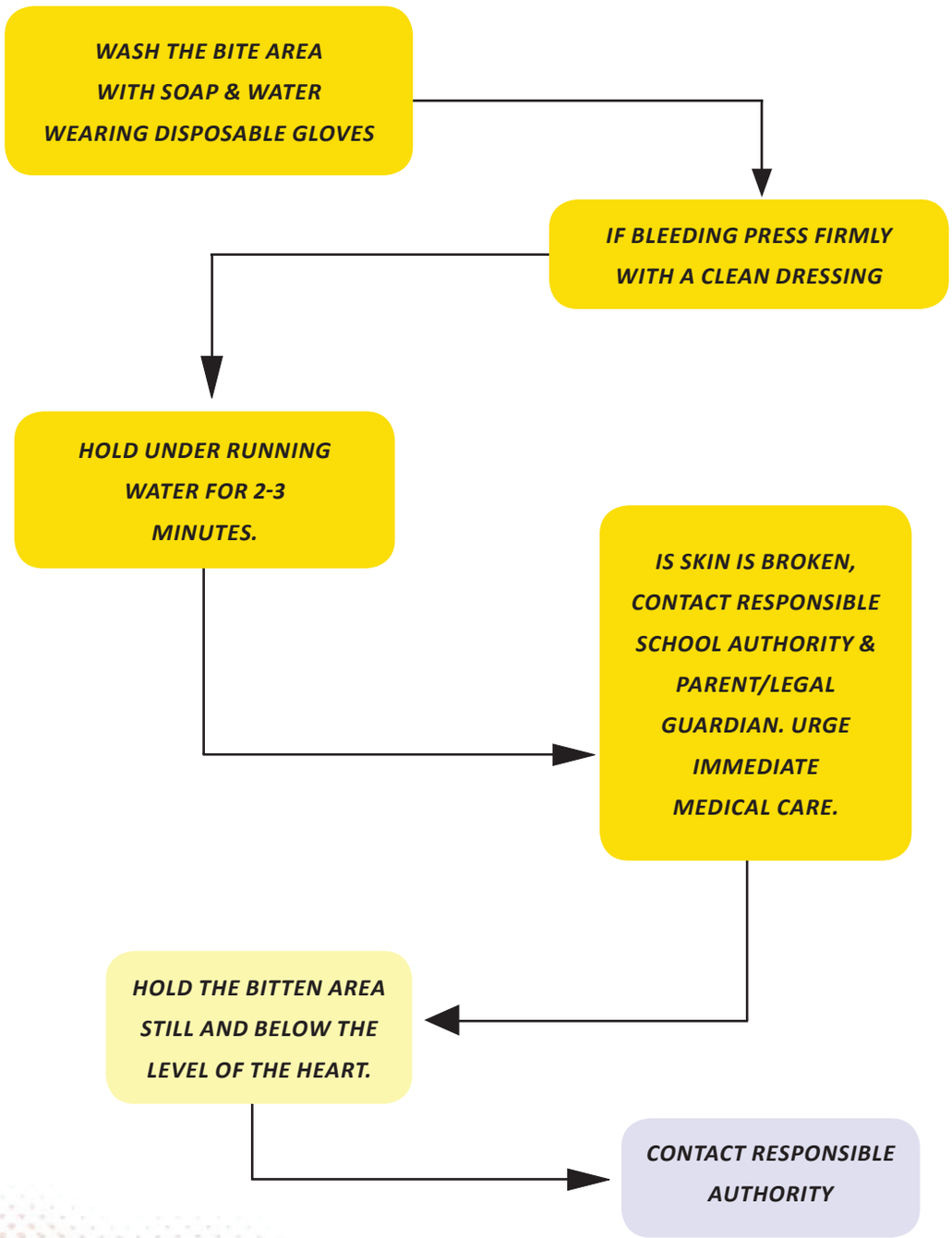
COMMON EMERGENCIES (Illustrations Through Flow Diagrams)

- **Diabetes**
- **Bites**
- **Fainting**
- **Head Injury**
- **Heat Stroke**
- **Burns**
- **Fractures**
- **Bleeding**

6.1 DIABETES


SYMPTOMS:
IRRITABILITY AND FEELING UPSET
CHANGE IN PERSONALITY
SWEATING AND FEELING "SHAKY
LOSS OF CONSCIOUSNESS
CONFUSION OR STRANGE BEHAVIOR
RAPID, DEEP BREATHING
SEIZURE
RESTLESSNESS
CRAMPING
DIZZINESS
PALENESS
RAPID J144
PULSE
CHECK IF HE / SHE IS
UNCONSCIOUS OR LOSING CONSCIOUSNESS?
HAVING A SEIZURE?
CHECK IF BLOOD SUGAR IS
LESS THAN 60 OR "LOW"
OR,
IF BLOOD SUGAR IS "HIGH"
GIVE "SUGAR" SUCH AS:
FRUIT JUICE OR SODA POP (NOT DIET) 6-8 OUNCES
HARD CANDY (6-7 LIFWSAVERS 1/2 CANDY BAR)
INSTANT GLUCOSE
RE- CHECK BLOOD SUGAR
CONTACT
RESPONSIBLE
AUTHORITY

6.2 BITES
(HUMAN & ANIMAL)



6.3 FAINTING

SYMPTOMS:

- ***EXTREME WEAKNESS OR FATIGUE***
- ***DIZZINESS OR LIGHT-HEADEDNESS***
- ***EXTREME SLEEPINESS***
- ***PALE, SWEATY SKIN***
- ***NAUSEA***

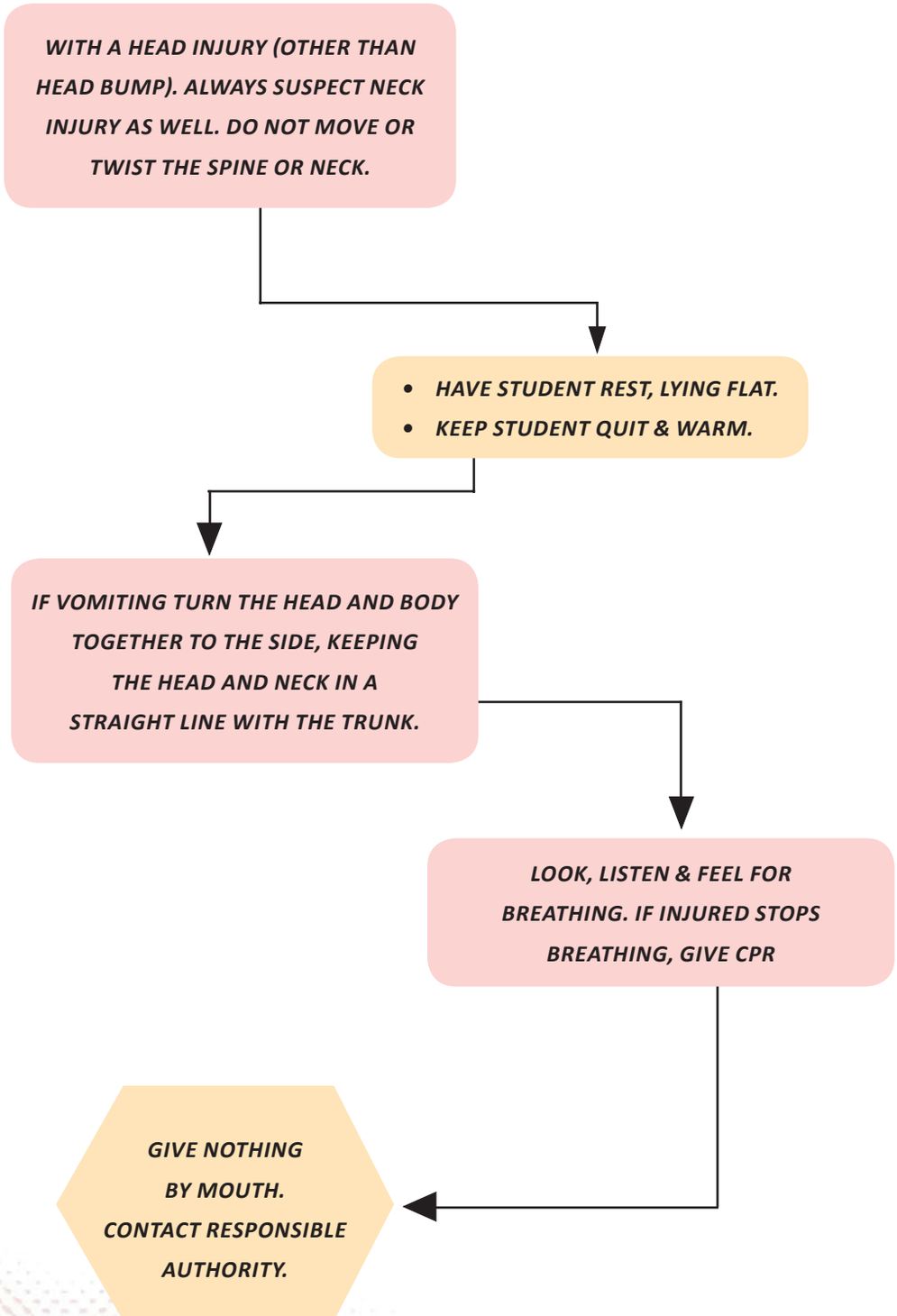
TREAT AS POSSIBLE NECK INJURY.
IF DUE TO INJURY
DO NOT MOVE

- ***KEEP IN FLAT POSITION.***
- ***ELEVATE FEET.***
- ***LOOSEN CLOTHING AROUND NECK AND WAIST.***

- ***KEEP AIRWAY CLEAR AND MONITOR BREATHING***
- ***KEEP PATIENT WARM, BUT NOT HOT.***
- ***CONTROL BLEEDING IF NEEDED (WEAR DISPOSABLE GLOVES).***
- ***GIVE NOTHING BY MOUTH.***

CONTACT RESPONSIBLE AUTHORITY & PARENT / LEGAL GUARDIAN.

6.4 HEAD INJURIES



6.5 HEAT STROKE / HEAT EXHAUSTION

SYMPLOMS:

- ***RED, HOT, DRY SKIN***
- ***WEAKNESS AND FATIGUE***
- ***COOL, CLAMMY HANDS***
- ***VOMITING***
- ***LOSS OF CONSCIOUSNESS***
- ***PROFUSE SWEATING***
- ***HEADACHE***
- ***NAUSEA***
- ***CONFUSION***
- ***MUSCLE***

- ***REMOVE CHILD FROM THE HEAT TO A COOLER PLACE.***
- ***HAVE THE CHILD LIE DOWN.***

- ***LOOK, LISTEN AND FEEL FOR BREATHING. IF CHILD IS NOT BREATHING,GIVE CPR***

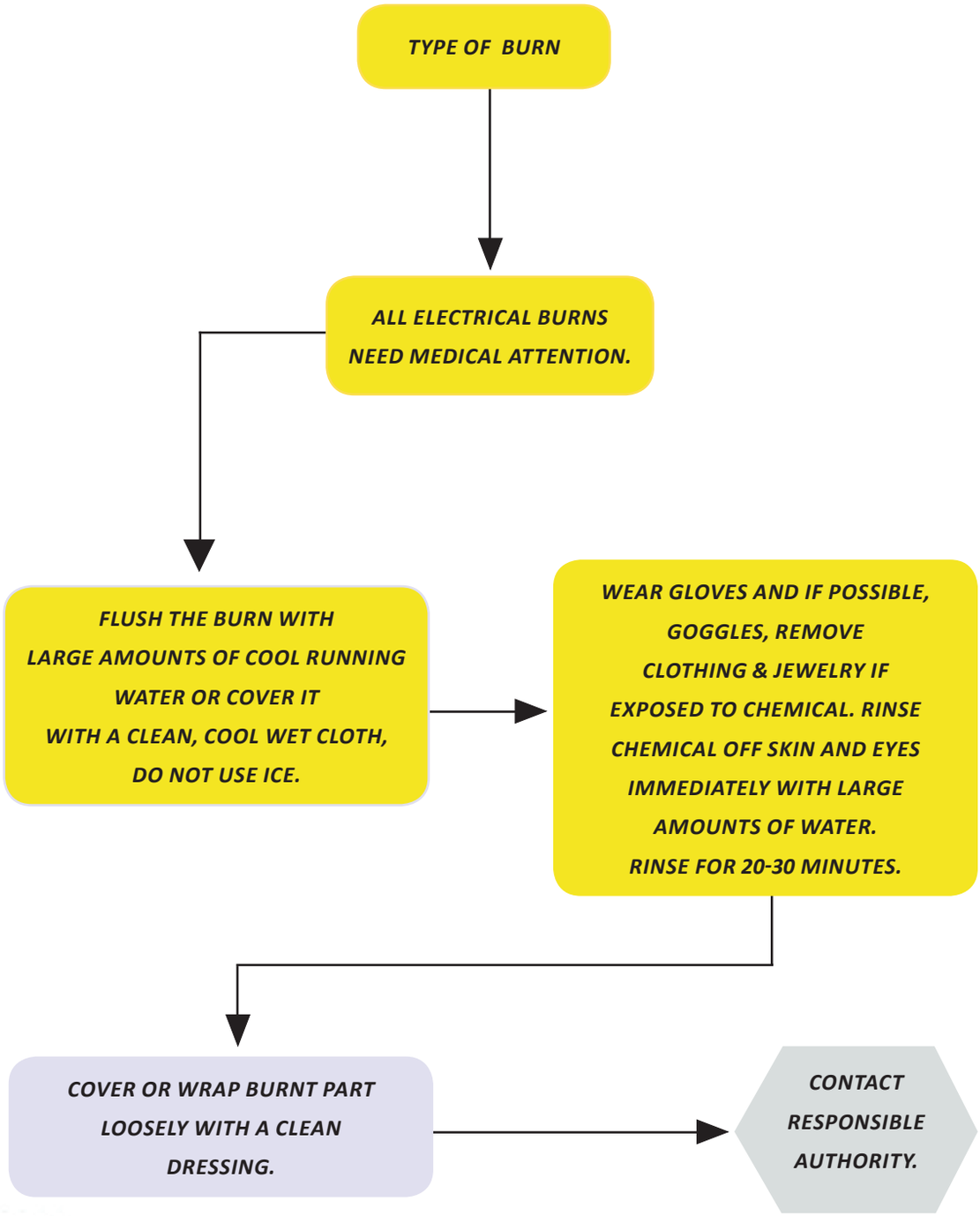
- ***HOT, DRY RED SKIN***
- ***VOMITING***
- ***CONFUSION***

COOL RAPIDLY BY COMPLETELY WETT CLOTHING WITH ROOM TEMPERATURE WATER. DO NOT USE ICE WATER

GIVE CLEAR FLUIDS SUCH AS WATER, 7-UP OR GETORADE FREQUENTLY IN SMALL AMOUNTS IF INJURED IS FULLY CONSCIOUS AND ALERT.

CONTACT RESPONSIBLE AUTHORITY.

6.6 BURNS


TYPE OF BURN
ALL ELECTRICAL BURNS NEED MEDICAL ATTENTION.
FLUSH THE BURN WITH LARGE AMOUNTS OF COOL RUNNING WATER OR COVER IT WITH A CLEAN, COOL WET CLOTH, DO NOT USE ICE.
WEAR GLOVES AND IF POSSIBLE, GOGGLES, REMOVE CLOTHING & JEWELRY IF EXPOSED TO CHEMICAL. RINSE CHEMICAL OFF SKIN AND EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER. RINSE FOR 20-30 MINUTES.
COVER OR WRAP BURNT PART LOOSELY WITH A CLEAN DRESSING.
CONTACT RESPONSIBLE AUTHORITY.

6.7 FRACTURES, DISLOCATION, SPRAINS, OR STRAINS

- PAIN IN ONE AREA
- SWELLING HEAVY
- FELLING IN INJURED AREA.
- DISCOLORATION
- LIMITED MOVEMENT
- BENT OR DEFORMED BONE
- NUMBNESS OR LOSS OF SENSATION

- REST INJURED PART BY NOT ALLOWING TO PUT WEIGHT ON IT OR USE IT.
- GENTLY SUPPORT AND ELEVATE INJURED PART IF POSSIBLE.
- APPLY ICE, COVERED WITH A CLOTH OR PAPER TOWEL, TO MINIMIZE SWELLING.

- LEAVE THE PERSON IN A POSITION OF COMFORT.
- GENTLY COVER BROKEN SKIN WITH A CLEAN BANDAGE.
- DO NOT MOVE INJURED PART.

CONTACT RESPONSIBLE AUTHORITY.

6.8 BLEEDING

- PRESS FIRMLY WITH A CLEAN BANDAGE TO STOP BLEEDING. (WEAR GLOVES)
- ELEVATE BLEEDING BODY PART GENTLY IF FRACTURE IS SUSPECTED, GENTLY SUPPORT PART AND ELEVATE.
- BANDAGE WOUND FIRMLY WITHOUT INTERFERING WITH CIRCULATION TO THE BODY PART.
- DO NOT USE TORNIQUET.

- HAVE THE PATIENT LIE DOWN.
- ELEVATE THE INJURED PART 8-10 INCHES
- UNLESS THIS CAUSES PAIN / DISCOMFORT OR A NECK / BACK INJURY IS SUSPECTED.
- KEEP WARM BUT DO NOT. COVER WITH A LIGHT BLANKET OR SHEET.

Contact responsible authority.

Chapter -7

FAQs-FREQUENTLY ASKED QUESTIONS

Introduction

First aid can save lives and prevent minor injuries becoming major ones. These are some frequently asked questions -

1. Who is an Appointed Person and What are his main duties?

An appointed person is someone who:

- Takes charge when someone is injured or becomes ill;
- Looks after the first-aid equipment e. g. restocking the first-aid container;
- Ensures that an ambulance or other professional medical help is summoned when appropriate.
- Appointed persons may not be first aiders. They should not give first aid treatment without training. A first aider will have emergency first aid training/refresher training.

2. What are the main duties of a first aider?

- Give immediate help to casualties with common injuries or illnesses and those arising from specific hazards;
- When necessary, ensure that an ambulance or other professional medical help is called.
- Emergency first-aid training should help an appointed person cope with an emergency and improve their competence and confidence.

3. What is to be done in an emergency?

- Cardiopulmonary resuscitation (CPR);
- First aid for the unconscious casualty;
- First aid for the wounded or bleeding.

4. What are some of the requirements for effective First Aid at various organisations?

- Provide adequate and appropriate equipment, facilities and qualified first aid personnel.

- Make suitable and sufficient assessment of the risks to the health and safety of their staff at work, and others who may be affected by their undertaking.
- To identify what measures they need to take to prevent or control these risks.
- The Management and/or head of organisation should regularly review the first-aid needs (at least annually), and make subsequent changes at the earliest.
- The head of the organisation must inform all staff (including those with reading and language difficulties) about the first-aid arrangements. This should include the location of equipment, facilities and first-aid personnel, and the procedures for monitoring and reviewing the organisation's first-aid needs.
- A simple method of keeping people informed is by displaying first-aid notices. The information should be clear and easily understood.

5. How many first-aid personnel are required?

There are no rules on exact numbers. Management has to make a judgement based on its own circumstances and a suitable and sufficient risk assessment.

A lower risk place of work (e.g. shops, offices, libraries), with 50-100 employees, should consider having at least one first aider;

A medium risk place of work (e.g. light engineering and assembly work, food processing) with 100-500 employees or people on campus, should consider having at least one first aider for every 50 employees (or part thereof).

A high risk place of work (e.g. manufacturing units) with 500-1000 or more employees or people on campus, should consider having at least one first aider for every 50 employees (or part thereof).

6. First Aid Training: Procedures and Refreshers

Training courses cover a range of first aid competencies. Every organisation should arrange appropriate training for their first-aid personnel. It is helpful to let the training organisation know in advance of any particular areas that should be covered.

7. First-Aid Materials, Equipment and First Aid Facilities

First-Aid containers for travel

Before undertaking any off-site activities, the head of institution should assess what level of first-aid provision is needed. It is recommended that, where there is no special risk identified, a minimum stock of first-aid items for travelling first-aid containers is:

- A leaflet giving general advice on first aid;
- Six individually wrapped sterile adhesive dressings;
- One large sterile un-medicated wound dressing -approximately 18cm x 18cm;
- Two triangular bandages;
- Two safety pins;
- individually wrapped moist cleansing wipes;
- One pair of disposable gloves.

Equivalent or additional items are acceptable.

8. School Transport/Public Service Vehicles

Transport Regulations require that all minibuses and public service vehicles have on board a first-aid container with the following items:

- Ten antiseptic wipes,
- Packaged foil
- One conforming disposable bandage (not less than 7.5 cms wide);
- Two triangular bandages;
- One packet of 24 assorted adhesive dressings;
- Three large sterile unmediated ambulance dressings (not less than 15 cm x 20 cm);
- Two sterile eye pads, with attachments;
- Twelve assorted safety pins;
- One pair of rust less blunt-ended scissors

This first-aid box/container shall be: Maintained in a good condition; Suitable for the purpose of keeping the items referred to above in good condition; Readily available for use; and Prominently marked as a first-aid container.

FAQ'S-PERTAINING TO SPECIFIC EMERGENCIES

- Shock
- Respiration
- Fractures
- Dislocations
- Displaced Cartilage Of The Knee
- Sprains
- Strains and Ruptured Muscles
- Crush Injuries
- Burns and scalds
- The Nervous system
- Unconsciousness (Insensibility)
- Poisons
- Miscellaneous Conditions

7.1 Shock

Ques. 1. What is shock ?

Ans. A condition of severe deterioration of the vital functions. It is associated with changes in the circulatory system varying from temporary weakness to complete failure. Almost always associated with low blood pressure.

Ques. 2. How does its severity vary ?

Ans. With the nature and extent type of the injury and the amount and rapidity of the bleeding.

Ques. 3. What is the most important cause of shock ?

Ans. The loss of whole blood or plasma from the circulation severe infection.

Ques. 4. How many types of shock are there ? Name them.

Ans. Two : nerve shock and established shock.

Ques. 5. What are the general signs and symptoms of shock ?

Ans. These may vary from a transient attack of faintness to a state of collapse and there may be:-

(1) giddiness and faintness,
(2) Coldness,
(3) nausea,
(4) pallor,
(5) cold clammy skin,
(6) a slow pulse at first which tends to become progressively more feeble and rapid,
(7) vomiting,
(8) unconsciousness,

Ques. 6. In what conditions is shock likely to be severe ?

Ans. (1) Major fractures and crush injuries, including those injuries where bleeding is concealed.

(2) Extensive burns and scalds.

Ques. 7. What is the general treatment of shock ?

Ans. (1) Re-assure the casualty ;

(2) Lay him on his back with the head low and turned to one side unless there is injury to the head, abdomen or chest when the head and shoulders should be slightly raised and supported. If vomiting seems likely or If there is interference with breathing, place him in the three quarter prone position ;

(3) Loosen clothing about the neck, chest and waist ;

(4) Wrap him in a blanket or rug ;

(5) If he complains of thirst he may be given sips of water, tea, coffee, or other liquid but not alcohol ;

(6) Do not apply heat or friction to the limbs : hot water bottles should not be used.

Ques. 8. What is the special treatment of an established shock ?

Ans. It must be borne in mind that in severe cases transfusion and surgery are matters of grave urgency if life is to be saved. It is unwise to delay transport to hospital for as long as even five minutes except to deal with failing respiration, to stop severe bleeding, to dress a sucking wound of the chest or to secure a badly broken limb. Nothing should be given by the mouth ; tilt the stretcher so that the level of the head is lower than the rest of the body, except, in cases of head, chest or abdominal injury ; remove urgently to hospital.

7.2 Respiration

Ques. 1. What is respiration ?

Ans. The means by which the tissues or organs of the body are supplied with the oxygen which is essential if they are to continue to live and function efficiently.

Ques. 2. Of what does the respiratory system consist ?

Ans. (1) The air passages and lungs – the respiratory tract.

(2) The muscles concerned with the mechanism of respiration.

(3) The nerve centre in the brain – the respiratory centre which controls and regulated their action.

Ques. 3. How does air reach the lungs ?

Ans. It enters through the nose and mouth and passes down the back of the throat (pharynx) ; then through the organ of the voice (larynx) into the windpipe (trachea); then through the right and left air tubes (bronchi) to the right and left lungs (where the bronchi divide into smaller tubes (bronchioles) and finally enters the air sacs (alveoli) of the lungs.

Ques. 4. What prevents food and fluids entering the larynx ?

Ans. A flap (epiglottis) which closes over the top of the larynx while food or fluid is being swallowed.

Ques. 5. What happens when air enters the Air sacs of the lungs ?

Ans. It is brought into intimate association with the blood in the capillaries of the lungs and the interchange of gases takes place.

Ques. 6. Where are the lungs situated ?

Ans. They occupy the greater part of the chest (thorax), one on each side. They lie immediately above the diaphragm and are protected by the ribs.

Ques. 7. Describe the lungs.

Ans. The lungs consist of a large number of alveoli, capillaries, veins, arteries and connective tissue. The part of the lung where the bronchus and the large arteries enter and the large veins emerge is known as the root of the lung. The lungs are entirely covered by a membrane, the pleura, which at the root of the lung is folded back on itself and lines the inside of the chest wall.

Ques. 8. How is respiration normally effected ?

Ans. By the action of the diaphragm and the ribs.

Ques. 9. Name the three phases of respiration.

Ans. 1. Cellular respiration

2. transport of respiratory gases

3. ventilation of the gas exchange organs (breathing).

7.3 Injuries to Bones and Joints Fractures

Ques. 1. What is a Fracture ?

Ans. It is a term used to indicate that a bone is broken or cracked.

Ques. 2. What are the causes of fracture ?

Ans. (1) Direct force, when the bone breaks on the spot where the force is applied :

(2) Indirect force, when the bone breaks at some distance from the spot where the force is applied :

(3) Muscular action, when the bone breaks due to a sudden violent contraction of the muscles attached to it.

Ques. 3. What is meant by a fracture resulting from indirect force ?

Ans. When a bone breaks at some distance from the spot where the force is applied.

Ques. 4. Name the three main types of fracture

Ans. (1) Simple (closed).

(2) Compound (open).

(3) Complicated.

Ques. 5. What is a simple fracture ?

Ans. When there is no wound leading down to the broken bone.

Ques. 6. What is a compound fracture ?

Ans. When there is a wound leading down to the broken bone or when the fractured ends protrude through the skin, thus allowing germs to obtain access to the site of the fracture.

Ques. 7. What is a complicated fracture ?

Ans. When there is associated injury to some important internal structure such as brain, spinal cord, nerve, lung, liver, spleen, kidney, major blood vessel, or when a fracture at a joint is associated with a dislocation. A complicated fracture may be either closed or open.

Ques. 8. What other types of fractures are there ?

Ans. (1) Comminuted.

(2) Impacted.

(3) Greenstick.

(4) Depressed.

Ques. 9. What are the general signs and symptoms of fracture ?

Ans. (1) Pain at or near seat of fracture.

(2) Tenderness or discomfort on gentle pressure over the affected area.

(3) Swelling about the site of fracture.

(4) Loss of power.

(5) Deformity of the limb.

(6) Irregularity of the bone.

(7) Grating of the bone ends (crepitus).

(8) Unnatural movement.

Ques. 10. What other indications may assist diagnosis of fracture ?

Ans. Comparison with the uninjured side ; marks on the clothing of skin. The snap of the bone may have been heard or felt.

Ques. 11. What are the general rules for the treatment of fractures ?

Ans. (1) Treat the fracture on the spot ;

(2) Steady and support the injured parts ;

(3) Immobilise the fracture.

Ques. 12. In what circumstances may a casualty be moved before treating a fracture ?

Ans. If life is in immediate danger from some other cause.

Ques. 13. How should immobilization be effected ?

Ans. By the use of :

(1) Body bandages ;

(2) Splints and bandages.

Ques. 14. What precautions must be taken when applying bandages ?

Ans. Bandages must not be applied so tightly as to prevent circulation of the blood. Padding must be used.

Ques. 15. What should be done if further swelling occurs ?

Ans. Bandages must be loosened at once ciently to allow circulation to return.

Ques. 16. How should a bandage be applied under the body when the casualty is lying down ?

Ans. Double the bandage over the end of a splint of similar object and pass it under the trunk, or lower limbs where there are natural hollows (the neck, loins, knees, and region just above the heels).

Ques. 17. What requirements must splints fulfill ?

Ans. They must be long enough to immobilize the joint above and below the fracture and be sufficiently firm and wide. They should be well padded to fit accurately to the limb and be applied over clothing.

Ques. 18. How may splints be improvised ?

Ans. Fro a walking stick, of umbrella, broom or brush handle, piece of wood cardboard or firmly folded paper.

Ques. 19. When a fracture of the skull occurs what other damage may be caused ?

Ans. The brain and the nervous system may be injured causing concussion and compression.

Ques. 20. What are the varieties of fracture of the skull and how are they caused ?

Ans. (1) Fracture of the upper part or of the sides, generally caused by direct force ;

(2) Fracture of the base of the skull, generally the result of indirect force.

Ques. 21. What signs suggest the presence of a fracture of the base of the skull ?

Ans. Blood of fluid may issue from the ear channel, escape from the nose, or may be swallowed and afterwards vomited. The fracture may involve the orbit causing a bloodshot eye and later a ‘black-eye’.

Ques. 22. What is the treatment of a fracture of the skull ?

Ans. (1) a. If breathing is not noisy, lay the casualty on his back, with head and shoulders slightly raised and supported, turn his head to one side. Should there be bleeding from an ear, place the head so that the affected ear is on the other side.

b. If breathing is noisy with bubbling through secretions, lay the casualty on his side in the three-quarter pron position (half-way between side and face-down position); support the casualty in this position with a paid is front of the chest or draw up from upper knee ; make sure that the throat and air passages are free from obstruction. If there is bleeding from an ear, arrange the position of the casualty so that affected ear is on the lower side.

(2) Keep a continuous and careful watch on the casualty.

(3) Make no attempt to rouse him.

(4) Maintain the position of the head during transport and avoid all unnecessary movement.

Ques. 23. What are the special signs and symptoms of fracture of the lower jaw ?

Ans. (1) Difficulty in speaking ;

(2) Excessive flow of saliva which is frequently blood-stained ;

(3) Pain which is increased by speaking, by jaw movements and by swallowing ;

(4) Irregularity of the teeth ;

(5) Crepitus.

When there has been extensive jaw damage, the tongue is liable to slip backwards and interfere with breathing ; there may also be hemorrhage if the tongue is injured.

Ques. 24. What is the treatment of fracture of the lower jaw ?

Ans. (1) Warn the casualty not to speak ;

(2) Instruct him to lean forward, place the palm of your hand against the injured bone and press it gently against the upper jaw ;

(3) Place the centre of a narrow bandage under the casualty's chin, carry one end upwards over the top of his head and cross with the other end above the ear. Carry the shorter end low down across the front of the forehead and the longer end in the opposite direction round the back of the head. Tie off above the other ear.

(4) If it appears theat the casualty is likely to vomit, remove the bandage, turn his head to the sound side and support the jaw with the palm of your hand. Re-apply the bandage when the vomiting has ceased.

Ques. 25. How should a casualty with a fractured jaw be transported ?

Ans. (1) If the casualty is able to travel in a sitting position, instruct him to sit with his head held forwards and downwards to prevent his tongue from slipping backwards into his throat.

(2) If the casualty is to be transported as a stretcher case (e.g., when fracture is comminuted or extensive) do not apply a bandage to the jaw. When the treatment of other important injuries does not make the following routine impracticable, turn the casualty face downwards on a blanket, lift him by the blanket lift' and place him on the stretcher with his head projecting over the canvas end, his forehead being supported by bandage running between the stretcher handles and his chest placed on a folded blanket to allow his head to hang forward.

Ques. 26. What special assistance should be given during the loading of the ambulance ?

Ans. An assistant must support the head, taking care to ensure that the casualty's face and upper limbs do not get injured.

Ques. 27. Where should the casualty be placed in the ambulance ?

Ans. If possible, a lower berth should be selected so that blood and vomit may be collected in a bowl more easily.

Ques. 28. How may a fracture of the spine be caused ? Give examples.

Ans. (1) By direct force, e.g., the fall of a heavy weight across the back or falling from a height on the back across a bar.

(2) Indirect force, e.g. a broken neck which may result from a fall on the head, and fracture in the lumbar region due to sudden over-flexion or jerking the spine.

Ques. 29. What grave complication may be caused by a fracture of the spine ?

Ans. Injury to the spinal cord or to the nerves issuing from it.

Ques. 30. What is the treatment of cases of spinal injury when medical aid is readily available?

Ans. (1) Immediately warn the casualty to lie still ;

(2) If he is unconscious, ensure that breathing does not become obstructed by the tongue;

(3) Do not move him but cover him with a blanket to ensure warmth and comfort:

(4) Keep him under careful observation pending the arrival of medical aid.

Ques. 31. What is the treatment of cases of spinal injury when medical aids not readily available?

Ans. (1) Immediately warn the casualty to lie steady.

(2) If he is unconscious, ensure that breathing does not become obstructed by the tongue;

(3) Place pads between his ankles, knees and thighs ;

(4) Apply a figure of 8 bandage round his ankles and feet, the knot being tied under the soles of the feet.

(5) Apply broad bandages round his knees and thighs over the intervening pads ;

(6) Make preparations for removal to shelter.

Ques. 32. How should a stretcher be prepared for the transportation of casualty suffering from a spiritual injury ?

Ans. (1) The soft bed of a canvas type of stretcher must be stiffened, preferably by placing short boards across the stretcher, or long ones lengthwise on the canvas only if these are available ;

(2) Cover the stretcher with a folded blanket and then 'blanket the stretcher;

(3) Place pillows or pads in readiness on the stretcher in a position to support the neck and small of the back to preserve the normal curves of the spine.

Ques. 33. How should the movement of the casualty's neck and trunk be prevented ?

Ans. One bearer must apply firm but gentle support to the head and face, so as to prevent neck movements and another bearer must steady and support the lower limbs to prevent trunk movements.

Ques. 34. For how long should this support be given ?

Ans. It must be continued until the casualty has been placed on the stretcher.

Ques. 35. What may be used if a stretcher is not available ?

Ans. A narrow shutter door or board of at least the same width and length as the casualty.

Ques. 36. How may ribs be fractured ?

Ans. (1) By direct force ;

(2) By indirect force.

Ques. 37. Describe the special signs and symptoms of fracture of ribs.

Ans. (1) Pain, which may be sharp and cutting, at the site of fracture, increased by deep breathing or coughing ;

(2) The casualty usually takes short shallow breaths in an attempt to limit movement and to decrease the pain ;

(3) A condition resembling crepitus may occasionally be noticed when a hand is placed over the broken ribs, but the casualty must on no account be instructed to take deep breaths ;

(4) If internal organs are affected there may be signs and symptoms of internal hemorrhage.

Ques. 38. What grave complication may be present ?

Ans. An open wound in the chest wall over the fracture may allow direct access of air to the chest cavity, the air being sucked in and blown out as the casualty breathes, instead of going in and out of the lungs.

Ques. 39. What is the treatment of an uncomplicated fracture of the ribs ?

Ans. (1) Apply two broad bandages round the chest firmly enough to afford support with the centre of the first immediately below and that of the second immediately above the site of the pain. The upper bandage must overlap the lower by half its width. The bandages may be applied over close fitting clothing, but under a jacket or coat. Hard objects (keys, etc.) should be removed from pockets that will be under the bandages ;

(2) Before tying the bandages instruct the casualty to empty the chest by breathing out as far as possible. Tie the knots a little to the front of the uninjured side ;

(3) Support the arm on the injured side in an arm sling ;

(4) If the bandages do not relieve the pain they should be removed.

Ques. 40. What is the treatment of a complicated fracture of the ribs?

Ans. (1) Do not apply bandages except where there is a sucking chest wound :

(2) Lay the casualty down with head and shoulder raised and the body inclined towards the injured side:

(3) Support in the position by means of a folded blanket applied lengthwise to his back:

(4) Support the limb on the injured side in an arm sling.

Ques. 41. How showld a casualty suffering from a fracture of the ribs be transported?

Ans. If the fracture is complicated, the casualty should be transported as a stretcher case; in uncomplicated case, the sitting position is usually more comfortable.

Ques. 42. What is the treatment of fracture of the breast-bone ?

Ans. (1) Undo tight clothing about neck, chest and waist :

(2) Place the casualty on his back in the most comfortable position with due regard to associated injuries :

(3) Keep him covered;

(4) Transport as a stretcher case.

Ques. 43. How may the collar-bone be fractured?

Ans. By indirect force such as a fall on the point of the shoulder or on the palm of the hand when the arm is outstretched from the side.

Ques. 44. Describe the special sign and symptoms of a fracture of the collar-bone.

Ans. The arm on the injured side is partly helpless and the casualty usually supports it at the elbow with the hand of the uninjured side. The broken ends may be felt to overlap, the outer fragment being the lower.

Ques. 45. What is the treatment of fracture of the collar-bone?

Ans.
(1) Immediately support the arm on the injured side ;

(2) Undo the brace (if worn) on the injured side, take off overcoat but do not remove jacket;

(3) Place padding between upper arm and chest;

(4) Bandage the upper arm on the injured side to the side of the chest with a broad bandage, leaving the forearm free;

(5) Support the upper limb on the injured side in a triangular sling;

(6) Feel the pulse on the injured side to ensure that there is no interference with the circulation in the limb;

(7) If shock is not severe, transport casualty as a sitting case, or assist as a walking case;

Ques. 46. What is the treatment of fracture of the shoulder- blade?

Ans.
(1) Do not remove the jacket: unfasten the brace (if worn) on the injured side;

(2) Support the upper limb of the affected side in a triangular sling ;

(3) Transport as a stretcher or sitting case according to the general condition of the casualty.

Ques. 47. In what parts of the upper arm may a fracture occur ?

Ans. (1) Close to the shoulder ;

(2) Near the middle of the shaft ;

(3) Close to or involving the elbow joint.

Ques. 48. What is a colles's fracture?

Ans. A fracture which occurs at the lower end of the radius (forearm bone) and which frequently result from a fall on the outstretched hand, usually after age of 40 year, due 10 weak bones.

Ques. 49. What is the treatment of a fracture of the upper limb when the elbow can be bent without difficulty or increasing pain.

Ans. (1) Do not remove the casualty's jacket.

(2) Bend his elbow and lay the injured link against his chest with fingers just touching the opposite shoulder;

(3) Apply adequate padding between the link and the chest;

(4) Except in cases of colles's fracture injuries involving the wrist, fix the hand with a collar and cuff sling taking care that there is no constriction.

(5) Secure the limb firmly to the chest using two broad bandages;

(6) Ensure there is no interference with the circulation of the limb;

(7) Transport as a sitting or walking case.

Ques. 50. What is the treatment of all fractures of the upper limb when the elbow cannot be bent with out difficulty or increasing pain and transport by stretcher is necessary?

Ans. (1) Place the limb by the side palm to thigh, with adequate intervening padding;

(2) Secure the limb to the trunk and lower limb by three broad bandages tied round the arm and trunk, and the wrist and thigh.

Ques. 51. What is the treatment of all fracture of the upper limb when the elbow cannot be bent without difficulty or increasing pain and the casualty can ride sitting or is fit to walk?

Ans. (1) Apply a well-padded splint to the front of the arm and forearm, long enough to reach from just below the armpit to below the wrist;

(2) Secure by there broad bandages – one above the fracture, one below the fracture and one round the wrist.

Ques. 52. What is the treatment when a fracture is near the wrist?

Ans. Treatment as for all fracture of the upper limb when the elbow can be bent, with the exception that the collar and cuff sling is omitted. Ensure that there is sufficient padding between the limb and chest and the limb and the broad bandages.

Ques. 53. What is the treatment of fracture of the forearm when it is necessary to use splints?

Ans. (1) Place the forearm at right angle to the upper arm, across the chest, keeping the thumb uppermost and the palm of the hand towards the body ;

(2) Apply well-padded splints on the front and back of the forearm from the elbow to the fingers ;

(3) Apply two bandages embracing both splints – one above the fracture and the other round the wrist first and completed as a figure – of – 8 round the hand and wrist ;

(4) Support the limb in an arm sling.

Ques. 54. Describe the special signs and symptoms of fracture of the pelvis.

Ans. (1) Pain of varying intensity in the region of the hips and loins, increased by moving or coughing;

(2) Inability to stand despite the absence of any injury to the lower limbs;

(3) Internal hemorrhage may occur and may be severe;

(4) There may be a desire to pass water frequently, though with difficulty or inability to do so. If passed, the urine may be of dark colour.

Ques. 55. What is the general treatment of fracture of the pelvis ?

Ans. (1) Lay the casualty in the position which gives the greatest comfort, preferably on his back with the knees straight. If he wishes to bend the knees, they should be supported on a folded blanket;

(2) Warm the casualty not to pass water if he can avoid it;

(3) a. Where the distance is short and the casualty is likely to reach hospital in 20-30 minutes transport as a stretcher case as quickly as possible in the position which is most comfortable; do not bandage;

b. Where some time must elapse before the casualty can be taken to hospital or where the journey is long or rough:

(i) gently apply two broad bandages round the pelvis overlapping by half, and with the centre in line with the hip-joint of the affected side. Tie off on opposite side of the body, but if site of fracture is doubtful tie off in the most comfortable position.

(ii) Put padding between ankles and feet,

(iii) Apply a figure-of- 8bandage round ankles and feet and a broad bandage round both knees.

Ques. 56. Where and how can a fracture of the thigh bone (femur) be caused in elderly people?

Ans. At the neck of the bone and frequently from a relatively slight cause such as tripping. Such a fracture may be mistaken for a badly bruised hip.

Ques. 57. Why must a fracture of the femur always be regarded as a serious injury ?

Ans. Because of the great shock which accompanies this fracture and the possibility of extensive hemorrhage into the surrounding tissues.

Ques. 58. What additional signs may help in the diagnosis of a fracture of the femur?

Ans. Shortening, varying half-an-inch to three inches, is often noticeable and the position of the foot which usually lies on its outer side.

Ques. 59. How may the knee-cap (Patellar bone) be broken?

Ans. By direct force but more frequently by muscular action.

Ques. 60. What special signs and symptoms may be present?

Ans. The limb is quite helpless ; there may be marked swelling , some irregularity and a gap felt between the broken fragments.

Ques. 61. What is a pott's fracture ?

Ans. A fracture of the fibula (bone of lower limb/leg) two or there inches above the ankle.

Ques. 62. What is the treatment of fractures of the lower limb. When journey to hospital is expected to take less than about 20 minutes?

Ans. If possible, tie the feet and the knees together, with pads between ankles, but avoid attempts to place the limbs in its natural position if this causes more pain .Place the casualty on a stretcher with as little disturbance as possible .Maintain the position of the limb and control movement with pillows, cushions or bandages. speed and gentle handling are of the greatest importance.

Ques. 63. What is the treatment of a fracture of the thigh when rough ground has to be covered or a long journey undertaken?

Ans.

(1) Apply a well – padding splint between the legs extending from the crotch to the foot;

(2) Tie the feet and ankles together with a figure- of-8- bandage to include the splint, using additional padding if required.

(3) Apply a well-padded splint to the outside of the body extending from just below the armpit to the foot;

(4) Secure by seven bandages:-

(a) the chest, just below armpits,

(b) the pelvis, in line with hip joints,

(c) both ankles and feet,

(d) Both thighs, where possible above the fractures.

(e) both thighs, below the fracture,

(f) both legs

(g) both knees.

Ques. 64. What is the special treatment of a fracture of the knee-cap when rough ground has to be covered or a long journey undertaken?

Ans. (1) Lay the casualty on his back supporting his head and shoulders.

(2) Raise and support the injured leg in a comfortable position

(3) Apply a splint along the back of the limb, reaching from the buttock to beyond the heel, well-padded under the natural hollow of the ankle.

(4) Secure splint to the limb by three band ages :-

(a) Broad bandages round the thigh,

(b) A narrow bandage, as a figure-of-8, round the ankle and foot,

(c) A narrow bandage above and below the knee-cap, crossing at the back of the knee.

During transport, keep the end of the splint raised, resting the lower end of the splint on a box, folded blanket or similar article.

Ques. 65. What is the treatment of a fracture of the leg when rough ground has to be covered or a long journey undertaken?

Ans. (1) Place a well-padded splint between the limbs extending from the crotch to the foot;

(2) Bring the feet as nearly as possible into line without using force or causing pain;

(3) Tie the feet and ankles together with a figure-of-8 bandage, using additional pads between ankles and feet if necessary;

(4) Apply a broad bandage round both thighs;

(5) Bandage the knees together with a broad bandage;

(6) Apply two bandages (narrow or broad according to the size of patient) one above and one below the fracture.

When one limb is affected, the bandages should be tied off over the uninjured limb, but when both limbs are fractured, over the side showing least injury.

Ques. 66. What is the treatment of a crushed foot when a wound is present or suspected?

Ans. (1) Remove the shoe or boot and sock or stocking ;

(2) Treat the wound ;

(3) Apply a padded splint to sole of foot reaching from the heel to the toes;

(4) Secure with a figure-of-8 bandage ;

(5) Raise the foot and support in a comfortable position.

Ques. 67. What is the treatment of a crushed foot when no wound is present or suspected?

Ans. (1) Do not remove the shoe or boot;

(2) Secure with a figure –of-8 bandage ;

(3) Raise and support the foot in a comfortable position.

Ques. 68. How should casualties with fractures of a lower limb be transported?

Ans. They must be transported by stretcher.

7.4 Dislocations

Ques. 1. What is a dislocation ?

Ans. The displacement of one or more bones at a joint .

Ques. 2. What joints are most frequently dislocated?

Ans. The shoulder, the elbow, the thumb, the fingers and the lower jaw.

Ques. 3. What are the signs and symptoms of a dislocation?

Ans. (1) Pain of a sickening character at or near the joint;

(2) Fixed joint (the casualty can not move the joint normally);

(3) Deformity (the limb assumes an unnatural position and appears misshapen at the joint);

(4) Swelling at the joint may occur.

Ques. 4. What is the treatment of a dislocation when the accident occurs out of doors?

Ans. (1) Do not attempt to reduce a dislocation: obtain medical aid at once;

(2) Steady and support the limb and secure it in the most comfortable position, using padding in order to lessen, the effects of jolting during transport.

Ques. 5. What is the treatment of a dislocation when the casualty is indoors?

Ans. (1) Do not attempt to reduce a dislocation : obtain medical aid at once ;

(2) Place the casualty on a couch or bed in the most comfortable position : support the limb with pillows, cushions, etc.

Ques. 6. What is the treatment of a dislocation of the lower jaw?

Ans. (1) Do not attempt to reduce the dislocation : obtain medical aid at once : remove any denture ;

(2) Support the lower jaw by a bandage tied over the top of the head.

7.5 Displaced Cartilage Of The Knee

Ques. 1. How do the signs of a case of displaced cartilage of the knee differ from those of a dislocation?

Ans. Deformity is not present.

Ques. 2. What is the treatment of a displaced cartilage of the knee?

Ans. Similar to that of a dislocation.

7.6 Sprains

Ques. 1. What is a sprain?

Ans. The wrenching or tearing of the ligament.

Ques. 2. What are the signs and symptoms of a sprain?

Ans. (1) Pain at the joint;

(2) Inability to use joint without increasing the pain;

(3) Swelling and later, bruising.

Ques. 3. What is the treatment of a sprain?

Ans. (1) Place the limb in the most comfortable position, preferably raised, and prevent further movement.

(2) Expose the joint and apply a firm bandage ;

(3) Wet the bandage with cold water and keep it wet ;

(4) When this ceases to give relief, take the bandage off and re-apply it.

7.7 Strain and Ruptured Muscles

Ques. 1. What is a strain?

And. The overstretching of a muscle.

Ques. 2. What are the signs and symptoms of a strain?

Ans. (1) A sudden sharp pain at seat of injury;

(2) In the case of a limb, the muscles may swell and cause server cramp. If the back is affected, the casualty may be unable to stand upright;

(3) Further exertion is difficult or impossible.

Ques. 3 What is the treatment of strain?

Ans. Place the casualty in the most comfortable position; steady and support the injured part ;if he has to go a long journey, it may help to immobilize the limb like a fracture.

7.8 Crush Injuries

Ques. 1. What can be done for a trapped casualty whose release is delayed?

Ans. (1) Watch for and try to prevent the onset of established shock;

(2) If casualty is conscious and there is no sign of abdominal injury, give two to four pints of water by mouth. Tea, coffee may be given and the fluid should be given slowly to avoid causing nausea ;

(3) When the casualty is released, raise the injured part and leave uncovered. The circulation should be allowed to return gradually. Heat must never be applied.

7.9 Burns and Scalds

Ques. 1. How is a burn caused?

Ans. (1) By dry heat (fire, piece of hot metal, the sun);

(2) By contact with any object charge with high tension electric current, or by lightning ;

(3) By friction (contact with a revolving wheel (brush burn), fast-moving rope or wire);

(4) By a corrosive chemical (acids- sulphuric, nitric, hydrochloric; or alkalis- caustic soda, caustic potash, strong ammonia or quicklime).

Ques. 2. How is a scald caused?

Ans. By moist heat such as boiling water, steam, improperly applied poultice, hot oil or tar.

Ques. 3. What are the effects of a burn or scald?

Ans. There may be reddening of the skin, or blister formation, or destruction of the skin, or destruction of the deeper tissues, pain, if existent, is very serve.

Ques. 4. What are the dangers in cases of burns and scalds?

Ans. The immediate danger is from shock which may be severe and in some cases made worse by intense pain and loss of plasma into the burnt area. Later there is danger from septic infection.

Ques. 5. If a person's clothing catches fire what should be done?

Ans. Approach him holding a rug, blanket, coat or tablecloth in front of yourself for protection. Wrap it round him, lay him flat and smoothen the flames.

Ques. 6. What should be done if a person's clothing catches fire when alone?

Ans. He should roll on the floor, smothering the flames with the nearest available wrap and call for assistance. **On no account should he rush into the open air**.

Ques. 7. Give the general rules for treatment of burns and scalds.

Ans.

(1) Avoid handling the affected areas more than is necessary : see that your hands are as clean as possible by washing them ;

(2) Do not apply lotions of any kind;

(3) Do not remove burned clothing and do not break blisters;

(4) Cover the area (including the burned clothing) with a prepared dry sterile dressing if possible, otherwise clean, freshly laundered cloth or some similar material may be used ;

(5) Bandage firmly except when blisters are present or suspected in which case bandage lightly ;

(6) Immobilise the affected area by suitable means ;

(7) Take such steps as are appropriate to treat for shock.

Ques. 8. What further treatment is necessary in a major case?

Ans. Remove casualty to hospital as quickly as possible. The casualty will probably require an anesthetic, so that ordinarily nothing should be given by the mouth. If medical aid is delayed for at least four hours, give drinks of water to which salt has been added in the proportion of half a teaspoon to two tumblers of water, with the addition of approximately half a teaspoon of bicarbonate soda (if available).

Ques. 9. What further treatment is given in a minor case?

And. Give large quantities of warm fluids, preferably weak tea sweetened with sugar.

Ques. 10. What should be done when the face is burnt?

Ans. Cut a piece of clean cloth as dressing in the shape of a mask, with a hole for breathing. Maintain the mask in position by a bandage as for a fractured jaw.

Ques. 11. What is the treatment of a burn caused by a corrosive acid?

Ans. (1) Thoroughly flood the part with water ;

(2) Bathe the part freely with an alkaline solution such as two teaspoons (one dessertspoon) of bicarbonate of soda (baking soda) or carbonate of soda (washing soda) to one pint of warm water;

(3) Apply the general rules for paint the treatment of burns but remove contaminated clothing as quickly as possible to prevent further injury. Take reasonable precautions against burning yourself with contaminated clothing.

Ques. 12. What is the treatment of a burn caused by a corrosive alkali?

Ans. (1) If the burn is caused by quicklime, brush off any that remains on the part;

(2) Thoroughly flood the part with water ;

(3) bathe the part freely with a weak acid solution, such as vinegar or lemon juice, diuted with an equal quantity of warm water;

(4) Apply the general rules for the treatment of burns but remove contaminated clothing immediately taking reasonable precautions.

Ques. 13. What is the treatment when the eye is injured by a corrosive chemical ?

Ans. Instruct the casualty to blink his eyelid under water or flush the eye with copious supplies of water. Apply a soft pad of cotton wool over his eye and keep the pad in position by a shade or bandage applied lightly, and see that he obtains medical aid as soon as possible.

7.10 The Nervous System

Ques. 1. Name the two systems of nerves which regulate and control the movement and functions of the body?

Ans. The central nervous system and the autonomous nervous system

Ques. 2. What comprises the cerebro-spinal system?

Ans. The brain, Spinal cord and nerves.

Ques. 3. What do the sensory nerves do?

Ans. Convey sensations to the brain.

Ques. 4. What do the motor nerves do?

Ans. They convey messages from the brain.

Ques. 5. Describe the brain.

Ans. The brain is situated within the skull, is the seat of the intellect, the emotions and the will. It is the organ where impressions received by the sensea and brought by the sensory nerves are analyzed and from which orders for appropriate action are given through the motor nerves.

Ques. 6. Describe the spinal cord.

Ans. It extends from the brain, consists of nerve tissues and lies within the vertebral canal of the spine. It leaves the brain through an opening in the base of the skull and extends downwards as far as the second lumbar vertebra.

Ques. 7. Describe the nerves.

Ans. They proceed from the brain and spinal cord in pairs as pearly-white trunks, and their branches can be traced throughout the tissue of the body.

Ques. 8. What happens when a nerve is severed?

Ans. There is loss of power and/or sensation in the region in which its branches are distributed.

Ques. 9. Describe the autonomic system .

Ans. It consists of a network of bodies of nerve tissue(ganglia) and connecting nerves, and it controls the involuntary muscles and regulates the vital functions of the body.

Ques. 10. Where is an important part of his network situated?

Ans. In the upper part of the abdomen behind the stomach. It is known as the solar plexus.

Ques. 11. Is the autonomic system under the control of the will?

Ans. No, it acts at all times whether awake or in sleep.

7.11 Unconsciousness

Ques. 1. What is unconsciousness ?

Ans. It is due to an interruption of the action of the brain through some interference with the functions of the nervous system. It is an important indication not only in diseases of or injury to the brain, but of many serious injury or diseases of other parts of the body.

Ques. 2. Name the two degrees of unconsciousness, apart from sleep .

Ans. (1) By speaking to the casualty ; in stupor, these can be degree of stupor present : in coma, there is no response ;

(2) By touching the eyelashes or opening the eyelids ; in stupor, the casualty objects to the eyelashes being touched or resists an attempt to draw back the eyelids : in coma, there is no response ;

(3) By the response of the pupils of the eyes to light. If a bright light is flashed into the eyes, or if the eyes are shaded and the shade suddenly removed, the pupils become smaller in stupor but remain fixed in deep coma.

Ques. 3. What are the common causes of unconsciousness?

Ans. (1) Ensure an abundant supply of fresh air and that the air passages are not obstructed ; for example, remove from harmful gases or impure atmosphere, open windows and doors, keep crowd back, remove false teeth ;

(2) If breathing has stopped or appears to be failing, turn the casualty into the prone position and commence artificial respiration;

(3) If breathing is not noisy, lay the casualty on his back with the head and shoulders slightly raised and supported, and turn the head to one side; be prepared to modify the position if breathing becomes difficult or obstructed;

(4) If breathing is noisy (bubbling through secretion) turn the casualty into the three-quarter prone position: support in this position with a pad in front of the chest or draw up the upper knee. If the casualty is on a stretcher, raise the foot of the stretcher to help drain secretion from the lungs;

(5) Undo all tight clothing about the neck chest and waist;

(6) Apply the special treatment for the condition that has caused the unconsciousness

(7) Wrap in a blanket but do not apply heat

(8) Do not leave the casualty until he has been placed in the charge of a responsible person : keep a continuous and careful watch for any change in his conditions

(9) Do not attempt to give food or fluids while the casualty is unconscious;

(10) Remove him to shelter – as a stretch case- as soon as possible;

(11) When he returns to consciousness moister the lips with water: unless an abdominal injury is suspected sips of water may be given if he complains of thirst

Ques. 4. What is concussion?

Ans. A condition of widespread disturbance of the function of the brain which comes on as a result of injury to the head and sometimes of the spine.

Ques. 5. How many concussions can be caused?

Ans. By a blow on the head, a fall from a height on the feet or the buttocks, or a blow on the point of the jaw may all cause concussion by jarring through the base of the skull.

Ques. 6. What are the signs and symptoms of concussion?

Ans. There is loss of consciousness of varying degree together with the associated signs and symptoms of nerve shock, there may be a momentary black-out' or temporary confusion, stupor or coma, or the condition may pass into compression without return to consciousness. If insensibility continues for some time, a further cause may be suspected.

Ques. 7. What may accompany recovery?

Ans. Nausea and vomiting and there is frequently a complete loss of memory of events before and after the injury.

Ques. 8. What is the treatment of concussion?

Ans. Apply the general rules for the treatment of an unconscious person. No case of head injury should be regarded lightly, and all unnecessary movements should be avoided. A caution should be given to a person who has been unconscious even for only a moment to not resume physical or mental activity without the advice of a doctor.

Ques. 9. What is compression?

Ans. A condition due to actual pressure on some part of the brain where in the skull has blood clot or a piece of bone. It may follow concussion with no return to consciousness or it may come on after apparent recovery.

Ques. 10. What may occur during the early stages of compression?

Ans. Signs of irritation may occur; these are twitching of the limbs, crying out or shouting or even convulsions.

Ques. 11. What should be done about these signs?

Ans. The casualty should not be forcibly restrained, but protected from injuring himself.

Ques. 12. What are the signs of compression?

Ans. Most of the following signs will usually be present:-

(1) Unconsciousness- coma may be present or its onset may be delayed or it may follow a period of stupor ;

(2) The face is flushed ;

(3) The breathing is noisy;

(4) The pulse is slow;

(5) The body temperature may be raised the head may feel hot to touch;

(6) The pupils of the eyes may be unequal in size or they may be dilated ;

(7) Paralysis on one side of the body may be present.

Ques. 13. What is the treatment of compression ?

Ans. Apply the general rules for the treatment of unconsciousness. This is a serious condition and medical aid must be obtained as soon possible.

Ques. 14. What is the cause of epilepsy?

Ans. The same as those of compression.

Ques. 15. What additional signs would help in the diagnosis of epilepsy ?

Ans. The age of the casualty, the sudden oneset and the absence of history or signs of injury.

Ques. 16. What is the treatment of epilepsy ?

Ans. Apply the general rules for the treatment of unconsciousness.

Ques. 17. What are the two types of epilepsy ?

Ans. Minor epilepsy ; major epilepsy.

Ques. 18. What are the signs and treament of minor epilepsy ?

Ans. The casualty may become pale with eyes fixed and staring and may become momentarily unconscious. He may then resume his previous activity as though nothing has occurred. The condition may resemble a fainting attack and should be treated as such. If the casualty is known to be subject to epileptic attacks, watch should be kept for the presence of post-epileptic automatism.

Ques. 19. What are the signs and symptoms of major epilepsy (True epileptic fit) ?

Ans. The casualty may have a premonition that he is going to have a fit. He may experience a sense of strangeness accompanied by headache, irritability, restlessness or a feeling of lethargy - the 'dremy state'. These sensations are known as the 'aura.' the epileptic fit consists of four stages :-

(1) the casualty suddenly loses consciousness and falls to the ground, possibly with a cry ;

(2) he remains rigid for some seconds and during this stage the face becomes flushed or even livid ;

(3) the convulsions start, and the casualty may injure himself by striking at some hard object. He froths at the mouth and may bite his tongue. He will not have control of his bladder or bowel and may pass urine and motions involuntarily (incontinence) ;

(4) after a variable time usually a few minutes, the convulsions cease and the casualty may be dazed and confused or sometimes act in a strange manner without realising what he is doing (post-epileptic automatism). This condition varies in duration.

Ques. 20. What is the treatment of major epilepsy ?

Ans. (1) Restrain the casualty only as far as is necessary, forcible restraint may cause injury. When possible, remove any object against which he might injure himself ;

(2) As opportunity arises, place the handle of a spoon or other hard object wrapped in a handkerchief between his back teech to prevent the casualty from biting his tongue ;

(3) Wipe away the froth from his mouth ;

(4) Apply the general rules for the treatment of unconsciousness ;

(5) Keep a careful watch for a possible recurrence, and do not leave him until you are satisfied that he is fully aware of his surroundings or until placed in the care of another responsible person ;

(6) Advise the casualty to see his doctor.

Ques. 21. What is the usual casue of an hysterical attack ?

Ans. An emotional crisis or mental stress.

Ques. 22. Give the signs and symptoms of an hysterical attack.

Ans. They vary from a temporary loss of emotional control to more serious signs including rigidity of the body and apparent unconsciousness. Occasionally there may even by 'apparent' convulsions, but these do not occur when a casualty is alone. The casualty may fall taking care not to injure himself. He may laugh, cry and utter words. The 'convulsions' that consist of voluntary though purposeless movements such as tearing the hair or clutching are never complete unconsciousness.

Ques. 23. What is the treatment of an hysterical attack ?

Ans. The First Aider should not show too much sympathy or concern. Speak firmly to the casualty but do not bully or threaten. The casualty should be kept under observation until he has recovered sufficient control of himself and then be given something to do.

Ques. 24. What are infantile convulsions ?

Ans. They occur in infants as a result of teething, some stomach or chest trouble or when sickening for an illness, such as an infectious disease.

Ques. 25. Describe the signs and symptoms of infantile convulsions.

Ans. There is a general twitching or tremor of the muscles ; extreme pallor and later blueness of the face ; occasional squinting or upturned eyes ; holding of the breath ; froth may appear at the mouth.

Ques. 26. What is the treatment of infantile convulsions ?

Ans. Apply the general rules for the treatment of unconsciousness ; wrap the child in warm blankets.

Ques. 27. What are the causes of heat exhaustion and heat stroke ?

Ans. Exposure to excessive heat, especially damp heat with or without physical exertion ; conditions where the air and surroundings are hotter than the body and there is little air movement so that it is difficult to get rid of heat from the body by the evaporation of sweat. Lack of fluids and salt are contributory causes.

Ques. 28. What are the signs and symptoms of heat exhaustion ?

Ans. These include headache, dizziness, nausea, vomiting, some times abdominal cramp, collapse and unconsciousness. The face is pale with cold clammy sweat ; the pulse is weak ; the temperature may be normal or slightly raised and the condition resembles shock of greater or lesser degree.

Ques. 29. What is the treatment of heat exhaustion ?

Ans. Place the casualty in a cool place ; if conscious give plenty of cool salted water (half a tea-spoon of salt to a pint of water). If he complains of feeling cold, keep him comfortably warm. Watch carefully in case the condition changes into heat stroke.

Ques. 30. What are the signs and symptoms of heat stroke ?

Ans. Unconsciousness comes on rapidly but may be preceded by headache, irritability and vomiting ; the face is flushed ; the skin hot and dry ; the pulse is full and bounding ; the temperature may rise rapidly to be very high (107^0 F. or more) and the casualty will die in a short time if it is not lowered quickly.

Ques. 31. What is the treatment of heat stroke ?

Ans. Place the casualty in the coolest place possible and remove clothing ; sprinkle him with water or wrap him in a wet sheet, and fan him ; care must be taken not to lower the temperature too far (102^0F.). When temperature is lowered, wrap him in a dry sheet and continue fanning. If the temperature rises again, repeat the treatment. On recovery continue as for heat exhaustion and keep under observation.

Ques. 32. What are the signs and symptoms of diabetic coma ?

Ans. The skin is dry ; the breathing is deep and sighing ; the breath may smell of acetone (musty apples or nail varnish) ; there may be varying degrees of unconsciousness. The casualty may be suffereing from some infection such as a boil.

Ques. 33. What are the signs and symptoms of insulin overdose ?

Ans. The skin is moist with perspiration ; the breathing is shallow and quiet; the breath is odourless ; there may be excitability ; faintness or unconsciousness may be present. Casualty's pockets should be searched for a card indicating that he is diabetic and for lumps of sugar which are often carried by diabetics on insulin treatment. Signs of recent injections on the arm, thigh or abdomen may be present.

Ques. 34. What is the treatment of diabetic coma and insulin overdose ?

Ans. Apply the general rules for the treatment of unconsciousness ; get a doctor immediately or if this is not possible remove to hospital. In Insulin Overdose if the casualty can swallow feed with sweet substances, dissolved sugar, jam or sweets given with a teaspoon. Ability to swallow may be tested by putting a teaspoonful of cold water between the gums and the cheek.

Ques. 35. What are the causes of fainting ?

Ans. A fall in blood pressure which may be sudden following fright, bad news, a horrigying sight or pain, or gradual when there has been debilitating illness, fatigue or long periods of sitting or standing in a hot stuffy atmosphere.

Ques. 36. What are the signs and symptoms of fainting ?

Ans. (1) Unconsciousness, which may be sudden, or the casualty may feel giddy and limp before 'passing out'.

(2) The face is pale ;

(3) The skin is cold and clammy ;

(4) The pulse is weak and slow ;

(5) The breathing is shallow.

Ques. 37. What is the preventive treatment of fainting ?

Ans. When a person feels faint get his head down quickly. If the casualty is sitting, lower the head between the knees or lay him down with the head lower than the feet. Smelling salts or sal volatile may be useful if available.

Ques. 38. What is the treatment of fainting when the casualty is unconscious ?

Ans. (1) Lay the casualty down with the head lower than the feet ;

(2) Loosen clothing at neck, chest and waist ;

(3) See that there is plenty of fresh air ;

(4) On recovery, which is usually 'rapid, gradually raise the casualty and give sips of water, tea or other beverage.

Ques. 39. What two types of heart attacks are likely to be met by a first aider ?

Ans. (1) When there is interference with the supply of blood to the heart itself, thus depriving it off the oxygen it needs to do its work properly (coronary disease, anginapectoria);

(2) Where there is chronic heart disease (congestive failure), and the heart cannot meet any extra demand made upon it.

Ques. 40. Describe the signs and symptoms of the two types of heart attack.

Ans. (1) In the first, it is likely to come on suddenly and is not necessarily associated with effort. The face is pale and may be ashen ; there is pain over the heart or in the pit of the stomach, which may be agonising and may go down the left arm ;

(2) In the second type, there is breathlessness and bluish colour of the skin due to lack of oxygen in the blood, but in a crisis the sufferer may collapse suddenly with vomiting or spitting of blood and all the signs and symptoms of shock.

Ques. 41. What is the treatment of heart attacks ?

Ans. (1) Do not move the casualty unless it is absolutely necessary ;

(2) Send for medical aid at once ;

(3) Support the casualty in a sitting position : take appropriate steps to prevent him from falling forward ;

(4) Undo tight clothing around the neck and waist.

Ques. 42. What aids to recovery that the casualty may carry ?

Ans. Small crushable glass capsules for inhalation or tablets to be taken if an attack comes on.

7.12 Poisons

Ques. 1. What is a poison ?

Ans. Any substance which, when taken into the body in sufficient quantity, is capable of injuring health or destroying life.

Ques. 2. How may poisons enter the body ?

Ans. Through the lungs by breathing poisonous gases or fumes ; by the mouth i.e., swallowed ; through the skin.

Ques. 3. How is life endangered by gas poisoning ?

Ans. By asphyxia.

Ques. 4. How is life endangered by swallowed poisons ?

Ans. (1) Directly on the food passages or,

(2) On the nervous system after absorption into the blood.

Ques. 5. How may poisons injected under the skin endanger life ?

Ans. Through coma and asphyxia.

Ques. 6. What are the general rules for the treatment of poisoning ?

Ans. (1) Send for medical aid at once giving brief particulars including, if possible, the suspected cause. Preserve the examination.

(a) any remaining poison ;

(b) any box, carton, bottle or other container, which may help to identify the poison ;

(c) any vomited matter ;

(2) If the casualty is unconscious, place him in the prone position with the head turned to one side and not resting on a pillow : if, however, there is much retching and vomiting the three - quarter prone position may be better. Start artificial respiration instantly if breathing is feeble or unduly slow ;

(3) When the poison has been swallowed and the casualty is conscious -

(a) make the casualty vomit by tickling the back of the throat with a spoon or two fingers, or if this method fails, give an emetic (two tablespoons of salt to a tumbler of water, preferably tepid) ; do not induce vomiting when the casualty is unconscious or when the lips and mouth are burned.

(b) Neutralise the poison by giving an antidote.

(c) dilute the poison by giving copious sips of cold water.

(d) give soothing drinks such as milk (at least one pint), barley water, raw eggs or flour beaten up with water.

Ques. 7. When treating cases where the poison is known. What dosage of antidote should be given to children and infants ?

Ans. For children between 2 and 8 years, the quantity should be reduced to a half. For infants under two years the quantity should be reduced to a quarter.

Ques. 8. What kinds of poisoning occur through careless handling of agricultural poisons or by accidental contamination ?

Ans. The first closely resembling heat stroke ; in the second kind, asphyxia may develop rapidly.

Ques. 9. What are the warning symptoms of poisoning by agricultural weed-killers or insecticides liable to cause asphyxia ?

Ans. Giddiness, nausea, blurred vision and tightness of the chest.

Ques. 10. What signs may be present in cases of poisoning by agricultural weed-killer or insecticides liable to cause asphyxia ?

Ans. Slow pulse, contracted pupils, sweating blueness of the face and lips unconsciousness and possible convulsions.

Ques. 11. What is the treatment of the second kind of poisoning through careless handling or accidental contamination in agricultural poisons ?

Ans. Artificial respiration, which may have to be repeated or continued for a long time. As the doctor may wish to give a special antidote by injection, the First Aider should give the suspected cause of the condition when sending for medical aid.

7.13 Miscellaneous Conditions

Ques. 1. What is the treatment of a foreign body embedded under the skin ?

Ans. If a needle or other foreign body, such as a splinter of glass or a fish-hook, do not attempt to remove. Treat the wound ; immobilise the part (using splints if necessary) and obtain medical aid.

Ques. 2. What is the treatment of foreign body in the eye ?

Ans. (1) Prevent the casualty from rubbing the eye (in the case of a child it may be necessary to get help to keep him still) ;

(2) Seat the casualty facing the light and stand in front of him ;

(3) Pull down the lower eyelid -

(a) if the foreign body is seen and does not appear to be embedded or adherent to the eyeball, remove it with the corner of a clean handkerchief, preferably white, twirled up and moistened with clean water.

(b) if the foreign body is embedded in or adherent to the eyeball, do not attempt to remove it but instruct the casualty to close his eyelids, apply a soft pad of cotton wool and secure it by a bandage, obtain medical aid ;

(4) If the foreign body is suspected to be under the upper eyelid, instruct the casualty to blink his eyelid under water. Alternatively, lift the upper lid forward, push the lower lid beneath it and let go both eyelids. Should the first attempt be unsuccessful, repeat several times ;

(5) If the foreign body is not dislodged, see that the casualty obtains medical aid as soon as possible.

Ques. 3. What is the treatment when medical aid is not available ?

Ans. (1) Seat the casualty facing the light and stand behind him, steadying his head against your chest ;

(2) Place a match-stick on the base of his upper eyelid, press it gently backwards and instruct the casualty to look downwards ; take hold of his upper eyelashes and pull the lid over the match-stick, thereby averting the eyelid ;

(3) Remove the foreign body with a corner of a clean handkerchief, preferably white, twirled up and moistened with clean water.

Ques. 4. What is the treatment when a corrosive acid or alkali is suspected ?

Ans. Instruct the casualty to blink his eyelid under water or flush the eye with copious supplies of water. Apply a soft pad of cotton wool over his eye and keep the paid in position by a shade or bandage applied lightly, and see that he obtains medical aid as soon as possible.

Ques. 5. What is the treatment if an insect is in the ear cannal ?

Ans. Fill the ear with olive or salad oil or insert a few drops of surgical spirit ; the insect will float and may be removed. Medical aid must be obtained.

Ques. 6. What is the treatment of a foreign body in the ear other than an insect ?

Ans. The foreign body should be left in position and the casualty warned not to interfere with it. Medical aid must be obtained.

Ques. 7. What is the treatment for a foreign body in the nose ?

Ans. Instruct the casualty to breathe through the mouth ; do not interfere with the foreign body ; obtain medical aid.

Ques. 8. What should be done in the case of a person who has swallowed a pin or some other small object ?

Ans. Give nothing by the mouth ; medical aid must be obtained without delay.

Ques. 9. What should be done if a fish bone is in the throat ?

Ans. Do not attempt to remove the fishbone but try to avoid panic and seek medical aid.

Ques. 10. What is a abdominal hernia ?

Ans. It is commonly referred to as a 'rupture' and consists of a protrusion of some part of the abdominal content, usually the bowel, through the muscular wall of the abdomen under the skin.

Ques. 11. Where does an abdominal hernia most frequently occur ?

Ans. At the groing but it is not uncommon at the navel or through the sear of an abdominal operation.

Ques. 12. What are the signs and symptoms of abdominal hernia ?

Ans. The condition may come on suddenly or gradually ; if the onset is sudden there may be swelling and pain followed sometimes by vomiting.

Ques. 13. What is the treatment of abdominal hernia ?

Ans. (1) Lay the casualty down, raise and support his head and shoulders, bend his knees and place a pillow under them ;

(2) Make no attempt to reduce the swelling, but seek medical aid without delay.

Ques. 14. What is the treatment of the sting of an insect ?

Ans. (1) Remove the sting, if present, using forceps or tweezers or the point of a needle which has been passed through a flame and allowed to cool for a few moments;

(2) Apply methylated or surgical spirit, or weak ammonia or sal volatile, or a solution of bicarbonate of soda or a wet 'blue bag'. Never use methylated spirit near the eyes ;

(3) If the sting is in the mouth, give a mouth wash of bicarbonate of soda - one tea spoonful to a tumbler or water ; guard against shock and seek medical aid as soon as possible.

(4) Watch for anaphylactic reaction.

Ques. 15. What is the treatment of frost bite ?

Ans. Where possible, bring the casualty into an atmosphere no warmer than ordinary room temperature and cover the affected part. Do not use friction or rub with snow. In cases of severe frostbite, especially after prolonged exposure, the casualty must receive medical aid as soon as possible.

Ques. 16. What is Cramp ?

Ans. Sudden involuntary and painful contraction of a voluntary muscle or groups of muscles.

Ques. 17. What is the treatment of cramp ?

Ans. Massage the affected part and apply warmth. Encourage fluid in take.

Ques. 18. What is the treatment of 'winding' ?

Ans. Apply the general rule for the treatment of unconsciousness ; draw up the casualty's knees and gently massage the abdomen, keep him lying down quietly until he is comfortable and the circulation fully restored.

Ques. 19. What is the treatment of stitch ?

Ans. If not immediately relieved by rest, give sips of hot water and gently rub the affected side.

GLOSSARY

New Resuscitation Guidelines 2010 Notes for Trainers

On October 18th the European Resuscitation Council and the Resuscitation Council (UK jointly Published the new Resuscitation Guidelines 2010. There are no major changes to the 2005 guidelines, although there are some subtle, yet very important amendments that refl ect the latest scientific evidence available on resuscitation.

Here is a summary of the changes to the Basic Life Support Guidelines:

1. **When obtaining help, ask for an Automated External Defi brillator (AED) if one is available.**

   AEDs are becoming more and more widespread in public places and in the emergency services. An AED should be viewed as a standard piece of first aid equipment and remains the single biggest factor in survival rates of sudden cardiac arrest. In the UK approximately 30,000 people sustain cardiac arrest outside of hospital each year. The chances of survival decline at a rate of about 10% with every 1 minute delay in providing a defibrillation shock.

   The new guidelines say that 'training in the use of an AED is desirable but not essential'. Attempting to use an AED without prior training is likely to result in a better outcome than CPR alone (and the machines are very safe), although chances of survival can be increased signifi cantly if training is provided, as this is likely to reduce interruptions in chest compressions and reduce the time taken to deliver the first shock.

2. **Compress the chest to a depth of 5-6cm and at a rate of 100-120 per minute.**

   Previous guidelines indicated a depth of 4-5cm at a rate of 100 per minute. The changes reflect evidence that chest compressions; both inside and outside hospital are often undertaken at insufficient depth and at the wrong rate, both

of which are associated with reduced survival rates. In theory, telling people to 'push harder' will improve on the actual depth achieved.

Interestingly, studies have shown that untrained laypeople generally deliver chest compressions too slow, whereas medical professionals tend to deliver compressions too fast. If chest compressions are delivered outside the new guideline rates of 100 to 120 per minute, coronary perfusion drops significantly. When was the last time you checked your perception of 100 per minute? If you go at the new upper limit of 120, that's 2 beats per second. Practice it!

3. **Give each breath over 1 second rather than 2 seconds.**

This is not actually a change, as the 2005 guidelines also indicated 'take about 1 second to make the chest rise', though the Resus Council (UK) have indicated this as one of the changes. It is likely that this is to further highlight the importance of minimising interruptions in chest compressions, which commonly happen and are associated with a reduced chance of survival.

4. **Do not stop to check the victim or discontinue CPR unless the victim starts to show** signs of regaining consciousness, such as coughing, opening his eyes, speaking or moving purposefully AND starts to breathe normally.

The 2005 guidelines indicated stopping if 'normal breathing' resumed - which often resulted in rescuers interrupting chest compressions to confi rm. The new guidance advocates stopping only if you see signs of the victim regaining consciousness. Note the terminology 'moving purposefully' - which excludes anoxic convulsions or spasms that can happen normally during a cardiac arrest.

This again reflects the need to prevent unnecessary interruptions in chest compressions, but also tllghlights the need to teach first aid students about 'agonal gasps' (see next page).

5. **Teach CPR to laypeople with an emphasis on chest compression, but include ventilation as the standard, particularly for those with a duty of care.**

This is a welcome clarification that teaching rescue breaths is necessary. 'Those with a duty of care' includes workplace fi rst aiders, those who work with children, lifeguards etc.

There is a subtle but significant change in the guidance on when to give CHEST COMPRESSIONS ONLY:

- The 2005 Guidelines said to give compressions only CPR 'if you are unwilling or unable to give rescue breaths ... '
- In the new 2010 guidelines this has changed to 'if you are not trained to, or are unwilling to give rescue breaths ... '

This makes it clear that if you are not trained in CPR, chest compressions only is better than no CPR at all, though victims of drowning and children will have little or no oxygen in the blood at the point of cardiac arrest, so for these casualties rescue breaths are essential. Even with a cardiac arrest of cardiac origin (caused by a heart attack) the residual oxygen in the blood will last 5 minutes at the longest. Even with an open airway (the patency of which can only really be tested by giving a rescue breath!) the air drawn in and out of the lungs by chest compressions alone is not sufficient to oxygenate the lungs because of the 'dead air space' in the airways.

For this reason you should always train first aid students to give full CPR including rescue breaths, and you should only certify competence in CPR if the delegate has demonstrated effective rescue breaths.

Studies on telephone CPR (advice given over the phone, not doing CPR with a telephone!) have shown how attempting to give rescue breaths when the layperson has not received prior training leads to considerable interruptions in chest compressions. Therefore chest compression only CPR is the preferred option if someone has NOT received training in CPR.

6. Teach about agonal gasps.

Around 40% of cardiac arrest victims gasp initially in the first few minutes of cardiac arrest. These are called 'agonal gasps' and are often mistaken for breathing, so CPR is not started. The new guidelines say 'it should be emphasised during training that agonal gasps occur commonly in the first few minutes after sudden cardiac arrest; they are an indication for starting CPR immediately and should not be confused with normal breathing.'

Paediatric Guidelines - A note to avoid confusion

The paediatric guidelines for laypeople / first aiders remain unchanged. The Resus Council (UK) website may cause some confusion if you go to the 'paediatric basic life support' section, as this section advocates a compression/breaths ratio of 15:2. This guidance is only for "Health Care Professionals with a Duty to Respond"

The definition of "Health Care Professionals with a Duty to Respond" has previously been clarified by the Resus Council (UK) as "Nurses, Doctors, Ambulance Crews or other medical professionals who, as their everyday job would expect to perform paediatric resuscitation". It was further clarified that this does not include general nurses, GPs, first aiders, teachers or childminders.

The correct section to look at for first aiders/child minders is actually at the end of the Adult Basic Life Support Guidelines, under the heading 'Resuscitation of children and victims of drowning'.

Manual Changes and Implementation

All the above changes are to be implemented from 1 st January 2011. Course manuals will be adjusted to reflect the changes mentioned above in due course.

The full Resuscitation Guidelines 2010, including references to research can be found at www.resus.org.uk

Information Courtesy of QualSafe.

If you require further information please contact Claire Brlsbourne, STA Qualifications Development Administrator (Lifesaving and First Aid) on 01922 645097 or email claireb@sta.co.uk

Abdominal thrust- an upward push to the abdomen given to clear the airway of a person with a complete airway obstruction

Abrasion- A superficial wound in which the topmost layers of the skin are scraped o

ABCs- Airway, breathing and circulation

AED- Automated External Defibrillator

Airway- The passages which transfer air from the outside environment to the lungs; the tracha, bronchi, bronchioles and alveoli

Airway obstruction- a complete or partial blockage of the airway

Artificial respiration- the process of breathing air into the lungs of a person who has stopped breathing

Artery- A blood vessel carrying blood away from the heart; contains oxygen-rich, highpressure blood in the systemic cardio respiratory system

Avulsion- A tearing away of a section of skin from the layers of issue beneath it

Brachial pulse- the beat that is felt on the inside of a person's upper arm

Blood pressure- the force of the circulating blood pushing against the walls of the blood vessels

Blood vessels- the tubes through which blood circulates throughout the body

Breastbone- the main bone in the front, centre part of the chest to which the ribs are connected

Bystander- Any person, trained or untrained, who assists in an emergency situation, but not as part of a duty of employment

Capillary- The smallest blood vessels in the body; the skin is rife with capillaries

Carotid artery- The main artery providing blood supply to the head

Cardiac arrest- the condition in which the heart stops beating

Cardio pulmonary resuscitation (CPR)- an emergency procedure used for a person who is not breathing and who's heart has stopped beating (cardiac arrest). The procedure involves a combination of rescue breathing and chest compressions.

Carotid pulse- the beat that is felt at side of the neck when the carotid artery is pressed. Located between the wind pipe and the neck muscles, the carotid pulse is checked to determine the presence or absence of heart beat.

Causation- Determination of whether the defendant's actions are causally linked to any harm

Circulation- The movement of blood throughout the body; performed by the heart

Chest compressions- a procedure for manually circulating blood in a person who's heart has stopped beating. It involves pressing down and up on the lower half of breastbone

Circulatory system- the system that carries blood to all the cells of the body. Its main components are the blood vessels and the heart

Consciousness (level of)- A state of awareness or lack thereof

Consent- A legal condition whereby a person can be said to have given consent based upon an appreciation and understanding of the facts and implications of an action

Cyanosis- The bluish coloration of the skin due to the presence of deoxygenated blood near the skin surface; occurs when the oxygen saturation of arterial blood falls below 85%

Defibrillation- Delivering a therapeutic dose of electrical energy to the affected heart with a device called a defibrillator

Diabetes- a disease causing an inability to regulate the level of sugar (glucose) in the blood

Distal- The point on a limb furthest from its point of attachment to the body

EMS- Emergency Medical System or Emergency Medical Services

Foreign body- an object that lodges in a person's airway, causing an obstruction or blockage of the airway

Head tilt/chin lift - a technique used to open the airway of an unconscious person. It is done by applying backward pressure on the forehead and lifting the jaw

Heart attack- a condition in which blood fl ow to part of the heart is blocked, causing that part of the heart muscle to die from lack of oxygen

Hypoxia- A condition in which insufficient oxygen reaches body tissue

Incision- A clean cut caused by a sharp-edged object

Insulin- a hormone that allows glucose to travel from the bloodstream into the cells

Laceration- Irregular wounds caused by a blunt impact to soft tissue which lies over hard tissue; tearing of skin

Landmark- The location of compressions; on the midline of the chest, even with the nipples

Mechanical obstruction- a blockage of the airway by a foreign object such as a piece of food

Mouth to mouth breathing- a form of rescue breathing in which a rescuer breathes air into the mouth and lungs of a person who is not breathing

Myocardial Infarction- Heart attack; bleeding or blockage cuts off blood fl ow to part of the heart muscle

Nailbed- The tissue under the nail; pinching the nail and observing the blood return to the nailbed is a good test of circulation at that location

Nausea- a feeling of sickness in the stomach with an urge to vomit

Neutral position- the position in which a person's head is placed to open the airway

Notch- the place where the lower ribs meet the lower end of the breastbone in the centre of the chest used as a reference point for fi nding the correct hand position in CPR

Oedema (Edema)- Swelling in the lower legs and ankles. Oedema is caused by a fluid build-up in the body.

Primary survey- a series of checks to discover conditions that are immediately life threatening to a victim

Proximal- The point on a limb closest to its point of attachment to the body

Puncture- A wound caused by an object puncturing the skin

Pulse- The rhythmic 'beat' in an artery. As the heart pumps blood, the walls of the arteries expand or contract causing a beat or a pulse

Rescue breathing- same as 'artificial respiration'

Resuscitation- an effort to artificially restore or provide normal heart and/or lung function

Secondary survey- a series of checks to discover conditions that are not immediately life threatening to a victim but that may become life threatening if not corrected

Semi-prone position- A position which keeps the tongue from obstructing the airway and allows any fluids to drain from the mouth (aka recovery position)

Stroke- a condition in which one or more of the blood vessels to the brain becomes clogged or bursts, causing a part of the brain to die from lack of oxygen

Tachycardia- A rapid pulse generally a pulse over 100 at rest

Vein- A blood vessel that carries blood toward the heart; most veins carry low-oxygen blood

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